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&
BOARD WISE**

09 BOARDS

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SECTION I

Chapter — 10

GASEOUS EXCHANGE

(MCQ's)

From Exercise:

1. The process of gaseous exchange involves:

- (A) Breakdown of C-H bonds to yield energy
(B) Physical movements that take air in and out of body
☒ (C) Getting oxygen from the air and removing carbon dioxide
(D) Transport of oxygen by the blood to different parts of the body

2. Most of the gaseous exchange in a leaf occurs through: BWP(GII-16) RWP(GI-17)

SWL(GII-15)

- ☒ (A) Stomata (B) General surface
(C) Cuticle (D) Lenticels

3. How many bronchi are there in the air passageway? GUJ(GI-18)

- (A) One ☒ (B) Two
(C) Many (D) None

4. Where does the gaseous exchange occur in humans? LHR(GI-17) GUJ(GII-18)

MTN(GII-17, GI-18) RWP(GI-16, GII-18)

SGD(GI-16) SWL(GI-14)

- (A) Pharynx (B) Trachea
(C) Bronchi ☒ (D) Alveoli

5. Which structure activity helps in taking the air out of lung? LHR(GII-18) BWP(GI-16)

- (A) Nasal Cavity (B) Bronchus
(C) Bronchiole ☒ (D) Diaphragm

6. The primary chemical stimulus for breathing is the concentration of:

- ☒ (A) Carbon dioxide in blood
(B) Oxygen in blood
(C) Carbon dioxide in muscles
(D) Oxygen in muscles

9. Which process does NOT occur in the nasal cavity?

- (A) Rapping of large dust particles
(B) Humidification of the inhaled air
(C) Warming of the inhaled air
☒ (D) Exchange of gases

10. What type of blood vessels surrounds the alveoli?

- (A) Artery (B) Arteriole
☒ (C) Capillary (D) Vein

PUNJAB BOARDS

2014, 15, 16, 17, 18, 19

1. Percentage of Carbon Dioxide in expired air during breathing is. LHR(GI-15)

BWP(GII-18)

- (A) 16 % ☒ (B) 04 %
(C) 21 % (D) 0.04 %

2. For gaseous exchange the leaves & young stem have in their epidermis: LHR(GI-16)

- ☒ (A) Stomata (B) Lenticels
(C) Companion cell (D) Ground cell

3. The respiratory center is present in:

LHR(GII-17)

- (A) Lungs ☒ (B) Brain
(C) Nose (D) Muscles

4. The disease in which destruction the wall of alveoli is: LHR(GI-18) BWP(GI-17)

SGD(GII-15)

- (A) Asthma (B) Pneumonia
☒ (C) Emphysema (D) Bronchitis

5. Stomata are frequently present on:

LHR(GII-16)

- ☒ (A) Upper side of leaf (B) Lower side of leaf
(C) Both side of leaf (D) Stem

6. Inflammation of bronchi or bronchioles is called MTN(GI-16)

- (A) Flu (B) Pneumonia
☒ (C) Bronchitis (D) Cough

7. During inspiration the amount of oxygen in inspired air is MTN(GII-16)

- (A) 16% ☒ (B) 21%
(C) 4% (D) 79%

8. Stomata are present in: MTN(GII-14)

- ☒ (A) Epidermis (B) Endodermis
(C) Xylem (D) Phloem

9. % of oxygen in inhaled air during breathing: BWP(GII-14)

- (A) 21 (B) 79
(C) 04 (D) 0.04

10. % of oxygen expired air is: BWP(GI-14)

- (A) 16% (B) 21%
(C) 79% (D) 30%

11. Most of the gaseous exchange in a leaf occurs: BWP(GII-16)

- (A) Stomata (B) General surface
(C) Cuticle (D) Lenticels

12. The length of trachea is cm approximately: FBD(GI-14)

- (A) 10 (B) 12
(C) 14 (D) 16

13. Which disease is caused by streptococcus pneumoniae: FBD(GII-14)

- (A) Brouchoitis (B) Amphysemn
(C) Pneumonia (D) Asthma

14. The % of oxygen from air which we inspired is FBD(GI-16)

- (A) 15 (B) 21
(C) 25 (D) 28

15. Gaseous exchange in cow takes place in: FBD(GII-16)

- (A) Bronchi (B) Trachea
(C) Pharynx (D) Alveoli

16. Larynx is made up of: FBD(GI-18)

- (A) Glottis (B) Trachea
(C) Cartilage (D) Alveoli

17. All the alveoli constitute: FBD(GII-18)

- (A) Liver (B) Heart
(C) Stomach (D) Lung

18. Percentage of carbon dioxide in the exhaled air is: RWP(GI-14)

- (A) 4% (B) 5%
(C) 6% (D) 7%

19. Glottis is the opening of: RWP(GII-14)

- (A) Pharynx (B) Larynx
(C) Trachea (D) Epiglottis

20. % of CO₂ in exhaled air is RWP(GII-16)

- (A) 2 (B) 4
(C) 6 (D) 8

21. A narrow opening present at the floor of Pharynx is called: RWP(GI-18)

- (A) Larynx (B) Nostril
(C) Glottis (D) Trachea

22. The amount of oxygen in expired air is: RWP(GII-18)

- (A) 15% (B) 16%
(C) 20% (D) 21%

23. Rubber plant excretes: RWP(GII-14)

- (A) Resin (B) Mucilage
(C) Latex (D) Rubber

24. Intake of oxygen from environment and removal of carbon dioxide is called as: SGD(GI-15)

- (A) Cellular respiration
(B) Excretion
(C) Gaseous exchange
(D) Secretion

25. The glottis is guarded by a flap of tissue called: SGD(GI-17)

- (A) Trachea (B) Glottis
(C) Bronchi (D) Epiglottis

26. Larynx is a box made up of: SGD(GI-18)

- (A) Bone (B) Cartilage
(C) Adipose (D) Muscles

27. Taking in oxygen and giving out of CO₂ is called: DGK(GI-14)

- (A) Arobic Respiration
(B) Anaerobic Respiration
(C) Gaseous exchange
(D) Respiration

28. In normal condition human respiration rate is: DGK(GII-14)

- (A) 12 to 15 (B) 15 to 20
(C) 10 to 12 (D) 16 to 20

29. Venule unit to form: DGK(GI-15)

- (A) Pulmonary vein (B) Pulmonary artery
(C) Trechea (D) Alveolia

30. Length of trachea is: DGK(GII-15)

- (A) 12 centimeters (B) 14 centimeters
(C) 16 centimeters (D) 18 centimeters

31. A muscular passage common to both food and air is: DGK(GI-18)

- (A) Trachea (B) Alveoli
(C) Larynx (D) Pharynx

32. Pakistan's Federal Ministry of health established NaCP in: SWL(GI-14)

- (A) 1987 (B) 1988
(C) 1989 (D) 1990

33. Power of speaking is only gifted to:

SWL(GI-17)

- (A) Human being (B) monkey
(C) parrot (D) crow

34. Glottis is a narrow opening at the floor of:

SWL(GI-14)

- (A) Nasal cavity (B) Nostril
(C) Pharynx (D) Larynx

35. The length of trachea is: RWP(GI-19)

- (A) 12 cm (B) 14 cm
(C) 16 cm (D) 18 cm

36. Stoma are abundantly present:

RWP(GII-19)

- (A) on upper epidermis of leaf
(B) on stem
(C) in xylem cells (D) in phloem cells

37. The empty space present in nose is called:

SGD(GII-19)

- (A) bronchi (B) nasal cavity
(C) eardrum (D) pharynx

38. Major types of bronchitis are:

BWP(GI-19)

- (A) 1 (B) 2
(C) 3 (D) 4

39. The larynx is also called this:

BWP(GI-19)

- (A) trachea (B) voice box
(C) alveoli (D) bronchioles

40. Percentage of oxygen in the inspired air:

FBD(GI-19)

- (A) 11% (B) 21%
(C) 31% (D) 41%

41. _____ blood vessels surrounds the alveoli: MTN(GII-19)

- (A) artery (B) arteriol
(C) capillaries (D) vein

42. Where does the gaseous exchange in human: LHR(GI-19)

- (A) pharynx (B) trachea
(C) bronchi (D) alveoli

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SECTION II

SHORT QUESTIONS

From Exercise:

1. Differentiate between breathing and cellular respiration?

MTN(GII-17)DGK(GII-14,15, GI-16)

Ans: The physical movements associated with gaseous exchange are called breathing. There are two phases of breathing i.e. inhalation and exhalation.

A process in living organisms involving the production of energy, typically with the intake of oxygen and the release of carbon dioxide from the oxidation of complex organic substances called as respiration.

2. Trace the path of air from the nasal cavity to the alveoli?

Ans: Air passes from nasal cavity to pharynx to larynx to oesophagus to trachea to bronchioles to alveoli.

3. How will you differentiate between a stoma and a lenticels?

LHR(GI-16) GUJ(GII-15)FBD(GI-14,15,16,18)

MTN(GI-18)FBD(GII-19)SGD(GI-19)MTN(GII-19)

Ans: Plants breathe through pores similar to the human mouth. These structures are called stomata, plural, or stoma for singular use.

Lenticels are certain pores in the layer of bark. These are called the lenticels. The lenticels allow air to pass through them.

PUNJAB BOARDS

2014, 15, 16, 17, 18, 19

1. What are the effects of smoking?

LHR(GII-14,GI-15), FBD(GI-16), BWP(GI-18), SWL(GII-18)FBD(GI-19)

Ans: Smoking has effects on the circulatory system. The carbon monoxide present in tobacco smoke lessens the oxygen-carrying capacity of hemoglobin. Many other chemicals in smoke increase the production of blood platelets. When platelets are more than the normal numbers, they make the blood viscous and it can lead to arteriosclerosis.

2. What is Larynx? Write two works.

LHR(GII-14),BWP(GII-16)

Ans: Larynx is a box made of cartilage. It is present between pharynx and trachea. It is also called the voice box.

Two pairs of fibrous bands called vocal cords are stretched across the larynx. The vocal cords vibrate when air passes through them. This vibration produces sounds.

3. Define epiglottis? LHR(GII-14),BWP(GII-18)

Ans: The glottis is guarded by a flap of tissue called the epiglottis.

4. What are the symptoms of the bronchitis? FBD(GI-16) DGK(GI-18)

LHR(GII-14), GUJ(GII-17)BWP(GII-18)BWP(GI-19)

MTN(GI-19)GUJ(GII-19)

Ans: Bronchitis is the inflammation of the bronchi or bronchioles. It results in excessive secretions of mucus into the tubes, leading to the swelling of tubular walls and narrowing of tubes.

5. Differentiate between inhalation and exhalation?

OR Difference between inspiration and expiration. LHR(GI-14), BWP(GI-16)

SWL(GI-17)RWP(GI-16)DGK(GII-14)RWP(GII-19)

Ans: When we take oxygen into our body is called as inhalation & when we move out carbon dioxide from our body is called as exhalation.

6. What are lenticels? Write their functions. LHR(GII-15,17), GUJ(GII-14,17,GI-18)

BWP(GI-17), RWP(GII-14)SWL(GII-17)GUJ(GI-19)

BWP(GII-19)

Ans: There are certain pores in the layer of bark. These are called the lenticels. The lenticels allow air to pass through them.

7. Write the structure and function of alveolus? LHR(GI-15, GI-18)

Ans: Structure of alveolus: Each alveolar dust opens into a cluster of pouches called alveoli. The alveoli forms the respiratory surface in human body. Each alveolus is a sac-like structure lined by a single layer of epithelial cells. It is bound on the outside by a network of capillaries.

Function: Alveolus is surrounded by blood capillaries and thus provide site and large surface area for gaseous exchange.

8. Define alveoli?

LHR(GII-15,GI-18), BWP(GI-14)
OR What is Alveoli?

Ans: The bronchioles end as fine tubules called the alveolar duct opens into a cluster of produces called alveoli singular called alveolus.

9. Define breathing & respiration?

LHR(GI-15), MTN(GI-15), GUJ(GII-15,GI-18)
BWP(GI-14) SWL(GII-18)

Ans: The physical movements associated with gaseous exchange are called breathing. There are two phases of breathing i.e. inhalation and exhalation.

A process in living organisms involving the production of energy, typically with the intake of oxygen and the release of carbon dioxide from the oxidation of complex organic substances called as respiration.

**10. Define bronchi? LHR(GI-16), MTN(GII-16)
BWP(GII-14)**

Ans: On entering the cavity, the trachea divides into two smaller tubes called bronchi (singular: bronchus). Each bronchus enters into the lung of its side and then divides into smaller branches.

11. Why does blood become thick due to smoking? LHR(GII-15,16)

Ans: Other chemicals in smoke increase the production of blood platelets. When platelets are more than the normal numbers, they make the blood viscous and it can lead to arteriosclerosis.

12. Define nasal cavity? LHR(GII-16), GUJ(GI-18)

Ans: The nasal cavity opens into the pharynx by means of two small openings called internal nostrils.

**13. Define vocal cord? FBD(GI-15)RWP(GII-14)
Ans: Vocal Cord:**

Two pairs of fibrous bands collect vocal cords are stretched across the larynx. The vocal cords vibrate when air passes through them. This vibration produces sounds.

**14. Difference b/w acute and chronic bronchitis? LHR(GII-17), BWP(GII-17)
MTN(GI-16), GUJ(GII-18), SGD(GI-18)
SGD(GII-19)**

Ans: There two major types of bronchitis i.e. acute and chronic. The acute bronchitis usually lasts about two weeks and patients recover with no permanent damage to the bronchi or bronchioles.

Chronic bronchitis is one type of COPD. The inflamed bronchitis tube produce a lot of mucus. This lead to coughing and difficulty breathing.

**15. What is the function of mucous in nasal cavity? GUJ(GII-14,18)LHR(GI-19)
GUJ(GII-19)**

Ans: The mucosa, or mucus membrane, that can be found in the nasal cavity is highly vascular, helping to warm and moisten incoming air and is important for smelling since it is connected to the first cranial nerve, also known as the olfactory nerve.

16. What are stomata? GUJ(GI-15), LHR(GI-18), DGK(GII-18)

Ans: Stomata are the microscopic pores in the epidermis of leaves. They are the passage ways for gases and water vapours opening and closing of stomata control the gaseous exchange.

17. What is meant by gaseous exchange? Also define breathing? LHR-(GII-18), GUJ(GII-15)

Ans: Organism get the oxygen, needed for cellular respiration. From their environment and provide to their cells. The carbon dioxide produced during cellular respiration is taken out of the cell and ultimately from the body. Taking in oxygen and giving out of carbon dioxide is termed as gaseous exchange.

Breathing:

The term breathing is used for the process through which animals take air in their bodies to get oxygen from it and give out air for getting rid of carbon dioxide.

18. What is trachea? Where is it located?

GUJ(GI-17), MNT(GII-14)

Ans: Trachea:

Larynx continues to trachea which is also called wind pipe. It is about 12cm long tube which lies in front of the oesophagus.

19. How voice is produced through vocal cords? GUJ(GII-17), BWP(GI-15), RWP(GI-17)

FBD(GII-14), DGK(GI-16)

Ans: The vibrations in vocal cords and the movements of lips, cheeks, tongue and jaws produce specific sounds which results in speech. Speech is an ability that only humans are gifted with.

20. What is trachea?

MNT(GII-14), FBD(GII-17), SGD(GII-15)

Ans: The trachea, colloquially called the windpipe, is a cartilaginous tube that connects the pharynx and larynx to the lungs, allowing the passage of air, and so is present in almost all air-breathing animals with lungs. It is about 12 cm long tube which lies in front of the esophagus. Only in the lungfish, where the lung is connected to the pharynx and the larynx, it is absent.

21. What are bronchioles? MTN(GI-16)

Ans: The bronchi continue dividing in the lungs until they make several fine tubes called bronchioles.

22. What is Diaphragm? MTN(GI-17)

Ans: A thick muscular structure called diaphragm is present below the lungs.

23. Differentiate between aerobic Respiration & cellular Respiration?

BWP(GI-14), FBD(GI-14), SWL(GI-14, GII-18)
LHR(GII-19)

Ans: In aerobic respiration, oxygen is used and there is complete oxidation of the food material. Carbon dioxide and water are also produced in this process. In heat respiration is the process in which the C-H bonds in foods are broken by oxidation reduction reaction and the energy is transformed into ATP.

24. What is the side effect of tobacco smoking on teeth? BWP(GI-14)LHR(GI-19)

Ans: Tobacco smoke contains over 4,000 different chemicals, out of which at least 50 are carcinogens and many are poisonous. They will decrease the teeth, badly harm it. Calcium present in teeth also decreases.

25. Define Oxygenated blood? BWP(GI-14)

Ans: Vertebrate blood is bright red when its haemoglobin is oxygenated and dark red when it is deoxygenated. Some animals, such as crustaceans and molluscs, use hemocyanin to carry oxygen, instead of hemoglobin.

26. Write the name of bacteria which cause pneumonia? BWP(GI-15)

Ans: The most common cause of pneumonia is a bacterium, Streptococcus Pneumoniae. Some virus (influenza) and fungi infections may also lead to pneumonia.

27. What is bronchitis? Write its causes? BWP(GI-16,18),DGK(GI-15)

Ans: Bronchitis is the inflammation of the bronchi or bronchioles. It results in excessive secretions of mucus into the tubes, leading to the swelling of tubular walls and narrowing of tubes.

Causes: It is caused by virus, bacteria or exposure to chemical irritants e.g. tobacco-smoke.

**28. Differentiate b/w Glottis and Epiglottis? BWP(GI-17), LHR(GII-18), DGK(GII-15)
GUJ(GI-19)**

Ans: Glottis: It is a narrow opening at the floor of pharynx which leads into larynx.

Epiglottis: a flap of tissue called the epiglottis guards the glottis.

**29. What is double Pneumonia? Write name of its causal Bacteria? BWP(GII-17)
MTN(GI-19)RWP(GI-19)**

Ans: Pneumonia is an infection of lungs. If this infection affects both lungs, it is called double pneumonia. The most common cause of pneumonia is a bacterium, Streptococcus Pneumoniae. Some viral (influenza virus) and fungal infections may also lead to pneumonia.

30. How does respiratory center control the breathing centre? RWP(GI-16)
MTN(GI-18)SGD(GII-15)

Ans: The respiratory centers (RCs) are located in the medulla oblongata and pons, which are parts of the brainstem. The RCs receive controlling signals of neural, chemical and hormonal nature and control the rate and depth of respiratory space movements of the diaphragm and other respiratory muscles.

31. What is bronchitis? Write the name of its 2 types? OR SGD(GII-15)
What are symptoms of bronchitis?

Ans: Bronchitis is the inflammation of the bronchi or bronchioles. It results in excessive secretions of mucus into the tubes, leading to the swelling of tubular walls and narrowing of tubes.

There are two major types of bronchitis:

(i) A cute bronchitis (ii) Chronic Bronchitis

Symptoms:

Cough, mild wheezing, fever chills and shortness of breath.

32. What is passive smoking and how it is harmful? SGD(GI-14,17)

FBD(GI-18), DGK(GI-18)SGD(GI-19)RWP(GI-19)

Ans: You have an increased risk of lung cancer and heart disease if you are exposed to other people smoking for long periods of time. For example, the risk of developing lung cancer is increased by about 20-30% in people who are regularly exposed to other people's cigarette smoke. Cigarette smoke is also an irritant, and can make asthma and other conditions worse.

33. What is the pleural membrane? SGD(GI-15)BWP(GI-19)

Ans: Pleura: One of the two membranes around the lungs. These two membranes are called the visceral and parietal pleurae. The visceral pleura envelops the lung, and the parietal pleura lines the inner chest wall.

The membranes close fluid which provides Lubrication for the tree expanding and contracting of the lungs.

34. What is pharynx? SGD(GI-17)

Ans: Pharynx is a muscular passage and is common to both food and air. It extends to opening of esophagus into the larynx.

35. What are alveoli? Describe their function? SGD(GII-17)

Ans: The bronchioles end as fine tubules called the alveolar duct opens into a cluster of produces called alveoli singular called alveolus.

The alveoli form the respiratory surface in human body. Each alveolus is a sac-like structure lined by a single layer of epithelial cells. It is bound on the outside by a network of capillaries.

36. What is normal rate of respiration in human? DGK(GI-14)

Or—describe the breathing rate in human at rest and during hard physical work? DGK(GI-15)

Ans: Humans breathe 16-20 times per minute in normal circumstances i.e. at rest. During exercise or other hard physical works the breathing rate may increase up to 30-40 times per minute.

37. Name some disease caused by smoking? DGK(GI-14)

Ans: Pneumonia, asthma and Emphysema are caused by smoking.

38. Why we should not sleep under trees during night? DGK(GI-14)

Ans: We should not sleep under a tree as during the night tree respire where the amount of CO_2 increase in the surrounding. So; during respiration by us while sleeping under a tree we may affect our health as due to the amount of carbon dioxide is little bit higher around the tree.

39. How does gaseous exchange occur in stems and leaves of plants? DGK(GI-15)
GUJ(GII-19)

Ans: Mostly gaseous exchange occur by stomata. These are small porous.

40. Define alveolus?

DGK(GII-15)

Ans: On entering the cavity, the trachea divides into two smaller tubes called bronchi (singular: bronchus). Each bronchus enters into the lung of its side and then divides into smaller branches. The bronchi continue dividing in the lungs until they make several fine tubes called bronchioles. The bronchioles end as fine tubules called the alveolar duct opens into a cluster of produces called alveoli singular called alveolus.

41. What is the % of nitrogen in exhaled & inhaled air?

SWL(GI-15)

Ans: The permanent gases in gas we exhale are 4% to 5% by volume more carbon dioxide and 4% to 5% by volume less oxygen than was inhaled. This expired air typically composed of 78.04% nitrogen.

42. What is the % of CO₂ in exhaled & inhaled air?

SWL(GI-15)

Ans: The permanent gases in gas we exhale are 4% to 5% by volume more carbon dioxide and 4% to 5% by volume less oxygen than was inhaled. This expired air typically composed of 78.04% nitrogen.

43. Define and give the function of diaphragm?

SWL(GII-15)

Ans: Diaphragm is a dome shaped. During inspiration, the rib muscles contract and ribs are raised. At the same time the dome-shaped diaphragm contracts and is lowered. These movements increase the area of the thoracic cavity, which reduces the pressure on lungs. As a result, the lungs expand and the air pressure within them also decreases. The air from outside rushes into the lungs to equalize the pressure on both sides.

44. How does the gaseous exchange occur in aquatic plants?

GUJ(GII-19)

Ans: The aquatic plants get the oxygen dissolved in water and release carbon dioxide in the water.

45. What is the location of stomata? What are their functions?

FBD(GI-19)

Ans: The leaves and young stems have stomata in their epidermis. The gaseous exchange occur through these stomata.

SECTION III

LONG QUESTION

PUNJAB BOARDS

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1. How do the different parts of the plant body exchange gases with the environment?
2. Write down the steps of inhalation and exhalation.
4. How does the tobacco smoke damage the respiratory system?

SECTION I

Chapter — 11

HOMEOSTASIS

(MCQ's)

From Exercise:

- The human urinary system consist of:
(A) Rectum, Lungs, kidneys, ureters
(B) Kidneys, ureters, urinary bladder
(C) Skin, liver, lungs, kidneys
(D) Kidneys, ureters, urinary bladder, urethra
- Which organ is responsible for filtering the blood? LHR(GI-15)SGD(GI-16)
GUJ(GI-17)
(A) Intestine (B) Brain
(C) Stomach **(D)** Kidney
- The tube between the kidney and urinary bladder is the: MTN(GI-18)BWP(GI-17)
RWP(GI-17)SWL(GI-14)
(A) Ureter (B) Urethra
(C) Renal tubule (D) Nephron
- Body balance of water, salts, temperature and glucose is termed as: RWP(GI-17)
SWL(GI-14, GI-15)
(A) Excretion (B) Tubular secretion
(C) Homeostasis (D) Re-absorption
- Which is the correct order for the path taken by urine after it leaves the kidneys?
(A) Urethra, bladder, ureters
(B) Bladder, ureters, urethra
(C) Ureters, bladder, urethra
(D) Bladder, urethra ureters
- What is the function of the ureter?
(A) To store urine
(B) To carry urine from the kidney to the bladder
(C) To carry urine out of the body
(D) To remove waste from the blood
- What waste products are excreted by kidneys? FBD(GI-15)
(A) Urea, water & salts
(B) Salts, water and carbon dioxide
(C) Urea & water
(D) Urea & salts

- The two main functions of sweat are:
(A) To keep the body cool and to remove excess proteins
(B) To keep the body warm and to filter the blood
(C) To filter the blood and to remove waste products
(D) To remove waste products and to cool the body
- Which would NOT be present in the filtrate entering the Bowman's capsule of nephron?
(A) Water (B) Calcium ions
(C) Blood cells (D) Urea

PUNJAB BOARDS

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- The blood glucose level remains about.....per liter despite eating a meal rich in carbohydrates: LHR(GI-16)
(A) 2gram **(B)** 1gram (C) 3gram (D) 4gram
- In every 100ml of human blood concentration of glucose is maintained as LHR(GII-16)
(A) 180-200mg (B) 150-180mg
(C) 100-150mg **(D)** 80-120mg
- As per normal chemical composition the amount of water in the urine is: LHR(GII-16)
(A) 60% (B) 70% (C) 80% **(D)** 95%
- The maintenance of temperature in internal human body is called: LHR(GII-18)
(A) Thermoregulation (B) Osmoregulation
(C) Respiration (D) Guttation
- Encyclopaedia "Al-Tasrif" is written by: LHR(GI-18)
(A) Al-Farabi **(B)** Abu-Al-Qasim
(C) Ali Ibn-e-Isa (D) Al-Haitham
- Who is the writer of Encyclopaedia "Al-Tasrif". LHR(GI-II-15, GI-18)
(A) Abu-Al-Qasim (B) Al-Farabi
(C) Jabir-bin-Hayan (D) Aristotle
- Broad leaves with large number of stomata on the upperside are found in. GUJ(GI-15)
(A) xerophytes **(B)** hydrophytes
(C) halophytes (D) trees

8. In an adult man the average urine formation in a day is. GUJ(GII-15)

(A) 4 litre (B) 1.3 litre
(C) 1.4 litre (D) 3 litre

9. The elimination of metabolic waste from body is called: GUJ(GII-18)

(A) excretion (B) respiration
 (A) osmoregulation (D) thermoregulation

10. The length of human Kidney is:

MTN(GI-14)

(A) 27 cm (B) 4 cm (C) 5 cm **(D)** 10cm

11. The tube between kidney and urinary bladder is the MTN(GI-16)

(A) Gall bladder (B) Urethra
 (C) Nephrons **(D)** Ureter

12. Number of Nephron in each Kidney is:

MTN(GI-17)DGK(GI-18)

(A) 5 Lac **(B)** 10 Lac (C) 7 lac (D) 12 Lac

13. Resins, as waste material, is excreted from: MTN(GII-17)

(A) Conifers (B) Tomato
 (C) Kikar (D) Rubber

14. The functional unit of the kidneys is called: MTN(GII-18)

(A) Neuron (B) Ribosome
(C) Nephron (D) Ureter

15.is responsible for filtration of blood MTN(GII-16)

(A) Antestine (B) Brain
 (C) Stomach **(D)** Kidney

16. The tube between Kidney and Urinary Bladder is: BWP(GI-17)

(A) Ureter (B) Urethra
 (C) Nephron (D) Renal Tubule

17. The functional unit of Kidney is called:

BWP(GI-18)

(A) Axon (B) Neuron
 (C) Cortex **(D)** Nephron

18. The maintenance of Internal Body Temperature is called: BWP(GII-18)

SGD(GII-16) SWL(GII-17)

(A) Osmoregulation (B) Excretion
(C) Thermoregulation (D) Homeostasis

19. The maintenance of internal body temperature is called: FBD(GI-14)

(A) Osmoregulation **(B)** Thermoregulation
 (C) Excretion (D) Digestion

20. Which plants have succulent organs:

FBD(GII-14)

(A) Hydrophytes (B) Mesophytes
(C) Xerophytes (D) Halophytes

21. The weight of human kidney is approximately: FBD(GII-15)

(A) 100 gm **(B)** 120 gm (C) 158 gm (D) 170 gm

22. The concave part of the kidney is towards

FBD(GII-16)

(A) Upper (B) Lower
(C) Toward vertebral column
 (B) Away vertebral column

23. Waste material that is removed by rubber plant is: FBD(GI-18)

(A) Gums **(B)** Latex (C) Resins (D) Mucilage

24. Two glands are situated above the kidneys: FBD(GII-18)

(A) Adrenal (B) Parathyroid
 (C) Thyroid (D) Pancreas

25. In average a mature person excretes a volume of urinelitre: RWP(GII-16)

(A) 4 (B) 2.5 (C) 2 **(D)** 1.4

26. The normal core temperature of human body is: RWP(GI-18)

(A) 35°C **(B)** 37°C (C) 39°C (D) 40°C

27. Which plant produces latex: RWP(GII-18)

(A) Keeker (B) Conifer
(C) Rubber plant (D) Tomato

28. Example of hydrophytes plants is:

RWP(GI-16)

- (A) Water lily (B) Cactus
(C) Sea grass (D) Grass

29. Human urinary system consist of: SGD(GI-15)

- (A) Kidney (B) Ureter
 (C) Urinary bladder **(D)** All of these

30. Urine is temporarily stored in which of these until it is released from body.

SGD(GII-15)

- (A) Kidney (B) Ureter
(C) Urinary bladder (D) Urethra

31. The functional unit of the Kidney is called.

SGD(GI-17)

- (A) Renal Pelvis **(B)** Nephron
 (C) Bowman's Capsule (D) Renal medulla

32. What are not filtered through glomerular capillaries?

SGD(GII-17)

- (A)** Blood cells & Proteins
 (B) Fats & Proteins
 (C) Fats & Salts (D) Salts & Proteins

33. Latex is released by: SGD(GI-18)

- (A)** Rubber Plant (B) Keekar
 (C) Lady finger (D) Brasica

34. Blood glucose levels remain in humane per liter: DGK(GI-14)

- (A) 0.1 gram **(B)** 1 gram
 (C) 0.5 gram (D) 10 grams

35. Functional unit of kidney is: DGK(GII-14)

- (A) Nerve (B) Neuron
(C) Nephron (D) Bowman's capsule

36. In every kidney no. of Nephrons is about:

DGK(GI-15)

- (A) 10 lac **(B)** More than 10 lac
 (C) More than 5 lac (D) 5 lac

37. Method for the removal of kidney stones is: DGK(GII-15)

- (A) Biopsy **(B)** Lithotripsy
 (C) Dialysis (D) Kidney transplant

38. The weight of human kidney is nearly

DGK(GI-16)SWL(GI-15)

- (A) 100 gram (B) 150 gram
(C) 120 gram (D) 170 gram

39. The core temperature of human body remains at about: SWL(GII-14)

- (A)** 37°C (B) 38°C (C) 39°C (D) 40°C

40. Weight of human kidney is approximately.

SWL(GI-17)

- (A) 27 gm (B) 127 gm (C) 60 gm **(D)** 120 gm

41. The waste material that are removed by coniferous trees are: GUJ(GI-19)

- (A)** resin (B) gums
 (C) latex (D) musilage

42. Which organs is responsible for filtering the blood: LHR(GI-19)DGK(GII-19)

- (A) intestine **(B)** kidney
 (C) brain (D) stomach

43. The maintenance of internal body temperature is called: LHR(GII-19)

- (A) homeostasis
 (B) osmoregulation
(C) thermoregulation (D) 18 excretion

44. Latex is secreted by: MTN(GI-19)

- (A)** rubber plant (B) keeper
 (C) ladyfinger (D) brassica

45. The weight of human kidney is nearly grams: MTN(GII-19)RWP(GI-19)

- (A) 110 (B) 115
(C) 120 (D) 127

46. Waste material that are secreted by rubber plant: FBD(GII-19)

- (A) gums **(B)** latex
 (C) resins (D) mucilage

47. The name of lube between kidney and urinary bladder is: SGD(GI-19)

- (A) ureter **(B)** urethra
 (C) nephron (D) renal tubule

48. Waste materials that secreted by keekar: SGD(GII-19)

- (A)** gums (B) latex
 (C) resins (D) mucilage

49. U shape renal tubules is called: DGK(GI-19)

- (A) neuron (B) pyramids
(C) loop of henle (D) cortex

SECTION II

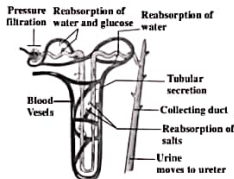
SHORT QUESTIONS

From Exercise:

2. Identify and label the following diagrams.



Ans:



PUNJAB BOARDS

2014, 15, 16, 17, 18, 19

1. Define Osmo-regulation?

LHR(GII-14,17), SWL(GI-15,GII-17)

MTN(GI-16), BWP(GI-15), DGK(GI-18)/SGD(GI-16)

Ans: Osmo-regulation: it is maintenance of the amounts of water and salts in body fluids (i.e. blood and tissue fluids).

2. What is guttation? OR
What is meant by guttation?

LHR(GI-14,GII-17), FBD(GII-14)RWP(GI-17)

SWL(GI-17)LHR(GII-19)DGK(GII-19)

Ans: The appearance of drops of water on the tips or edges of leaves is called guttation.

3. Differentiate between osmoregulation & thermoregulation?

LHR(GI-15), GUJ(GII-17), MTN(GII-18)

Ans: Osmo-regulation is maintenance of the amounts of water and salts in body fluids (i.e. blood and tissue fluids).

The maintenance of internal body temperature is called thermoregulation.

4. Write the name of different parts of human urinary system?

LHR(GII-14,GI-15,16), FBD(GII-14,15,GI-16)

SWL(GII-18)RWP(GI-19)

Ans: These are the parts: It is formed of one pair of kidneys, a pair of ureters, a urinary bladder and a urethra. Kidneys filter blood to produce urine and the ureters carry urine from kidneys to urinary bladder. The bladder temperature stores urine until it is released from body. Urethra is the tube that carries urine from urinary bladder to the outside of body.

5. When kidney form hypotonic and hypertonic urine? LHR(GI-15)

Ans: When there is excess water in body fluids, kidneys form dilute (hypotonic) urine. When there is shortage of water in body fluids; kidneys filter less water from glomerular capillaries and the rate of re-absorption if water is increased. Less filtration and more re-absorption produce small amount of concentrated (hypertonic) urine.

6. What is hilus? LHR(GII-16)

Ans: The concave side of kidney faces vertebral column. There is a depression, called hilus, near the centre of the concave area of kidney.

This is the area of kidney through which ureter leaves kidney and other Structures including blood vessels, lymphatic vessels and nerves.

7. What is meant by osmosis? SWL(GII-18)

LHR(GII-15,16,GI-18), BWP(GI-14)

Ans: A process by which molecules of a solvent tend to pass through a semi-permeable membrane from a less concentrated solution into a more concentrated one.

8. Define Homeostasis. Give an example?

GUJ(GII-14,15, GII-18), MTN(GII-17, GII-18),

BWP(GI-14, GI-18), SWL(GII-15)LHR(GI-19)

Ans: Homeostasis may be defined as the maintenance of the internal conditions of body at equilibrium, despite changes in the external environment. For example, the core temperature of human body remains at about 37°C despite fluctuations in the surrounding air temperature.

9. Describe the role of bowman's capsule in the nephrons? GUJ(GI-15)

Ans: Bowman's capsule is a cup-shaped structure that encloses glomerulus. They perform the 1st step in the filtration of blood to form urine. A glomerulus is enclosed in the Sac.

10. Define Thermoregulation & Excretion?

LHR(GI-18), GUJ(GII-15)DGK(GII-14, GI-15)

Ans: The maintenance of internal body temperature is called thermoregulation. **Excretion** is also a process of homeostasis. In this process, the metabolic wastes are eliminated from body to maintain the internal conditions at equilibrium.

11. What is meant by pressure filtration?

GUJ(GII-15), BWP(GII-17)

Ans: Pressure filtration is the excretion of waste water outside the body. Kidneys filter blood to produce urine and the ureters carry urine from kidneys to urinary bladder. The bladder temperature stores urine until it is released from body. Urethra is the tube that carries urine from urinary bladder to the outside of body.

12. What is difference between Resins and Gums? GUJ(GI-17)

Ans:

Gums	Resins
Gums are viscous substances which are secreted by the bark of certain trees.	Resins are gluey and viscous substances which may be whitish, brownish or red and are secreted by certain trees when they are incised.

13. Differentiate b/w renal cortex and renal medulla?

GUJ(GI-17), BWP(GI-17, GII-18), DGK(GI-18)

RWP(GII-19)

Ans: Renal cortex is the outer part of kidney and it is dark red in colour. Renal medulla is the inner part of kidney and is pale red in colour.

14. What are succulent organs?

LHR(GII-18), GUJ(GII-17)

Ans: Some xerophytes have special parenchyma cells in stems or roots in which they store large quantities of water. This makes their stem or roots wet and juicy called succulent organs.

15. What is difference b/w Transpiration & Guttation? SGD(GI-18), MTN(GI-17)

SGD(GII-19)MTN(GI-19)

Ans: The appearance of drops of water on the tips or edges of leaves is called guttation.

Transpiration is the loss of water from plant surface in the form of vapors.

16. Define nephron and describe their two major parts? LHR(GI-17)BWP(GI-14,17)

BWP(GII-19)

Ans: The functional unit of the kidney is called nephron. There are two parts of a nephron i.e. renal corpuscle and renal tubule.

17. Write the size of human kidney?

MTN(GII-14), FBD(GI-14,15)

Ans: Kidneys are dark-red, bean shaped organs. Each kidney is 10 cm long, 5 cm wide and 4 cm thick and weight about 120 grams.

18. Differentiate b/w Hillus & Pelvis?

LHR(GI-18)MTN(GII-16)SGD(GII-17)

Ans: **Hilus:** The concave side of kidney faces vertebral column. There is a depression, called hilus, near the centre of the concave area of kidney.

Pelvis: The large bony frame near the base of the spine to which the hind-limbs or legs are attached in humans and many other vertebrates are called as pelvis.

19. How the extra carbon dioxide and oxygen are removed from plant?

FBD(GII-15)

Ans: In daytime, the carbon dioxide produced during cellular respiration is utilized in photosynthesis and hence it is not waste product. At night, it is surplus because there is no utilization of carbon dioxide. In leaves and young stems, carbon dioxide escapes out through stomata. In young roots, carbon dioxide diffuses through the

general root surface, especially through root hairs. Oxygen is produced in mesophyll cells only during daytime, as a by-product of photosynthesis. After its utilization in cellular respiration, the mesophyll cells remove the extra amount of oxygen through stomata.

20. Osmo-regulation role in kidney?

FSD(GII-15,GI-16)

Ans: Kidney play important role in osmoregulation by regulation the water contents of blood. It is an important process as excessive loss of water concentrates the body fluids whereas excess intake of water dilutes them.

21. What are renal corpuscles? OR Write down about bowman's capsule?

FSD(GI-16,-17), SWL(GII-14,17)

Ans: The renal corpuscle is not tubular and has two parts i.e. glomerulus and Bowman's capsule. Glomerulus is a network of capillaries while Bowman's capsule is a cup-shaped structure that encloses glomerulus.

22. Write a short note on peritoneal Dialysis?

SGD(GI-18), FBD(GI-18), RWP(GII-14)

RWP(GI-19)

Ans: In this type of dialysis, the dialysis fluid is pumped for a time into the peritoneal cavity which is the space around gut. This cavity is lined by peritoneum. Peritoneum contains blood vessels. When we place dialysis fluid in peritoneal cavity, waste materials from peritoneal blood vessels diffuse into the dialysis fluid, which is then drained out.

23. Abu-Nasr-Ala-Farabi is famous for what? RWP(GI-17)

Ans: He wrote many books that contained information about Kidney diseases.

24. What is meant by tubular secretions in the functioning of Kidney? RWP(GII-17)

Ans: The third step in urine formation different ions, creatinine, urea etc are secreted from the blood into the filtrate in the renal tubule. This is done to maintain blood at a normal pH (7.35 to 7.45).

25. Name the metabolic wastes produced in conifers and keekar tree? SGD(GI-15)

Ans: In conifer and kiker both produce metabolic waste in the form of Oxygen, Carbon dioxide and Water through leaves or other parts. But the Oxygen is the main metabolic waste.

26. Define orterio sclerosis. SGD(GII-15)

Ans: The thickening and hardening of the walls of the arteries, occurring typically in old age called as orterio sclerosis.

27. Differentiate b/w glomerulus & bowman's capsule? DGK(GII-15)

Ans: Glomerulus is a network of capillaries while Bowman's capsule is a cup-shaped structure that encloses glomerulus.

28. What is Glomerulas filtrate?

GUJ(GI-18), DGK(GI-16)FBD(GII-18)

SWL(GII-15, GI-17)

Ans: Glomerular filtration is the process by which the kidneys filter the blood, removing excess wastes and fluids. Glomerular filtration rate (GFR) is a calculation that determines how well the blood is filtered by the kidneys, which is one way to measure remaining kidney function.

29. What is meant by selective reabsorption? DGK(GI-16)

Ans: The absorption of some of the components of the glomerular filtrate back into the blood as the filtrate flows through the nephrons of the kidney is called as selective reabsorption.

30. What happened, when the excess water in body fluid? SWL(GII-14)

Ans: When there is excess water in body fluids, kidneys form dilute (hypotonic) urine. For this purpose, kidneys filter more water from glomerular capillaries into Bowman's capsule. Similarly less water is reabsorbed and abundant dilute urine is produced. It brings down the volume of body fluids to normal.

31. Differentiate b/w Guttation & dew?

BWP(GII-18), SWL(GII-15)

Ans: Transpiration is the loss of water from plant surface in the form of vapors. The appearance of drops of water on the tips or edges of leaves is called guttation. While dew is the moisture with drops of liquid.

32. Define excretion?

MTN(GII-18), SWL(GII-15)SGD(GI-19)

Ans: Excretion is the process by which metabolic wastes and other non-useful materials are eliminated from an organism. In vertebrates this is primarily carried out by the lungs, kidneys and skin.

33. What is meant by metabolic waste?

FBD(GI-19)DGK(GII-19)

Ans: Metabolic waste means any material that is produced during body metabolism and that may harm the body.

34. Write two benefits of homeostasis?

MTN(GI-19)

Ans: Plants respond to environment changes and keep their internal condition constant.

35. What is meant by renal pelvis?

SGD(GII-19)

Ans: The large bony frame near the base of the spine to which the hind-limbs or legs are attached in humans many other vertebrates are called as pelvis.

3. What is the functional unit of the kidney? Describe its structure and draw labeled diagram.

4. What steps are involved in the formation of urine in the kidneys?

5. "Along with excretion, kidneys also play role in osmoregulation." Comment on this statement.

SECTION III**LONG QUESTION****PUNJAB BOARDS**

2014, 15, 16, 17, 18, 19

1. Describe the process of selective re-absorption in the kidneys.
2. How do the plants excrete extra water and salts from their bodies?

SECTION I

Chapter — 12

COORDINATION & CONTROL

(MCQ's)

From Exercise:

1. Processes that carry nerve impulses away from the cell body are called:

RWP(GII-15,18)BWP(GI-18)FBD(GII-15)

- (A) Axons (B) Dendrites
(C) Synapses (D) Myelin Sheath

4. The part of the brain responsible for muscle movement, interpretation of the senses and the memory is the: LHR(GII-16)

- (A) Pons (B) Medulla oblongata
(C) Cerebrum (D) Cerebellum

6. The myelin sheath is formed by _____ which wrap around the axons of _____ some neurons.

- (A) Nodes of Ranvier (B) Axons
(C) Dendrites (D) Schwann cells

7. This is NOT a part of the hindbrain:

BWP(GII-14) RWP(GII-17)

- (A) Pons (B) Medulla oblongata
(C) Cerebrum (D) Cerebellum

8. If you look at an intact human brain, what you see the most is a large, highly convoluted outer surface. This is the:

- (A) Cerebrum (B) Cerebellum
(C) Pons (D) Medulla oblongata

9. Insulin and glucagon are produced in the:

- (A) Hypothalamus
(B) Anterior pituitary
(C) Liver (D) Pancreas

10. All of these are hormones except:

BWP(GII-16) RWP(GI-18) SWL(GI-15)

- (A) Insulin (B) Thyroxin
(C) Glucagon (D) Pepsinogen

PUNJAB BOARDS

2014, 15, 16, 17, 18, 19

1. Types of neurons according to their work are: LHR(GI-16)

- (A) 3 (B) 4
(C) 5 (D) 2

2. Part of brain movements: LHR(GI-15)

- (A) Cerebellum (B) Pons
(C) Medulla Oblongata (D) Hypothalamus

3. The Cochlea is present in: LHR(GI-15)

- (A) External Ear (B) Middle Ear
(C) Internal Ear (D) None of these

4. When the human body has low amount of water then Pituitary Gland secretes:

LHR(GI-15)

- (A) Vessopressin (B) Insulin
(C) TSH (D) Oxytocin

5. Pair of spinal nerves are: LHR(GI-17)

RWP(GI-16)

- (A) 12 (B) 21
(C) 13 (D) 31

6. The myelin sheath is secreted by:

LHR(GI-17)

- (A) Nodes of Ranvier (B) Axon
(C) Dendrites (D) Schwann cells

7. The number of spinal nerves is:

LHR(GII-17)

- (A) 31 pair (B) 12 pair
(C) 41 pair (D) 21 pair

8. The length of spinal cord is: LHR(GI,II-18)

- (A) 20 cm (B) 40 cm
(C) 60 cm (D) 70 cm

9. It is the unit of nervous system: LHR(GII-18)

BWP(GI-17)

- (A) Ganglions (B) Nerve
(C) Neuron (D) Receptor

10. Temporal lobe is concerned with: BWP(GI-16)

- (A) Hearing and smell
(B) Control of skeletal muscles
(C) Visual information
(D) Both A & B

11. The smallest bone of human body is:

LHR(GI-18)RWP(GII-14)MTN(GI-18)

- (A) Stapes (B) Incus
(C) Malleus (D) Vertebra

12. This hormone is secreted in case of emergency situation.

GUJ(GI-17)

- (A) pancreas (B) glucagon
(C) adrenalin (D) calcitonin

13. Decreases the level of calcium ions in blood:

LHR(GI-18)

- (A) calcitonin (B) parathormone
(C) vasopressin (D) oxytocin

14. In neuron, nucleus is found in:

GUJ(GI-18)

- (A) myelin sheath (B) axons
(C) cell body (D) node of ranvier

15. Oval window is found in:

GUJ(GII-18)

- (A) middle ear (B) external ear
(C) internal ear (D) eye

16. A hormone testosterone is secreted by:

GUJ(GII-18)

- (A) pancreas (B) gonads
(C) thyroid gland (D) adrenal gland

17. The unit of Nervous system is:

MTN(GI-14)

- (A) Nucleus (B) Neuron
(C) Receptors (D) Nephron

18. The part of the brain responsible for the muscle

MTN(GI-15)

- (A) Pons (B) Medulla
(C) Cerebrum (D) Cerebellum

19.lobe of forebrain contains sensory areas that receive impulses from skin

MTN(GI-16)

- (A) Parietal (B) Frontal
(C) Occipital (D) Temporal

20. Insulin and Glucagon are produced in:

MTN(GI-16, 17, 18)BWP(GI-15)FBD(GII-15)

RWP(GII-15)

- (A) Hypothalamus (B) Pituitary Glands
(C) Liver (D) Pancreas

21. ____ carry Nerve impulse away from Cell Body.

MTN(GII-17)

- (A) Dendrites (B) Axons
(C) Dendron (D) Nerve Fibre

22. Decreases the concentration of Glucose in Blood:

MTN(GII-17)

- (A) Glucagon (B) Insulin
(C) Testosterone (D) Calcitonin

23. Body synthesis rhodopsin from vitamin:

MTN(GII-18)

- (A) K (B) A (C) D (D) A, B

24. The smallest bone of the human body is:

MTN(GI-18)

- (A) Incus (B) Malleus
(C) Stapes (D) Cochlea

25. Insulin & Glucagon are produced in:

MTN(GII-16)

- (A) Hypothalamus (B) Pituitary
(C) Pancreas (D) Liver

26. Beneath the larynx in human neck, name of the gland is

BWP(GI-14)

- (A) Parathyroid (B) Thyroid
(C) Adrenal (D) Pancreas

27. Hormone increasing level of calcium ions in blood is

BWP(GII-14)

- (A) Adrenaline (B) Calcitonin
(C) Parathormone (D) Oxygen

28. The largest part of human brain is:

BWP(GII-15)

- (A) Forebrain (B) Midbrain
(C) Hindbrain (D) Medulla

29. Included in effectors:

BWP(GI-16)

FBD(GII-14)

- (A) Muscles (B) Glands
(C) Muscles & glands (D) Vane

30. Most one does not as effector

BWP(GII-16)

- (A) Liver (B) Nephrons
(C) Brain (D) Bones

31. The length of Spinal Cord is about:

BWP(GII-17)

- (A) 20 cm (B) 40 cm
(C) 45 cm (D) 30 cm

32. The example of Stimulus is: BWP(GII-18)

- (A) Ear (B) Brain **(C)** Cold (D) Muscles

33. The length of Spinal Cord is about:

BWP(GII-18)

- (A) 40 mm (B) 40 cm **(C)** 40cm (D) 40 Inch

34. Specific organs, tissue or cells of the body that intercept the stimuli BWP(GI-16)

- (A) Receptor **(B)** Effectors
(C) Coordinators (D) Dendrites

35. How many types of nerves are classified on the basis of property of axons:

FBD(GI-14)

- (A) 2 **(B)** 3 (C) 4 (D) 5

36. The parts of Forbrain are: FBD(GI-15)

- (A) Thalamus, medulla and pons
(B) Thalamus, hypothalamus and cerebrum
(C) Thalamus, hypothalamus and cerebellum
(D) medulla, cerebellum and pons

37. Disease caused by the deficiency of the iodine in food is called FBD(GI-16)

- (A) Diabetes mellitus (B) Hyperthyroidism
(C) Dwarfism **(D)** Goiter

38. Which type of coordination take is found in plants? FBD(GII-16)

- (A)** Chemical (B) Mechanical
(C) Electrical (D) Nervous

39. The largest endocrine gland in human body is: FBD(GI-18)

- (A) Adrenal gland
(B) Parathyroid gland
(C) Thyroid gland
(A) Pancreas

40. On receiving the message from coordinators, the effectors perform action is called: FBD(GII-18)

- (A) Receptors (B) Coordinators
(C) Effectors **(D)** Response

41. In certain parts of body, cell bodies of many neurons form a group enveloped by a membrane. Such group is called:

FBD(GI-15)

- (A) Tissues (B) Nerves
(C) Ganglion (D) Receptors

42. Which hormone causes contraction of uterus at the time of birth: RWP(GI-14)

- (A) Thyroxin (B) Vasopressin
(C) Oxytocin (D) Calcitonin

43. Which fibers conduct impulses away from cell body: RWP(GII-14)

- (A) Dendrites (B) Neuron
(C) Nerve **(D)** Axons

44. Spinal cord is the combination of:

RWP(GII-16)

- (A) Medulla oblongata
(B) Frontal lobe
(C) Thalamus
(D) Hypothalamus

45. Insulin Glucagon are produced in the:

FBD(GI-17)

- (A) Hypothalamus (B) Goonads
(C) Thyroxin **(D)** Pancreas

46. Which hormone develops the male secondary sex characters: RWP(GI-18)

- (A)** Testosterone (B) Estrogen
(C) Progesterone (D) Insulin

47. Which hormone is also called emergency hormone? RWP(GII-18)

- (A) Adrenaline (B) insulin
(C) Oxytocin (D) Calcitonin

48. The myelin sheath is formed by:

RWP(GI-16)

- (A) Nodes of renvier (B) Axons
(C) Dendrites **(D)** Schwann cell

49. The function of effector is called as:

SGD(GI-15)DGK(GI-14)

- (A) Stimulus (B) Impulse
(C) Response (D) Axon

50. It control the secretions of pituitary gland

SGD(GII-16)

- (A) Cerebrum (B) Thalamus
(C) Hypothalamus (D) Pons

51. They receive information, interpret them and stimulate motor neurons. SGD(GI-17)

- (A) Sensory neurons **(B) Inter neurons**
 (C) Motor neurons (D) Mixed nerves

52. It is responsible for chemical coordination.

SGD(GI-17)

- (A) Endocrine System**
 (B) Central nervous System
 (C) Peripheral nervous System
 (D) Chondrocytes

53. Is responsible for chemical coordination.

SGD(GII-17)

- (A) Nervous System
(B) Endocrine System
 (C) Circulatory System
 (D) Reproductive System

54. Receives and analyzes visual information.

SGD(GII-17) DKG(GII-18)

- (A) Temporal Lobe **(B) Occipital Lobe**
 (C) Frontal Lobe (D) Parietal Lobe

55. Temporal lobe is concerned with:

SGD(GI-18)

- (A) Control of skeletal muscle
 (B) Visual information
(C) Hearing and smell (D) Fear

56. Increases rate of respiration of water from nephrons

SGD(GII-15)

- (A) Oxygen **(B) Vasopressin**
 (C) Parathormone (D) Glucagon

57. This hormones is necessary for the ejection of milk from breast:

DKG(GII-15)

- (A) Thyroxin (B) Parathormone
(C) Oxytocin (D) Calcitonin

58. The hormone which increase the level of calcium ions in blood is DKG(GI-16)

- (A) Parathormone** (B) Adrenaline
 (C) Thyroxin (D) Calcitonin

59. The largest part of forebrain is: SWL(GI-14)

- (A) cerebrum** (B) thalamus
 (C) hypothalamus (D) cerebral hemisphere

60. Parathyroid glands secretes hormone, is called: SWL(GII-14)

- (A) calcitonin (B) thyroxin
(C) parathormone (D) apinephrine

61. Dengue virus attacks on: SWL(GI-15)

- (A) white cells (B) red cells
(C) platelets (D) brain

62. Central nervous system include brain and: SWL(GI-15)

- (A) noto cord (B) vertebra
(C) spinal cord (D) heart

63. No. of components of coordination process is: SWL(GI-15)

- (A) 4 (B) 7 (C) 3 **(D) 5**

64. Posterior lobe of pituitary gland secretes hormone: SWL(GII-15)

- (A) somatotrophin (B) thyroxin
(C) oxytocin
 (D) thyroid stimulating hormone

65. The nature of myelin sheath is: SWL(GI-17)

- (A) conductor (B) elastic
(C) insulator (D) rigid

66. The largest part of the forebrain is:

SWL(GI-17)

- (A) Hypothalamus (B) thalamus
 (C) cerebellum **(D) cerebrum**

67. The smallest bone of the human body is:

SWL(GII-17)

- (A) stapes** (B) Incus
 (C) both A and D (D) malleus

68. Which one is not included in the symptoms of diabetes mellitus: SWL(GII-18)

- (A) weakening of muscles
 (B) tiredness
(C) difficulty in breathing
 (D) loss of weight

69. Which hormone increases the level of calcium ions in blood?: SWL(GII-18)

- (A) thyroxine (B) adrenaline
(C) insulin (D) parathormone

70. Temporal lobes is concerned with:

MTN(GI-19)

- (A) taste (B) fear
(C) hearing and smell (D) visual information

71. Insuline and glycagon are made by:

MTN(GI-19)

- (A) pancreas (B) liver
(C) hypothalamus (D) adrenal gland

72. Testes and ovaries are called: FBD(GI-19)

- (A) glands (B) gonads
(C) gametes (D) embryo

73. The unit of nervous system is: FBD(GII-19)

- (A) nephron (B) receptors
(C) neurons (D) nucleus

74. Two glands are situated above kidneys:

BWP(GI-19)

- (A) adrenal (B) parathyroid
(C) thyroid (D) pancreas

75. A pigment present in rods: BWP(GI-19)

- (A) vitreous humour (B) rhodopsin
(C) iodopsin
(D) aqueous humour

76. Processes that carry nerve impulses away from the cell body are called:

BWP(GII-19)

- (A) axon (B) dendrite
(C) myelin sheath (D) synapses

77. The name of gland present below the human neck region is:

RWP(GI-19)

- (A) parathyroid (B) thyroid
(C) adrenal gland (D) pancreas

78. The hormone which increases the quantity of calcium ions in blood is:

RWP(GI-19)

- (A) adrepanin (B) calcitonin
(C) parathormone (D) thyroxine

79. Which lobe is concerned with hearing and smell: RWP(GII-19)

- (A) frontal (B) temporal
(C) occipital (D) parietal

80. The largest endocrine gland in human body is: SGD(GII-19)

- (A) adrenal gland
(B) parathyroid gland
(C) thyroid gland (D) pancreas

81. There are major regions of human brain:

DGK(GI-19)

- (A) 2 (B) 3
(C) 4 (D) 5

82. Part of neuron which takes impulses towards cell body are called: DGK(GII-19)

- (A) dendrites (B) axons
(C) ganglia (D) myelin sheath

83. All of these are hormones except:

DGK(GII-19)

- (A) insulin (B) glucagon
(C) glycogen (D) estrogen

84. The longest part of forebrain is called:

LHR(GII-19)

- (A) cerebrum (B) thalamus
(C) hypothalamus (D) cerebellum

85. The special glands present in the walls of auditory canal _____ which produce:

GUJ(GI-19)

- (A) auditory fluid (B) wax
(C) blood (D) nerve impulse

86. A coordinated action has _____ component: GUJ(GII-19)

- (A) 2 (B) 3 (C) 4 (D) 5

SECTION II

SHORT QUESTIONS

From Exercise:

1. Identify the two types of coordination in living organisms?

Ans: There are two types of coordination in organisms:

- Nervous coordination brought about by nervous system and
- Chemical coordination brought about by endocrine system.

2. Differentiate between the mode of nervous and chemical coordinations?

Ans: Nervous coordination brought about by nervous system and Chemical coordination brought about by endocrine system.

3. What are the main component of coordination? GUJ(GII-14)BWP(GI-14)

MTN(GII-17,18) DKG(GI-15,18)

Ans: A coordination action has five components;

Stimulus $\longleftrightarrow$ Receptor $\longrightarrow$
 Coordination $\longrightarrow$ Effector $\longrightarrow$
 Response

4. Define the reflex action & reflex arc?

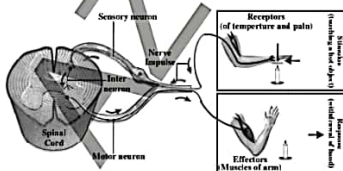
GUJ(GII-17)BWP(GII-17)RWP(GI-16,17)

DKG(GII-15)

Ans: Sometimes, the involuntary response produced by the CNS is very quick. Such a response is called reflex action. The pathway followed by the nerve impulses for producing a reflex action, is called reflex arc.

5. Trace the path of a nerve impulse in case of a reflex action?

Ans:



8. Define the terms; hormone & endocrine system?

Ans: A hormone is a specific messenger molecule synthesized and secreted by an endocrine gland.

The endocrine system refers to the collection of glands of an organism that secrete hormones directly into the circulatory system to be carried towards distant target organs.

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1. What is coordinator? LHR(GII-14,GI-17) SWL(GI-14), SGD(GI-17), DKG(GII-18)

Ans: These are the organs that receive information from receptors and messages to particular organ for proper action.

2. What is reflex action? LHR(GII-14) LHR(GI-18)DKG(GI-16, 18) DKG(GI,II-17)

Ans: Sometimes, the involuntary response produced by the CNS is very quick. Such a response is called reflex action.

3. Differentiate between sensory neurons and inter-neurons? LHR(GII-14)

Ans: Sensory neurons conduct sensory information (nerve impulses) from receptors towards the CNS. Sensory neurons have one dendrite and one axon.

Interneuron's form brain and spinal cord. They receive information, interpret them and stimulate motor neurons. They have many dendrites and axons.

4. What is meant by Somatic nervous system? LHR(GII-15), SGD(GI-17)

SGD(GII-19)

Ans: Somatic nervous system is responsible for the conscious and voluntary actions. It includes all of the motor neurons that conduct impulses from CNS to skeletal muscles.

5. How brain is protected? LHR(GI-15)

Ans: Brain is protected by the skull. Brain is situated inside a bony cranium (part of skull). Inside cranium, brain is covered by three layers called meninges.

6. What do you know about spinal card?**LHR(GII-15), GUJ(GI-17), BWP(GI-16, GII-17)**

Ans: The spinal cord in fact a tubular bundle of nerves. It starts from brain stem and extends to lower back. Like brain, spinal cord is also covered by meninges. The vertebral column surrounds and protects spinal cord. The outer region of spinal cord is made of white matter. The central region is butterfly shaped that surrounds the central canal. It is made of grey matter containing neuron cell.

7. Define receptors and their example?**LHR(GI-16), FBD(GII-14)RWP(GI-17)****SGD(GI-15)SGD(GI-19)**

Ans: The organs, tissues or cells which are specifically built to detect particular type of stimuli are called receptors. For example sound waves are detected by ears, light is detected by eyes.

8. Define Saltatory impulses? LHR(GII-16)

Ans: In such a neuron, impulses 'jump' over the areas of myelin going from node to node such impulses are called saltatory ('jumping') impulses. This increases the speed of nerve impulse.

9. Define meninges? LHR(GII-16)LHR(GI-19)

Ans: Brain is protected by the skull. Brain is situated inside a bony cranium (part of skull). Inside cranium, brain is covered by three layers called meninges.

10. Write down the exocrine and endocrine glands? LHR(GI-16)BWP(GI-19)

OR Difference between exocrine and endocrine glands. MTN(GII-15)

Ans: Posterior lobe is also called as exocrine gland. The posterior lobe of pituitary gland stores and secretes two hormones i.e. oxytocine and vasopressin (anti-diuretic hormone: ADH)

The endocrine system refers to the collection of glands of an organism that secrete hormones directly into the circulatory system to be carried towards distant target organs.

11. Differentiate b/w Sensory and motor Nerves.**LHR(GI-17), MTN(GI-14), BWP(GI-18)**

Ans. Sensory Nerves: Sensory nerves contain the axons of sensory.

Motor Nerves: Motor nerves contain the axon of motor neurons only.

12. What is nerve impulse? LHR(GI-17)**FBD(GI-19)**

Ans: A nerve impulse is a wave of electrochemical changes that travels along the length of neurons

13. How ear maintain the balance of body?**LHR(GI-17)GUJ(GI-18)**

Ans: Semicircular canals and vestibule help to maintain the balance of body. Semicircular canal contains sensory nerves which can detect any movement of head. Vestibule can detect any changes in the posture of body. The neurons coming for these two receptors reach cerebellum through the auditory nerve.

14. Define Response and their example?**GUJ(GII-14,15)**

Ans: On receiving the message from coordination, the effector performs action. This action is called response. For example, pulling our hand away from something very hot and the movement of the flower of sunflower towards light are responses.

15. Write down 2 important functions of spinal card? GUJ(GII-14, GI-18)**DGK(GI-14,18, GII-17)LHR(GII-19)RWP(GII-19)**

Ans: Spinal cord performs two main functions:

1. Spinal cord transmits nerve impulses from body parts to brain and from brain to body parts.
2. Spinal cord also acts as a coordinator, responsible for some simple reflexes.

16. How unicellular organisms coordinate their function? GUJ(GI-15)

Ans: Coordination also takes place in unicellular organisms. The response to stimuli is brought about through chemicals.

17. Define stimuli. Also give example?

GUJ(GI,II-15, GII-18), MTN(GI-15)
SGD(GII-15,GI-18)SWL(GII-17)

Ans: We can define a stimulus as any change in environment (external and internal), which can provoke a response in organism. More examples of stimuli are heat, cold, pressure, sound waves.

18. What is Neuron? Write name of its two parts?

GUJ(GI-17), MTN(GI-14), BWP(GI-14)

Ans: Nerve cell or neuron is the unit of the nervous system. Neurons are specialized cells that are able to conduct nerve impulses from receptors to coordinators and from coordinators of factors. Its parts are axons, dendrites all body.

19. Define coordination and write down its types?

GUJ(GI-17), SGD(GI-18)MTN(GI-19)

Ans: These are the organs that receive information from receptors and messages to particular organ for proper action.
There are two types of coordination in organisms:

- Nervous coordination brought about by nervous system and
- Chemical coordination brought about by endocrine system.

20. Define the reflex action & reflex arc?

GUJ(GII-17), BWP(GII-17), RWP(GI-16,17)

Ans: A reflex arc is a neural pathway that controls a reflex action. In higher animals, most sensory neurons do not pass directly into the brain, but synapse in the spinal cord.

21. Differentiate b/w hypothyroidism and hyperthyroidism?

MTN(GII-17)

Hypothyroidism	Hyperthyroidism
It is caused by the under production of thyroxine. It is characterized by low energy production in body and slowing down the heart-beat.	It is caused by over-production of thyroxine. Its symptoms are increased energy production, Increased heart beat, frequent sweating and shivering of hands.

22. Define the followings terms: MTN(GII-14)
(i) Receptors (ii) Effectors

Or Difference between receptors and effectors. DGK(GI-15)

Ans: (i) Receptors: The organs, tissues or cells which are specifically built to detect particular type of stimuli are called receptors.

(ii) Effectors: These are the parts of body which receive messages from coordinators and produce particular response. Nephron acts as effectors. Bones and liver act as effectors.

23. Difference between stimuli and response. MTN(GII-15)

OR Define stimulus and response. LHR(GI-15)
MTN(GII-19)FBD(GII-19)

Ans: We can define a stimulus as any change in environment (external and internal), which can provoke a response in organism. On receiving the message from coordination, the effector performs action. This action is called response.

24. Write a short note on Midbrain.

MTN(GII-14), BWP(GI-17, GII-18), SWL(GI-15)
SGD(GI-19)

Ans: Midbrain lies between hind brain and fore brain and connects the two. It receives sensory information and sends it to the appropriate part of the brain. Midbrain also controls some auditory reflexes and posture.

25. Define Feedback Mechanism. MTN(GII-15)
LHR(GI-18) DGK(GI-14)SGD(GII-19)

Ans: Endocrine glands do not secrete their hormones at a constant rate. The rate varies with the need of the body like many other functions in body, the secretion of hormones is also regulated by feedback mechanisms. Feedback mechanisms means the regulation of a process by the output of the same process.

26. What is difference b/w Dendrites and Axons?

MTN(GII-17), FBD(GII-14), RWP(GII-17)
SGD(GII-17)DGK(GI-15)

Ans: Dendrites conduct impulses toward cell body and axons conduct impulses away from cell body.

27. Define endocrine system? BWP(GII-14)

Ans: The endocrine system refers to the collection of glands of an organism that secrete hormones directly into the circulatory system to be carried towards distant target organs. The activities such as growth, reproduction, maintenance of glucose concentration in blood, reabsorption of water in kidneys etc. need to be regulated. Endocrine system performs this job.

28. What is hypothyroidism? BWP(GII-14) FBD(GII-14)

Ans: Abnormally low activity of the thyroid gland, resulting in retardation of growth and mental development in children and adults called hypothyroidism.

29. What is ganglion? BWP(GI-15)DGK(GII-19)

Ans: Ganglia are the clusters of neuron cell bodies outside CNS. Nerves arise or lead to brain and spinal cord. So they are named as cranial and spinal nerves.

30. What is effector? BWP(GI-16)FBD(GII-15)

Ans: These are the parts of body which receive messages from coordinators and produce particular response. Nephron acts as effectors. Bones and liver act as effectors.

31. Define Positive Feedback with examples. BWP(GI-17), FBD(GI-15)SGD(GII-19)

Ans: In positive feedback, the changes resulting from a process increase the rate of process. For example; sucking action of an infant stimulates the production of a hormone in mother. This hormone works for the production of milk.

32. Write function of parathyroid gland? BWP(GII-17), FBD(GI-15), RWP(GII-14)

Ans: These are four glands situated on the posterior side of thyroid gland. They produce a hormone known as parathormone. It increases the level of calcium ions in blood.

When there is increased production of parathormone, more than normal calcium salts absorbed from the bones and added to blood. Consequently the bones become brittle if there is deficiency in the production of parathormone, blood calcium level falls. It leads to tetany, which affects the functioning of muscles.

33. What is autonomic nervous system? RWP(GI-17), GUJ(GII-18)

Ans: Autonomic nervous system responsible for the activities which are not under conscious control. It consists of motor neurons that send impulses to cardiac muscles, smooth muscles and glands. Autonomic nervous system comprises of sympathetic system and parasympathetic system.

34. Write two functions of meninges? FBD(GI-19)RWP(GII-17)

Ans: Brain is situated inside a bony cranium part of skull. Inside cranium, brain is covered by three layers called meninges.

Function of meninges:

Meninges protect brain and also provide nutrients and oxygen to brain tissue through their capillaries.

35. Write the names of two hormones produced by thyroid gland? RWP(GII-17)

Ans: (i) Thyroxine (ii) Calcitonin

36. What are the causes of diseases hypothyroidism and hyperthyroidism? Write 2 symptoms for each. SRG(GI-14)

Ans: Hypothyroidism is abnormally low activity of the thyroid gland, resulting in retardation of growth and mental development in children and adults. Hyperthyroidism (overactive thyroid) is a condition in which your thyroid gland produces too much of the hormone thyroxine. Hyperthyroidism can accelerate your body's metabolism significantly, causing sudden weight loss, a rapid or irregular heartbeat, sweating, and nervousness or irritability.

37. Compare the functions of hormones insulin & Glucagon? SRG(GI-14)BWP(GI-19)

Ans: In response to insulin, cells (muscle, red blood cells, and fat cells) take glucose in from the blood, which ultimately lowers the high blood glucose levels back to the normal range. Glucagon is secreted by the alpha cells of the pancreas when blood glucose is low.

38. Write the name and effects of hormones secreted by testes and ovaries? SGD(GI-14)

Ans: Testes secrete testosterone which is responsible for the development of male secondary sex characters such as growth of hair on face and coarseness of sound etc. Ovaries secrete estrogen and progesterone which are responsible for the development of female secondary sex character like development of breast etc.

39. Name the hormones secreted by posterior lobe of pituitary gland?

GUJ(GII-18), SGD(GI-15)

Ans: The posterior lobe of pituitary gland stores and secretes two hormones i.e. oxytocin and vasopressin (anti-diuretic hormone: ADH).

40. Differentiate b/w voluntary and involuntary actions? SRG(GII-17)

Ans: The higher centers of brain control the conscious action or voluntary actions.

When impulses are not passed to higher centers of brain it results in responses which are not under conscious control. Such responses are called involuntary actions.

41. Write 2 functions of oxytocin hormone?

MTN(GI-15)FBD(GI-14)DGK(GI-15)

SGD(GII-19)

Ans: The release of oxytocin by the pituitary gland acts to regulate two female reproductive functions: Childbirth. Breast-feeding.

42. What is Coordination? DGK(GII-14)

FBD(GII-19)

Ans: Coordination enables the organism to respond to happenings in the world around it.

43. Differentiate b/w interneurons and motor neurons? DGK(GII-15)

Ans: Interneuron's form brain and spinal cord. They receive information, interpret them and stimulate motor neurons. They have many dendrites and axons. Motor neurons carry information from Interneuron's to muscle or glands (effectors). They have many dendrites but only one axon.

44. Define nerve and How can we Classify it? BWP(GII-18), SWL(GII-14)GUJ(GI-19)

Ans: A nerve means the union of several axons that are enveloped by a covering made of lipid. Based on the property of axons, the nerves are classified into three types.

1. Sensory nervous contain the axons of sensory neurons only.
2. Motor nerves contain the axons of motor neurons only.
3. Mixed nerves contain the axons of both i.e. sensory and motor neurons.

45. How many types of coordination in organisms? GUJ(GII-18), DGK(GI-15,17)

Ans: There are two types of coordination in organisms:

- (i) Nervous coordination brought about by nervous system and
- (ii) Chemical coordination brought about by endocrine system.

46. Write the functions of neurons?

DGK(GII-15)

Ans: On the basis of their functions, neurons are of three types;

1. Sensory neurons conduct sensory information (nerve impulses) from receptors towards the CNS. Sensory neurons have one dendrite and one axon.
2. Interneuron's form brain and spinal cord. They receive information, interpret them and stimulate motor neurons. They have many dendrites and axons.
3. Motor neurons carry information from Interneuron's to muscle or glands (effectors). They have many dendrites but only one axon.

47. What is somatic nervous systems?

RWP(GI-19)

Ans: It is responsible for the conscious and voluntary actions. It includes all of the motor neurons that conduct impulses from CNS to skeletal muscles.



SECTION III

LONG QUESTION

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1. Explain what can happen if there is no coordination in the activities of organisms.
2. Explain the location and function of these parts of brain; cerebrum, cerebellum, pituitary gland, thalamus, hypothalamus, medulla oblongata.
3. Define neuron and describe the structure of a general neuron.
9. Outline the major glands of the endocrine system (pituitary, thyroid, pancreas, adrenal, gonads), with name of their hormones and their functions.
10. Describe negative feedback with reference to insulin and glucagons.
11. Explain how adrenaline may be involved in exercise and emergency conditions.



SECTION I

Chapter — 13

SUPPORT & MOVEMENT

(MCQ's)

From Exercise:

- Find the ball-and-socket joint.
 - (A) Joint in the finger bones
 - (B) Joint of neck and skull bones
 - (C) Joint at elbow
 - (D)** Joint at pelvic girdle and leg bones
- All these are the parts of axial skeleton of humans except:
 - (A) Ribs
 - (B) Sternum
 - (C)** Shoulder girdle
 - (D) Vertebral column
- The disorders in which there is an accumulation of uric acid in joints:

MTN(GI-16, 17) FBD(GII-16)RWP(GII-16,17) SWL(GII-14)

 - (A)** Gout
 - (B) Rheumatoid arthritis
 - (C) Osteoporosis
 - (D) Osteo-arthritis
- What is correct about tendons?
 - (A) Tendons are flexible and they join muscles with bones
 - (B) Tendons are non-elastic and they join bones with bones
 - (C)** Tendons are non-elastic and they join muscles with bones
 - (D) Tendons are flexible and they join muscles with muscles
- How many bones make our skull?

BWP(GII-16)FBD(GI-15)RWP(GII-15)

 - (A) 14
 - (B)** 22
 - (C) 24
 - (D) 26
- What are the main components of a bone?
 - (A) Marrow, spongy bone, wax
 - (B) Marrow, compact bone, wax
 - (C)** Compact bone and marrow
 - (D) Compact bone, spongy bone, marrow

7. What do some bones produce?

LHR(GII-16)BWP(GI-18)RWP(GI-16) DGK(GI-18)

- (A) Mucous
 - (B)** Hormones
 - (C) Oxygen
 - (D)** Blood Cells
- How would you define skeletal system?
 - (A) All the bones in body
 - (B) All the muscles and tendons
 - (C) All the body's organs, both soft and hard tissues
 - (D)** All the bones in body and the tissues that connect them
 - Find the INCORRECT statement.
 - (A) Bone is where most blood cells are made
 - (B) Bone serves as a storehouse for various minerals
 - (C)** Bone is a dry and non-living supporting structure
 - (D) Bone protects and supports the body and its organs
 - The purpose of rib cage is to:

GUJ(GI-17)

 - (A) Protect the stomach
 - (B) Protect the spinal cord
 - (C)** Protect the heart and lungs
 - (D) Provide an object to which the lungs can attach

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- The skeleton found outside the body is called

LHR(GI-16)

 - (A) Endoskeleton
 - (B)** Exoskeleton
 - (C) Hydro-skeleton
 - (D) Fibro-skeleton
- Number of bones in skull is

LHR(GI-15)

 - (A)** 22
 - (B) 08
 - (C) 14
 - (D) 80
- An adult person skeleton has hard bones:

LHR(GI-15)

 - (A) 406
 - (B) 306
 - (C)** 206
 - (D) 106
- Number of bones in both feet are:

LHR(GI-15)

 - (A) 22
 - (B) 12
 - (C)** 56
 - (D) 108

5. The end of skeletal muscle attached with immovable bone is: LHR(GII-17)

(A) Origin (B) Insertion
(C) Belly (D) Static end

6. Number of bones in appendicular skeleton is: LHR(GI-18)BWP(GII-16)

(A) 126 (B) 116
(C) 136 (D) 146

7. Human skeleton contains number of bones: LHR(GII-18)

(A) 406 (B) 306
(C) 206 (D) 106

8. Mature bone cells are called: GUJ(GI-15)

(A) compact bone (B) osteocytes
(C) cartilage (D) fibrous cartilage

9. The biggest bone of our body is found in GUJ(GII-15)

(A) thigh (B) hand
(C) leg (D) waist

10. Our skull has _____ bones. GUJ(GII-18)

(A) 14 (B) 24
(C) 22 (D) 32

11. Number of bones in both feet is: MTN(GI-14)

(A) 108 (B) 26
(C) 22 (D) 54

12. Number of bones in Appendicular Skeleton is: MTN(GII-14)

(A) 120 (B) 126
(C) 56 (D) 108

13. All these are the part of axial skeleton of the human except MTN(GI-15)

(A) Bones (B) Sternum
(C) Shoulder girdle (D) Vertebral column

14. The no. of bones in appendicular skeleton is: MTN(GII-15)

(A) 120 (B) 124
(C) 126 (D) 125

15. In adult human skeleton, the total no. of bones is MTN(GII-16)

(A) 203 (B) 206
(C) 80 (D) 126

16. Bone Marrow is found in: MTN(GII-17)

(A) Compact bone (B) Spongy bone
(C) Osteocytes (D) Chondrocytes

17. Mature bone cells are called: MTN(GI-18)

(A) Osteocytes (B) Cartilage
(C) Fibrous cartilage (D) Spongy bone

18. End of muscles attached with moveable bone is called: MTN(GII-18)

(A) Origin (B) Flexor
(C) Insertion (D) Extensor

19. Name of the mature bone cells is: BWP(GI-14)

(A) Osteocytes (B) Chondrocytes
(C) Oocytes (D) Tendons

20. Number of cranial bones is BWP(GII-14)

(A) 8 (B) 14 (C) 22 (D) 80

21. Number of ribs in man are BWP(GII-15)

(A) 10 pairs (B) 12 pairs
(C) 20 pairs (D) 22 pairs

22. The Mature Cells of Bone are: BWP(GI-17)

(A) Osteocytes (B) Chondrocytes
(C) Tendons (D) Osteoclasts

23. In Mammals the no. of bones in lower Jaw are: BWP(GII-17)

(A) Only One (B) 3
(C) 4 (D) 2

24. The cells of cartilage are called: FBD(GI-14)

(A) Chondrocytes (B) Osteocytes
(C) Collagen (D) Osteoclast

25. Nose and larynx are made up of: FBD(GII-14)

(A) Hyaline cartilage (B) Elastic cartilage
(C) Fibrous cartilage (D) Bone

26. Vertebral column protects: FBD(GII-15)

(A) Heart (B) Spinal cord
(C) Brain (D) Lungs

27. It is the largest bone of our body FBD(GI-16)

(A) Pectoral girdle (B) Pelvic girdle
(C) Thigh (D) Vertebral column

28. They prevent dislocation of bones at joints: FBD(GI-18)

(A) Collagen (B) Tendons
(C) Ligaments (D) Cartilage

29. The matrix of cartilage also contains fibers: FBD(GII-18)

(A) Glucagon (B) Insulin
(C) Collagen (D) Lacuna

30. An example of immoveable joints is:

RWP(GI-14)

- (A) Joint of skull (B) Hip joint
(C) Shoulder joint (D) Elbow joint

31. Babies are born with soft bones:

RWP(GII-14)

- (A) 200 (B) 206
(C) 356 (D) 300

32. The bones in pelvic or hip girdle are:

RWP(GI-17)

- (A) 2 (B) 3 (C) 4 (D) 5

33. The hard outer layer of a bone is called:

RWP(GI-18)

- (A) Osteocyte (B) Compact bone
(C) Cartilage (D) Spongy bone

34. Which of the following is the hardest connective tissue:

RWP(GII-18)

- (A) Cartilage (B) Bone
(C) Ligament (D) Tendon

35. Cartilaginous cells are called

SGD(GI-15)

- (A) Chondrocytes (B) Osteocytes
(C) Leucocytes (D) Entrocytes

36. No. cranial bones in human body is:

SGD(GII-15)

- (A) 22 (B) 24 (C) 8 (D) 33

37. The cells of cartilage are called:

SGD(GI-17)

- (A) Osteocytes (B) Collagen fibres
(C) Fibrous formation (D) Condroytes

38. The hard outer layer of the bone is called.

SGD(GII-17)

- (A) Spongy bone (B) Compact bone
(C) Fibrous cartilage (D) Elastic cartilage

39. The part of bone in which blood vessels are found:

SGD(GI-18)

- (A) Spongy bone (B) Compact bone
(C) Bone marrow (D) None

40. Which one of the following have exoskeleton:

DGK(GI-14)

- (A) Arthropods (B) Birds
(C) Mammals (D) Reptiles

41. Number of bones in upper Jaw is:

DGK(GII-14)

- (A) Two (B) Three
(C) Ten (D) Fourteen

42. The cartilage found in inter vertebral discs is:

DGK(GI-15)

- (A) Hyaline (B) Fibrous
(C) Matrix (D) Elastic

43. Elastic cartilage is found in:

DGK(GII-15)

- (A) In Larynx (B) In-Trachea
(C) In Bronchial tubes (D) In Epiglottis

44. Mature cells of human bones are called

DGK(GI-16)

- (A) Osteoclast (B) Chondrocytes
(C) Osteocytes (D) Collagen

45. The longest bone in human body is:

DGK(GII-18)

- (A) Sternum (B) Thigh bone
(C) Stapes (D) Hyoid bone

46. The interior of bone is soft and porous which is called:

SWL(GI-14)

- (A) compact bone (B) spongy bone
(C) bone marrow (D) cartilage

47. Tendons and ligaments are examples of the tissues:

SWL(GI-15)

- (A) connective (B) ground
(C) nerve (D) epithelial

48. Example of hinge joints is:

SWL(GI-15)

- (A) elbow joint (B) hip joint
(C) shoulder joint
(D) joints between the vertebrae

49. Number of bones in skull is:

SWL(GI-17)

- (A) 22 (B) 08 (C) 24 (D) 33

50. How many bones are there in appendicular skeleton?

SWL(GII-17)

- (A) 206 (B) 126
(C) 129 (D) 80

51. Example of ball and socket joints is:

SWL(GII-18)

- (A) skull joints (B) hip joints
(C) elbow joints (D) knee joints

52. The cells of cartilage are called:

GUJ(GI-19)

FBD(GI-19)

- (A) osteocytes (B) monocytes
(C) lymphocytes (D) chondrocytes

53. The matrix of cartilage also contains fibers:

FBD(GII-19)

- (A) glucagon (B) insulin
(C) collagen (D) lacuna

54. _____ prevent dislocation of bones at joints: BWP(GI-19)

- (A) collagen (B) tendon
(C) ligaments (D) cartilage

55. It is the longest bone in our body: BWP(GII-19)

- (A) stapes (B) skull
(C) thigh bone (D) uncus

56. Which point of the attachment on bone is pulled when a muscle contracts: GUJ(GII-19)

- (A) origin (B) flexion
(C) extension (D) insertion

57. What do some bones produce: LHR(GI-19)

- (A) mucous (B) hormones
(C) blood cells (D) oxygen

58. Which bone is part of appendicular skeleton: LHR(GII-19)

- (A) pectoral girdle
(B) vertebral column
(C) skull (D) sternum

59. Tendons and ligaments are bands of: DGK(GI-19)

- (A) muscular tissue (B) nervous tissue
(C) epidermal tissue (D) connective tissue

60. Number of bones in human skull is: DGK(GII-19)

- (A) 22 (B) 21
(C) 20 (D) 19

61. The movement of an animal as a whole from one place to another is called: SGD(GII-19)

- (A) support (B) movement
(C) locomotion (D) growth

62. Number of bones in both hand is: RWP(GI,II-19)

- (A) 33 (B) 80
(C) 54 (D) 126

63. The bone in which blood vessels are found: MTN(GI-19)

- (A) compact bone (B) spongy bone
(C) bone marrow (D) none of these



SECTION II

SHORT QUESTIONS

From Exercise:

1. Differentiate between cartilage & Bone?

RWP(GI-16)RWP(GII-19)

Ans: Cartilage is a dense, clear blue-white firm connective tissue (but less strong than bone). The cells of cartilage are called chondrocytes.

Bone is the hardest connective tissue in body. Bones not only move, support and protect the various parts of body but also produce red and white blood cells and store minerals.

2. What is the role of skeleton in support and movement?

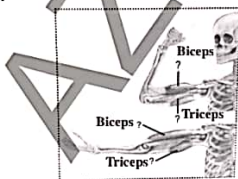
Ans: Movement and support are the general term meaning the act of changing place or position by entire body or by its parts and all body parts to support them. There are two types of movement i.e. movement of body parts and locomotion.

3. How would you differentiate between osteoporosis and arthritis?

Ans: Osteoporosis is a bone disease in adults, especially in old people. It is more common in old women. In osteoporosis, there is a decrease in the density of bones due to loss of calcium and phosphorus. Arthritis means "inflammation in joints". It is also very common in old age and in women. It is characterized by pain and stiffness in joints.

4. Label the biceps and triceps in the following diagrams and also mention their contracted or relaxed states.

Ans:



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1. What is cartilage & write their two types? LHR(GII-14), MTN(GI-14), FBD(GI-14)

DGK(GI-14, GI-15), SWL(GII-14)

Ans: Cartilage is a dense, clear blue-white firm connective tissue (but less strong than bone). The cells of cartilage are called chondrocytes.

There are three types of cartilage.

- Hyaline cartilage is strong yet flexible.
- Elastic cartilage is similar in structure to hyaline cartilage.
- Fibrous cartilage is very tough.

2. Write down the cause of Rheumatoid arthritis & their two symptoms?

LHR(GII-14, GII-15, GII-17), SGD(GI-16), DGK(GI-14)

Ans: Rheumatoid arthritis involves the inflammation of the membranes at joints. Their symptom includes fatigue, low-grade fever, pain and stiffness in joints.

3. Difference between skeletal muscle origin and insertion?

LHR(GII-14), BWP(GII-14, GI-II-18), SWL(GI-14)

GUJ(GI-17)FBD(GI-18)DGK(GI-16)BWP(GII-19)

DGK(GII-19)

Ans: One end of a skeletal muscle is always attached with some immoveable bone. This end of muscle is called the origin.

Other end of muscle is attached with a moveable bone and is called the insertion.

4. Write two functions of bones? OR

Define Bones?

LHR(GI-15, GI-16)

GUJ(GI-15), BWP(GI-17), FBD(GII-14, GI-15),

SGD(GI-15), DGK(GII-14, GI-16)MTN(GII-19)

RVP(GII-19)

Ans: Bone is the hardest connective tissue in body. Bones not only move, support and protect the various parts of body but also produce red and white blood cells and store minerals.

5. Describe the role of Ligaments? OR

Define ligaments?

LHR(GI-15, GII-16)

MTN(GII-18), SWL(GI-14)BWP(GII-19)

Ans: Ligaments are strong but flexible bands and join one bone to another at joints. They prevent dislocation of bones at joints.

6. Define antagonists? LHR(GI-16, GI-18), BWP(GII-18), FBD(GII-15), RWP(GII-14), SWL(GII-14, GII-15) FBD(GI-19) DGK(GII-19)

Ans: In an antagonistic pair, both muscles do opposite jobs. When one muscle contracts the other relaxes and this phenomenon is known as antagonistic (antagonistic action) when a muscle contracts and bends the joint, it is known as flexor muscle and the movement is called flexion. When a muscle contracts and straightens the joint, it is known as extensor muscle and the movement is called extension. Following is an example of the antagonistic action of a pair of skeleton muscles.

7. Difference b/w bicep and Tri-cep muscles? OR

Differentiate between flexor and extensor muscles?

LHR(GII-15, GII-16, GII-18), BWP(GII-16, GI-17), MTN(GII-15, GII-16, GI-18), RWP(GII-17), SGD(GII-15), DGK(GI-15, GI-18), SWL(GII-17)

Ans: Biceps is a flexor muscle on the front of the upper arm bone while triceps is an extensor muscle on the back of arm.

8. Differentiate b/w hyaline and fibrous cartilage? LHR(GII-17)

Ans:

Hyaline Cartilage	Fibrous Cartilage
Hyaline cartilage is strong yet flexible. It is found covering the ends of the long bones in the nose, larynx, trachea and bronchial tubes.	Fibrous cartilage is very tough and less flexible due to large number of thick collagen fibres present in knitted form.

9. How lower jaw is different in mammals from other lower vertebrates also give its advantage? LHR(GI-17), SWL(GI-15)

Ans: In lower vertebrates, the lower jaw is made up of more than one bone while in mammals, it is made of single bone. During evolution mammals modified lower jaw bones and incorporated four of them into the middle ear. This adaptation proved beneficial for mammals. Lower jaw with single bone is stronger and malleus and incuse also improve hearing.

10. Difference b/w compact bone and spongy bone?

GUJ(GII-14), LHR(GII-17), MTN(GII-17) FBD(GI-19)

Ans: The hard outer layer of a bone is called compact bone while the interior of bone is soft and porous. It is called spongy bone.

11. Write a short note on appendicular skeleton? GUJ(GII-14), BWP(GI-14)

Ans: Appendicular skeleton is composed of 126 bones. Pectoral (shoulder) girdle is made of 4 bones. Arms have 6 bones. Both hands have 54 bones. Pelvic girdle (hips) has 2 bones. Legs have 6 bones. Both feet have 54 bones.

12. Define Joints. Also write its types?

GUJ(GII-14, GII-18), MTN(GII-17), RWP(GI-16), SGD(GI-17), DGK(GI-14, GII-15)

Ans: a joint is the location at which two or more bones make contact. Joint can be classified on the basis of the degree of movement they allow.

1. Immoveable (fixed) joints: such joints allow no movement e.g. the joints between the skull bones.
2. Slightly moveable joints: such joints allow slight movements e.g. joints between the vertebrae.
3. Moveable joints: they allow a variety of movements e.g. shoulder joint, hip joint, elbow joint, knee joint etc.

13. Write the difference b/w hyaline and elastic cartilage? GUJ(GII-15)

FBD(GI-14), SWL(GII-14)

Ans: Hyaline cartilage is strong yet flexible. Elastic cartilage is similar in structure to hyaline cartilage.

14. Define cartilage & give example?

GUJ(GI-15)

Ans: Cartilage is a dense, clear blue-white firm connective tissue (but less strong than bone). The cells of cartilage are called chondrocytes. e.g. pinna is made up of cartilage.

15. Write any 2 functions of skeletal muscle? GUJ(GII-15), BWP(GI-15, GII-16), RWP(GII-17)

Ans: The big function of skeletal system are protection, support and movements. In our body skeleton works very closely with the muscular system to help us move. Skeleton provides protection to many internal organs e.g. skull protects brain.

16. Write down the number of bones in pectoral girdle and pelvic girdle? GUJ(GII-17)

Ans: Pectoral girdle is made of 4 bones. Pelvic girdle has 2 bones.

17. What is difference b/w exoskeleton and endoskeleton? GUJ(GII-17), DGK(GII-15, GII-18), SWL(GII-15, GII-18) MTN(GI-19)

Ans: The skeleton system of some invertebrates e.g. arthropods, is on the outside of the body, and is called exoskeleton. Like other vertebrates, the human skeleton is one the inside of body and is called endoskeleton.

18. Differentiate b/w tendons and ligaments? GUJ(GII-17, GI-18),

OR What is work of ligament and tendons? MTN(GI-17, 18) BWP(GII-16, GI-18) SGD(GI-14) LHR(GI-19) GUJ(GI-19) RWP(GI-19)

Ans: Tendons are tough bands and attach muscles to bones. When a muscle contracts tendon exerts a pulling force on the attached bone, which moves as a result. Ligaments are strong but flexible bands and join one bone to another at joints. They prevent dislocation of bones at joints.

19. What is skeletal system? MTN(GII-14) BWP(GI-15, GII-16), SGD(GI-18) LHR(GII-19) SGD(GI-19)

Ans: Skeletal system is defined as the framework of hard, articulated structure that provide physical support, attachment for skeleton muscles, and protection for the bodies of animals.

20. What are movable joints? MTN(GI-16) BWP(GI-15), SGD(GI-14, GI-15, GI-16)

Ans: The main types are hinge joints and ball and-socket joints. Hinge joints move back and forth like the hinge on a door and allow movements in one plane only. The

knee and elbow are hinge joints. Ball-and-socket joints allow movements in all directions. The hip and shoulder joints are ball-and-socket joints.

21. Write names of the Cell of Cartilage and Bone? MTN(GI-17)

Ans: The cells of Cartilage are called chondrocytes. The mature bone cells are called osteocytes.

22. Which bone is called as compact bone? BWP(GII-14)

Ans: The hard outer layer of a bone is called compact bone.

23. What is fibrous cartilage? BWP(GII-14) RWP(GI-17), SWL(GI-14, GII-15)

Ans: It is the type of cartilage. Fibrous cartilage is very tough. It is very hard.

24. Define Locomotion & Movement? BWP(GI-17), RWP(GII-14, GI-16), DGK(GI-16) SGD(GII-17) LHR(GII-19)

Ans: Locomotion is the movement of an animal as a whole from one place to another.

"Movement" is a general term meaning the act of changing place or position by entire body or by its parts. There are two types of movement i.e. movement of body parts and locomotion.

25. State Elastic and Fibrous Cartilage? BWP(GII-17), RWP(GII-14), SGD(GI-14) SGD(GII-19)

Ans:

Elastic cartilage	Fibrous Cartilage
It is similar in structure to hyaline cartilage. It is also quite strong but has elasticity due to a network of elastic fibres.	Fibrous cartilage is very tough and less flexible due to large number of thick collagen fibres present in knitted form.

26. Define the ball & socket joints?
OR Name two kinds of joints? DGK(GII-14) FBD(GII-14, GI-16), SWL(GII-17) GUJ(GII-19)

Ans: Ball-and-socket joints allow movements in all directions. The hip and shoulder joints are ball-and-socket joints.

27. What is the similarity between bone and cartilage? SGD(GI-15)

Ans: The big difference between cartilage and bone tissues is in the composition of the matrix. In cartilage tissues, the matrix is protein or glycoprotein in nature, and ranges from fairly soft and pliable in elastic cartilage to quite rigid in hyaline cartilage.

28. What is skeletal? Write its function?

SGD(GII-17)

Ans: One end of a skeleton muscle is always attached with some immovable bone. This end of muscle is called the origin. Other end of muscle is attached with a moveable bone and is called the insertion. Functions: The big functions of Skeletal System are protection, support and movement. Skeleton provides protection to many internal organs. e.g Skull protects brain etc.

29. Write name of main bones of human axial skeleton? SGD(GII-14)

Ans: The axial skeleton is the part of the skeleton that consists of the bones of the head and trunk of a vertebrate. In the human skeleton, it consists of 80 bones and is composed of six parts: the skull bones, the ossicles of the middle ear, the hyoid bone, the rib cage, sternum and the vertebral column.

30. Write 4 causes of osteoporosis? (GI-14)

Ans: It may be due to malnutrition, lack of physical activities or deficiency of estrogen hormone. In old age there is decreased secretion of growth hormones and it also leads to decreased deposition of minerals in bone matrix.

31. How many bones are present in vertebral column. Write the name of the biggest bone in human body? DGK(GII-15)

Ans: The vertebral column usually consists of 33 vertebrae: 24 presacral vertebrae (7 cervical, 12 thoracic, and 5 lumbar) followed by the sacrum (5 fused sacral vertebrae) and the coccyx (4 frequently fused coccygeal vertebrae).

The largest and longest bone in the human body is the femur, and it is located in the upper leg.

32. Define the structure and functions Tendons? SWL(GI-15), MTN(GI-18)

Ans: Tendons are tough bands and attach muscles to bones. When a muscle contracts tendon exerts a pulling force on the attached bone, which moves as a result. Ligaments are strong but flexible bands and join one bone to another at joints.

33. Describe the spongy bone? SWL(GI-15)
BWP(GI-19)

Ans: The interior bone in our body is soft and porous. It is called spongy bone.

34. What are chondrocytes? (GI-18)

Ans: Cartilage is dense, clear blue-white firm connective tissue. The cells of cartilage are called chondrocytes.

35. Write the name of two type of Skeleton?

SWL(GII-17)

Ans. (i) Exoskeleton (ii) Endoskeleton



SECTION III

LONG QUESTION

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1. What are the main components of the axial skeleton and the appendicular skeleton of human.
2. Describe the types of joints and give examples.
3. What are ligaments and tendons? What function do they perform.
4. Explain antagonism in muscle action selection biceps and triceps as example.



SECTION I

Chapter — 14

REPRODUCTION

(MCQ's)

From Exercises:

1. Growing an entire new plant from part of the original plant is called: DGK(GII-15)
(A) Budding (B) Regeneration
(C) Fragmentation
(D) Vegetative propagation
2. Rhizopus reproduces asexually by: LHR(GI-15)FBD(GII-15)SGD(GI-17) MTN(GII-17)
(A) Binary fission (B) Budding
(C) Spore formation
(D) Endospore formation
3. Pollination is the transfer of pollens from: (A) Anther to stigma (B) Stigma to anther
(C) Sepal to petal (D) Petal to sepal

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1. Calyx is the most whorl of the flower & bears the colour LHR(GI-16)
(A) Red (B) Green (C) Blue (D) White
2. The simple and most common way of asexual reproduction in bacteria: LHR(GI-16)
(A) Binary fission (B) Multiple fission
(C) Regeneration (D) Budding
3. Is not a part of carpel: LHR(GII-16)BWP(GI-17)
(A) Ovary (B) Anther
(C) Stigma (D) Style
4. Ovary is ripened into LHR(GII-16)
(A) Seed (B) Blood cells
(C) Oxygen (D) Hormones
5. Fourth whorl of flower is. LHR(GI-15) GUJ(GI-18)
(A) Calyx (B) Corolla
(C) Androecium (D) Gynoecium
6. Normally external fertilization occurs in: LHR(GI-15)
(A) In the body (B) Air
(C) Water (D) All of these

7. The cell results by combining sperm and ovum: LHR(GI-17)
(A) Nucleus (B) Zygote
(C) Genes (D) Chromosomes
8. Seed absorbs water through: LHR(GII-17)
(A) Testa (B) Hilum
(C) Micropyle (D) Integument
9. The outermost whorl of flower is called: LHR(GI-17)
(A) Corolla (B) Petals
(C) Calyx (D) Androecium
10. Example of vegetative propagation by leaves is: LHR(GI-18)
(A) Mint (B) Potato
(C) Garlic (D) Bryophyllum
11. Example of rhizome stem is: LHR(GII-18) RWP(GII-18)
(A) Potato (B) Ginger (C) Onion (D) Garlic
12. Part of embryo makes root: LHR(GII-18) FBD(GII-14)
(A) Cotyledon (B) Epicotyl
(C) Radicle (D) Plumule
13. Optimum temperature for seed growth is. GUJ(GI-15)
(A) 25-30°C (B) 30-35°C
(C) 15-25°C (D) 35-38°C
14. A corm develops into new garlic plant. This process of reproduction is called. GUJ(GI-15)
(A) gametogenesis
(B) vegetative reproduction
(C) meiosis
15. The plant in which vegetative propagation occurs by leaves is: GUJ(GI-17)
(A) garlic (B) ginger
(C) potato (D) bryophyllum
16. The root is formed from the part of the embryo. GUJ(GI-17)
(A) hilum (B) radicle
(C) plumule (D) epicotyl
17. The example of suckers is: GUJ(GI-18)
(A) potato (B) garlic
(C) mint (D) ginger

18. Connection between embryo and uterus wall is called: GUJ(GII-18)

- (A) cervix (B) follicle
(C) placenta (D) vagina

19. The unit of Androecium is: MTN(GI-14)

- (A)** Stamens (B) Anther
(C) Pollen grains (D) Gametes

20. The Scar present on Seed Coat is called:

MTN(GI-14)

- (A) Micropyle (B) Inegoment
(C) Ovule **(D)** Hilum

21. The male reproductive part of flower is

MTN(GII- 15)

- (A) Stigma **(B)** Stamen
(C) Ovary (D) Carpel

22. The method used for the cultivation of the sugarcane is MTN(GII- 15)

- (A)** Cutting (B) Grafting
(C) Layering (D) Spores

23. Ovule after ripening make. MTN(GI-16)

- (A) Fruit **(B)** Seed (C) Root (D) Egg

24. External fertilization is found in.....

MTN(GII-16)

- (A)** Fishes (B) Reptiles
(C) Birds (D) Mammals

25. Part of Embryo in the seed gives rise to plants shoot:- MTN(GI-17)

- (A) Cotyledon **(B)** Plumule
(C) Radicle (D) Testa

26. Double Fertilization results into: MTN(GI-17)

- (A) Ovule (B) Egg
(C) Triploid Endosperm Nucleus
(D) Diploid Endosperm Nucleus

27. Root develops from: MTN(GII-17)

- (A) Testa **(B)** Plumule
(C) Micropyle **(D)** Radicle

28. Optimum temperature for the growth of seed is: MTN(GI-18)

- (A)** 25---30°C (B) 35---40°C
(C) 15---20°C (D) 35---38°C

29. Ovary is ripened into: MTN(GI-18)

- (A) Seed (B) Flower
(C) Fruit (D) Sweetness

30. Transfer of pollen grains to stigma is called: MTN(GII-18)

- (A) Germination (B) Reproduction
(C) Fertilization **(D)** Pollination

31. A mature ovule is called: MTN(GII-18)

- (A) Fruit (B) Tuber
(C) Seed (D) Bulb

32. In which type of the following reproduction ways, buds are formed:

BWP(GI- 14)

- (A) Regeneration (B) Fragmentation
(C) Budding (D) Binary fission

33. Formation of gametes is called: BWP(GI- 14)

- (A) Spermatogenesis (B) Oogenesis
(C) Gametogenesis (D) Sporogenesis

34. Internal fertilization takes place in:

BWP(GII-15)

- (A) Fishes (B) Frog
(C) Birds **(D)** Reptiles

35. Sperm & fluid containing material is called BWP(GII-15)

- (A) Primary spermatocytes
(B) Secondary spermatocytes
(C) Spermatogonia
(D) Semen

36. The third whorl of flower is: BWP(GI-16)
SWL(GII-15)

- (A) Calyx (B) Corolla
(C) Androecium (D) Gynaecium

37. Which group of animals shows external fertilization? BWP(GI-16)SGD(GI-16)

- (A) Reptiles **(B)** Amphibians
(C) Mammals (D) Birds

38. Each spore is covered with thick wall called BWP(GII-16)

- (A) Membrane
(B) Semi permeable membrane
(C) Fragments **(D)** Cyst

39. Binary fission is seen in BWP(GII-16)
FBD(GI-14)

- (A) Yeast **(B)** Planaria
(C) Hydra (D) Corals

40. The material containing Sperms and Fluid is: BWP(GI-17)

- (A) Secretion **(B)** Semen
(C) Serum (D) Plasma

41. Every Ripen Ovule is called: BWP(GII-17)

- (A) Leave (B) Flower
(C) Seed (D) Filament

42. Male reproductive part of Flowers is:

BWP(GI-18)SGD(GII-15)

- (A) Calyx (B) Androecium
(C) Corolla (D) Gynoecium

43. The main method of reproduction in sponges, hydra and corals is: FBD(GII-14)

- (A) Fragmentation (B) Spores
(C) Regeneration (D) Budding

44. Male gonads are known as: FBD(GII-15)

- (A) Spores (B) Ovaries
(C) Testes (D) Egg cells

45. Fruit is formed by FBD(GI-16)

- (A) Ovule (B) Ovary
(C) Calyx (D) Corolla

46. It is to produce a new plant from any part of plant FBD(GII-16)

- (A) Parthenogenesis (B) Cutting
(C) Tissue culture (D) Grafting

47. Ovule develop into: FBD(GI-18)

- (A) Fruit (B) Seed
(C) Endosperm (D) Pollen sacs

48. The male and female gametes are produced in specialized organs are called:

FBD(GI-18)

- (A) Gametogenesis (B) Zygote
(C) Placenta (D) Gonads

49. Waste material that is removed by carnivorous plants and lady finger is:

FBD(GII-18)

- (A) Gums (B) Latex
(C) Resins (D) Mucilage

50. Some invertebrates also reproduce through binary fission: FBD(GII-18)

- (A) Sexual reproduction
(B) Asexual reproduction
(C) Pollination
(D) Budding

51. From epididymis, sperms move to a sperm duct is called: FBD(GII-18)

- (A) Semen (B) Seminal vesicles
(C) Seminiferous tubules (D) Vas deferens

52. Microspores are produced by: RWP(GII-14)

- (A) Mitosis (B) Meiosis
(C) Fission (D) Budding

53. Amoeba is reproduced asexually by:

RWP(GI-14)

- (A) Budding (B) Binary fission
(C) Fragmentation (D) Spore formation

54. Which of the cells of ovary have diploid number of chromosomes: RWP(GI-14)

- (A) Oogonia (B) Secondary oocytes
(C) First polar body (D) Egg cell

55. Individual units of corolla are: RWP(GII-14)

- (A) Carpels (B) Petals
(C) Stamens (D) Sepals

56. Diploid is RWP(GI-16)

- (A) Egg cell (B) Sperm cell
(C) Zygote (D) Endosperm

57. Usually which part of the embryo in the seed gives rise to plant root? RWP(GII-16)

- (A) Cotyledon (B) Plumule
(C) Radical (D) Testa

58. These are horizontal underground stems:

RWP(GI-17)

- (A) Tubers (B) Rhizomes
(C) Suckers (D) None

59. From this part of the embryo, shoot is formed; RWP(GI-17)

- (A) Radicle (B) Plumule
(C) Cotyledons (D) Hypocotyl

60. The amount of sperms in semen is:

RWP(GI-18)

- (A) 10 % (B) 50 %
(C) 80 % (D) 90 %

61. An example of corm is: RWP(GI-18)

- (A) Ginger (B) Onion
(C) Potato (D) Garlic

62. The optimum temperature for seed germination is: RWP(GII-18)

- (A) 10---20°C (B) 20---25°C
(C) 25---30°C (D) 30---35°C

63. The plant in which vegetative propagation occurs by leave is called SGD(GI-15)

- (A) Ginger (B) Ferns
(C) Water lily (D) Bryophyllum

64. Fruit is formed from SGD(GII-15)

- (A) Ovary..... (B) Ovule
(C) Endosperm (D) Stigma

65. The second whorl of flower is: SGD(GI-16)

- (A) Androecium (B) Corolla
(C) Calyx (D) Gynoecium

66. This method is used to propagate peach and plum trees. SGD(GII-16)

- (A) Cutting (B) Grafting
(C) Bulbs (D) Corms

67. Corals reproduce by means of: SGD(GII-17)

- (A) Binary Fission (B) Fragmentation
(C) Budding
(D) Sexual Reproduction

68. Reproductive part of plant is: SGD(GI-18)

- (A) Stem (B) Leaf
(C) Root (D) Flower

69. It is simple and most common method of asexual reproduction: DGK(GI-14)

- (A) Budding (B) Grafting
(C) Layering (D) Binary fission

70. In Rhizopus reproduction takes place by: DGK(GII-14)

- (A) Budding (B) Spores
(C) Fragmentation (D) Sexually

71. Parthenogenesis is a type of reproduction: DGK(GII-14)

- (A) Sexual (B) Fragmentation
(C) A-sexual (D) Grafting

72. Ripen ovary is called: DGK(GI-15)

- (A) Sperm (B) Seed
(C) Egg (D) Fruit

73. Essential process for the continuation of species is: DGK(GI-18)

- (A) locomotion (B) Respiration
(C) Cloning (D) Reproduction

74. The unit of androecium is: DGK(GI-18)

- (A) Stamens (B) Anthers
(C) Pollen grain (D) Gamete

75. It is the process used to propagate sugar cane plantation. DGK(GII-18)

- (A) Grafting (B) Layering
(C) Cutting (D) Fragmentation

76. In mint vegetative propagation occurs by: DGK(GII-18)

- (A) Stem tubers (B) Leaves
(C) Suckers (D) Corms

77. The outer most whorl of flower is called

- (A) calyx (B) corolla
(C) androecium (D) gynoecium

78. Onion and tulips plants reproduce by: SWL(GII-14)

- (A) bulbs (B) corms
(C) rhizomes (D) stemtubers

79. The flower of which plant is pollinated by wind: SWL(GII-15, 18)

- (A) rose (B) sunflower
(C) grass (D) butter cup

80. Every mature ovary is called: SWL(GI-17)

- (A) seed (B) fruit
(C) flower (D) sporangia

81. In how many days embryo develops to offspring in rabbit? SWL(GI-17)

- (A) 30-40 days (B) 20-30 days
(C) 30-32 days (D) 25-30 days

82. Which one is the middle part of carpel. SWL(GII-18)

- (A) filament (B) style
(C) stigma (D) ovary

83. Some cells of ovary prepare structures called: FBD(GII-19)

- (A) follicles
(B) seminal vesicles
(C) seminiferous tubules
(D) vas deferens

84. The unit of the Gynoecium are called: FBD(GI-19)

- (A) sepals (B) petals (C) carpels (D) stamens

85. Ovule develop into: BWP(GI-19)

- (A) fruit (B) seed
(C) endodermis (D) pollen sacs

86. Ovary change into this: BWP(GII-19)

- (A) seed (B) flower (C) fruit (D) ovule

87. These reproduce by budding: BWP(GII-19)

- (A) planaria (B) corals
(C) rhizopus (D) tulips

88. Hydra and corals reproduce by means of: GUJ(GI-19)

- (A) budding (B) binary fission
(C) spore formation (D) fragmentation

89. The materials containing sperms and fluids is called: GUJ(GI-19)

- (A) hormones (B) follicles
(C) semen (D) scrotum

90. In flower stigma, style and ovary is collectively called: GUJ(GII-19)
(A) sepal (B) petal (C) stamen (D) carpel
91. After fertilization in plants the seed develops from: GUJ(GII-19)
(A) ovule (B) ovary (C) sepals (D) petals
92. Reproductive part of plant is: MTN(GI-19)
(A) stem (B) leave (C) root (D) flower
93. Process of vegetative propagation in onion is carried out by: MTN(GI-19)
(A) corn (B) rhizome
(C) bulb (D) stem tuber
94. Rhizopus reproduce a sexually by: MTN(GII-19)
(A) Binary fission (B) Budding
(C) spore (D) endospore
95. The scar present on seed coat is called: MTN(GII-19)
(A) micropile (B) integument
(C) hilum (D) ovule
96. External fertilization is found in: RWP(GI-19)
(A) amphibians (B) mammals
(C) birds (D) reptiles
97. The example of corns is: RWP(GII-19)
(A) ferns (B) ginger
(C) onion (D) dasheen
98. The female reproductive part of flower is: RWP(GII-19)
(A) calyx (B) corolla
(C) gynoecium (D) androecium
99. An example of diploid cell is: SGD(GI-19)
(A) egg cells (B) zygote
(C) sperm
(D) endosperm nucleus
100. Example of stem tuber is: SGD(GI-19)
(A) tulip (B) ginger (C) garlic (D) potato
101. Some invertebrates also reproduce through binary fission: SGD(GII-19)
(A) sexual reproduction
(B) asexual reproduction
(C) pollination (D) cloning
102. The unit of androecium are called: SGD(GII-19)
(A) sepals (B) petals (C) carbels (D) stamens

SECTION II

SHORT QUESTIONS

From Exercise:

2. Why do Gardeners use the method of culture & grafting?

Ans: Because in this method they increase there vegetative production and many more varieties.

3. Parthenogenesis is a type of asexual reproduction. Give comments on this statement?

Or Write something about parthenogenesis.

FBK(GI-15)DGK(GII-14)SWL(GI-17)
MTN(GII-19)LHR(GII-19)GUJ(GII-19)
DGK(GII-19)MTN(GI-19)

Ans: In it, an unfertilized egg develops into new offspring. Some fishes, frogs and insects reproduce by means of parthenogenesis. Similarly, queen honeybee lays eggs in the cells of honeycomb. Many eggs remain unfertilized and develop into haploid males (drones) by parthenogenesis.

4. Outline the life cycle of flowering plants?

Ans: The major stages of the flower life cycle are the seed, germination, growth, reproduction, pollination, and seed spreading stages. There are two types of flowering plant seeds: dicots and monocots.

5. What structure adaptations will you find in a wind pollinated flower?

Ans: Wind pollinated have following adaptations.

- They have small sized flows.
- Their petals are green or dull in color.
- They do not produce nectar.
- Their flowers hang down for easy shaking.
- They have stigma with feathery branches for catching pollen.

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1. Define the alternation of generation in plants?
LHR(GI-14), GUJ(GI-18)
SWL(GII-15)LHR(GI-19)BWP(GI-19)BWP(GI-19)

Ans: In most plants, sporophyte generation is dominant. It means that it is big in size and in independent. Sporophyte produces haploid spored by meiosis. The spores develop into gametophyte. It is small in size and gametes fuse and form diploid zygote. The zygote undergoes repeated mitosis and develops into a new diploid sporophyte.

2. Describe the formation of spore in Rhizopus?
LHR(GII-14), BWP(GI-16)

Ans: When Rhizopus reaches reproductive age, its body cells form thick walled spore sacs called sporangia (sing. Sporangium) Inside each sporangium, a cell divides many times and forms many daughter cells called spores. Each spore is covered with a thick wall called cyst and it can survive unfavorable conditions. When sporangia are mature, they burst and release spores. Under favorable conditions, the spores germinate and develop into new Rhizopus.

3. What is semen & write two glands that important with respect to semen?

LHR(GII-14), BWP(GII-14)LHR(GII-19)

Ans: Semen is the material containing sperms in a fluid. It consists of 10% sperms and 90% fluid.

Prostate gland produces a secretion that neutralizes the acidity of the fluid. Cowper's glands produce secretions that lubricate the ducts.

4. What is Embryo? Write its parts?

LHR(GI-15)

Ans: The part of a seed which develops into a plant, consisting (in to mature embryo of a higher plant) of a plumule, a radicle, and one or two cotyledons called embryo.

5. Define the reproduction? How many types of reproduction? LHR(GII-16), FBD(GI-16), SGD(GI-18), DGK(GII-15)LHR(GI-19) BWP(GI-19)

Ans: Reproduction is defined as the production of individuals of the same species i.e. the next generation of species. The two basic types of reproduction.

Sexual reproduction

Asexual reproduction

6. Differentiate b/w the self-pollination and cross-pollination?

LHR(GII-16), MTN(GI-14, GII-17), BWP(GII-17), FBD(GI-14), RWP(GI-16)LHR(GII-19)

Ans: Self pollination

Self pollination is defined as the transfer of pollen grains from the anther to the stigma of the same flower or other flower of the same plant.

Cross pollination

Cross pollination is the transfer of pollen grains from the flower on one plant to the flower on other plant of the species.

7. Define the dormancy of the seed?

LHR(GI-16), GUJ(GII-17), MTN(GII-18)BWP(GII-14) BWP(GII-19)

Ans: Most seeds go through a period, during which there is no growth. This period is called the dormancy of the seed.

8. How budding occurs in Corals?

LHR(GI-17)SGD(GI-19)DGK(GII-19)

Ans: In Corals the buds do not detach from the parent body. Corals form big colonies because the buds grow into new organisms by remaining attached to the parent body.

9. How plants reproduce by Suckers? Give example? LHR(GI-17), DGK(GI-18)

Ans: A sucker grows underground from some distance and then turns up, producing the new plant. Mint and Chrysanthemum reproduce in this way.

10. Define Oogenesis? LHR(GII-17)

Ans: The production of egg cells in ovaries is called Oogenesis.

11. Differentiate b/w epigeal germination and hypogeal germination.

LHR(GII-17, GII-18), BWP(GI-15), FBD(GII-16), RWP(GI-14, GI-16)

Ans: On the basis of the elongation of hypocotyls and epicotyls, there are two types of germination. In epigeal germination, the hypocotyls elongate and form a hook, pulling the cotyledons above ground. Beans, cotton and papaya are the examples of seed that germinate this way. In hypogeal germination, the epicotyls elongate and form the hook. In this type of germination, the cotyledons stay underground. Pea, maize and coconut germinate this way.

12. Give two disadvantage of vegetative propagation? LHR(GII-17, GII-18)

BWP(GII-16), SGD(GII-17)MTN(GII-19) SGD(GII-19)

Ans: The plants do not have genetic variations. Species diseases can attack and this can result in the destruction of an entire crop.

13. Define fragmentation & give example?

GUJ(GI-15), MTN(GI-17), FSD(GII-15), DGK(GII-18), SWL(GII-14)DGK(GII-19)

Ans: As certain worms grow to full size, they spontaneously break up into 8 or 9 pieces. Each piece (fragment) develops into a mature worm, and the process is fragmentation.

14. What is the difference b/w Bulbs & Corms?

GUJ(GI-15), BWP(GI-16), SGD(GII-15)

Ans: Bulbs are short underground stems surrounded by thickened fleshy leaves that contain stored food in adventitious roots emerge under the base of bulb while shoots emerge from the top of the base. Corms are short and swollen underground stems containing stored food. Buds are present at the top of corm.

15. Differentiate b/w Asexual and sexual reproduction? GUJ(GII-15)

BWP(GI-17), SGD(GII-15)BWP(GII-19)

Ans: Asexual reproduction means simple cell division that produces an exact duplicate of an organism while sexual reproduction involves the joining of male and female sex cells i.e. gametes.

16. What are endospores? GUJ(GII-15)
GUJ(GII-19)

Ans: The bacteria spores are also thick-walled. They are formed inside bacterial cells, so are called endospores.

17. What is meant by Calluses? GUJ(GI-17), DGK(GI-14)

Ans: Tissues are taken from any part of plant and put in a suitable nutrient medium. The tissue cells start mitosis and produce masses of cells called calluses are transferred to other medium that contains different hormones for the formation of roots, stem and leaves. Calluses make these structures and grow into new small plant.

18. What is Epigeal Germination? Give one example? GUJ(GI-17)

Ans: On the basis of the elongation of hypocotyls and epicotyls, there are two types of germination. In epigeal germination, the hypocotyls elongate and form a hook, pulling the cotyledons above ground. Beans, cotton and papaya are the examples of seed that germinate this way.

19. Define Double fertilization? GUJ(GII-17), SWL(GII-18)FBD(GII-19)MTN(GI-19)

SGD(GI-19)

Ans: One sperm fuses with egg and forms a diploid zygote. The other sperms fuse with diploid fusion nucleus and forms a triploid nucleus called endosperm nucleus. Since the process of fertilization involves two fusions it is called double fertilization.

20. What is gametogenesis? MTN(GI-16)

Ans: The formation of gametes is called gametogenesis.

21. What is importance of Reproduction?

MTN(GI-17, GII-18)

Ans: Reproduction is essential for the continuation of species. It ensures that the genetic material of one generation is transmitted to the next. Each generation produces more offspring for the next generation.

22. From which Seed and Fruit develop? MTN(GI-17)

Ans: Ovule then becomes Seed and Ovary changes into fruit.

23. What is Hypogeal Germination? MTN(GII-17), DGK(GI-18)RWP(GII-19)

Ans: In hypogeal germination, the epicotyls elongate and form the hook. In this type of germination, the cotyledons stay underground. Pea, maize and coconut germinate this way.

24. What is STDs stand for? MTN(GII-17), SGD(GI-15), SWL(GII-18)

Ans: Sexually transmitted diseases (STDs) are defined as the diseases that are transmitted through sexual act.

25. Write names of Reproductive parts of Flowers? BWP(GI-17)

- Ans.** (i) Androecium (Male Reproductive part)
(ii) Gynoecium (Female Reproductive part)

26. What is germination? BWP(GI-17), SWL(GI-14, GII-18)

Ans: Seed germination is a process by which a seed embryo develops into a seedling.

27. Define Placenta? BWP(GII-17)

Ans. A connection called Placenta is established between embryo and uterus wall.

28. Differentiate between Regeneration and binary fission? FBD(GII-14)

Ans: Regeneration is the reproduce or regenerate their lost part and in binary fission the body division into two.

29. Define Fertilization? RWP(GI-17)

Ans. The fusion of Male and Female gametes to form a zygote then fertilization occurs.

30. Define Pollination and write names of its types? RWP(GI-17), SWP(GII-15, GI-17)

Ans: Pollination is defined as the transfer of pollen grains from flower's anther to stigma. Two types of pollination are recognized.

1. Self pollination. 2. Cross pollination

31. Differentiate between External and Internal fertilization? BWP(GI-18)

RWP(GII-17), DGK(GI-16), SWL(GI-14, GI-17)

Ans: In external fertilization, egg cells are fertilized outside of body. External fertilization occurs mostly in aquatic environment.

In internal fertilization, egg cells are fertilized within the reproductive tract of female. It occurs in reptiles, birds and mammals. Such animals provide protection to the developing embryo.

32. Write down the names of necessary conditions for Seed germination?

RWP(GII-17), SGD(GI-14)

Ans: Seed germination depends on both internal and external conditions. The internal conditions include a live embryo and sufficient food strong. The most important external conditions include water, oxygen and favourable temperature.

33. Define self Pollination?

FBD(GI-18), RWP(GII-17), SGD(GI-16)

Ans: Self pollination is defined as the transfer of pollen grains from the anther to the stigma of the same flower or other flower of the same plant.

34. Define grafting and give examples?

SGD(GII-15), BWP(GII-19)

Ans: In grafting, a piece of stem is cut from the plant and is attached with another plant with established root system. After a while, the vascular bundles of the attached stem piece and the host plant are connected to each other. The stem piece and the plant begin to grow together. This method is used to propagate many roses, peach trees, plum trees and various seedless fruits (including grapes).

35. Differentiate between Fertilization and Pollination? SGD(GI-17)

Ans.

Fertilization	Pollination
The fusion of male and female gametes to form a zygote.	The transfer of pollen grains from flowers anther to stigma.

36. What is micropyle? SGD(GI-17)

LHR(GI-19), SGD(GII-19)

Ans. The opening in the ovule through which the pollen tube enters, seed used it for the absorption of water.

37. Define Spermatogenesis? SGD(GI-17)

Ans. The production of sperms in testes is called spermatogenesis.

38. What is meant by Saprophyte generation?

SGD(GII-17, GI-18)

Ans. In the life Cycle of Plants, two different generations alternate with each other. One generation is diploid and produces spores. It is called saprophyte generation.

39. Differentiate between Prostate glands and Cowper's Glands? SGD(GII-17)

Ans. Prostate glands produce a secretions that neutralizes the acidity of the fluid.

Cowper's glands produce secretions the lubricate the duct.

40. Write name of 4 plants which reproduce by bulbs and corms?

BWP(GII-18), DGK(GI-14)

Ans: Bulbs reproduce by such as onion, tulips, lilies, and snowdrops and Corms reproduce by such as dasheen and garlic.

41. Write the method of tissue culture?

DGK(GI-15)

Ans: Plant tissue culture is a collection of techniques used to maintain or grow plant cells, tissues or organs under sterile conditions on a nutrient culture medium of known composition.

42. How Binary fission take place in bacteria? DKG(GII-15, GII-18)

Ans: During binary fission in bacteria, the DNA is duplicated and so two copies of DNA are formed. The two copies move towards the opposite poles of cell. The cell membrane invaginates in centre and divides the cytoplasm into two. New cell wall is deposited b/w two cross membrane. If result in the formation of two daughter bacteria which grow in size and divide again.

43. Write 2 main causes for spread of AIDS? BWP(GI-18), DKG(GI-16)

RWP(GI-19)

Ans: The AIDS are transmitted by used syringes and by sexually.

44. Define tissue culture? SWL(GI-15)

Ans: The growth in an artificial medium of cells derived from living tissue.

45. What is epididymis and vas deferens?

SWL(GI-16)

Ans: When sperm are mature, they accumulate in the collecting ducts tested and then pass to epididymis. Sperms move to a sperm duct called vas deferens.

46. What is micro Pyle? Describe its function? SWL(GI-17), SGD(GI-17)

Ans: At the end of hilum there is micropyle. This is the same opening through which the pollen tube entered ovule. Seed uses it for the absorption of water.

47. How does binary fission take place in unicellular eukaryotes? SWL(GII-17)

Ans. Animals such as sponges, hydra and corals also reproduce by means of budding. In them, a small bud is formed on the side of body, by mitosis. This bud enlarges by the formation of more cells. It then detaches from the parent body and grows into new organism.

48. Define suckers and give example.

FBD(GI-19)

Ans: Suckers are lateral stems underground from some distance and then turn up, producing the new plant e.g. Mint, Chrysanthemum.

SECTION III

LONG QUESTION

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1. What are the different ways by which prokaryotes, protozoans and fungi reproduce asexually?
3. Explain, how the epigeal and hypogeal germinations are different?
5. Outline the methods of asexual reproduction in animals.



SECTION I

Chapter — 15

INHERITANCE

(MCQ's)

From Exercise:

- An organism's expressed physical trait, such as seed colour or pod shape, is called its: **GUJ(GI-17)MTN(GI-16)**
(A) Genotype **(B)** Phenotype
(C) Karyotype (D) Physical type
- An organism has two different alleles for a single trait. Its genotype is said to be: **MTN(GII-16)RWP(GI-16)**
(A) Homozygous **(B)** Heterozygous
(C) Hemizygous (D) Homologous
- In cross-pollination between a true-breeding yellow pod plant and a true-breeding green pod plant, where green pod colour is dominant, the resulting offspring (F1 generation) will be:
(A) $\frac{1}{4}$ green, $\frac{3}{4}$ yellow (B) All yellow
(C) $\frac{1}{4}$ yellow, $\frac{3}{4}$ green **(D)** All green
- How many genetically different kinds of gametes an individual with genotype AAbb can produce? **BVP(GI-15)FBD(GI-16)**
(A) 1 (B) 2 (C) 4 **(D)** 8
- Which of the following statements regarding genes is FALSE?
(A) Genes are located on chromosomes
(B) Genes consist of a long sequence of DNA
(C) A gene contains information for the production of a protein
(D) Each cell contains a single copy of every gene
- Mendel's primary contribution to our understanding of inheritance was:
(A) The idea that genes are located on chromosomes
(B) Explanation of the patterns of inheritance
(C) The discovery of alleles
(D) Determining that the informations contained in DNA are for protein synthesis

- A purple-flowered pea plant has the genotype PP. Which of the following statements about this plant is FALSE?
(A) Its phenotype will be white flowers
(B) It has a homozygous dominant genotype
(C) When bred to a white-flowered plant, all offspring will be purple flowered
(D) All the gametes produced will have the same flower colour allele

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- Transmission of characters from parent to offspring is called: **LHR(GI-16)**
(A) Inheritance (B) Mutation
(C) Regeneration (D) Reproduction
- Alternate forms of gene are called: **LHR(GI-16)**
(A) Traits **(B)** Alleles
(C) Loci (D) Character
- Cytosine always pair with **LHR(GII-16)**
(A) Guanine (B) Thiamine
(C) Adenine (D) Hydrogen
- Alternate form of gene is called: **LHR(GII-16)**
(A) DNA (B) Gametes
(C) Chromosome **(D)** Allele
- Person with Genotype has blood group. **LHR(GI-15)**
(A) AB (B) B **(C)** 0 (D) A
- Genotype in which Gene Pair contains two identical Alleles is called. **LHR(GI-15)**
(A) Homozygous (B) Heterozygous
(C) Hemizygous (D) Homologous
- The branch of Biology in which we study about inheritance is called. **LHR(GI-15)**
(C) Genetics (B) Physiology
(D) Ecology
- Sources of variations in the Organisms are: **LHR(GI-15)**
(A) Crossing Over **(B)** Mutation
(C) Both A and B (D) Mitosis
- Example of co-dominance is: **LHR(GI-17)**
BWP(GI-17) RWP(GII-14,17)
(A) Blood group A (B) Blood group B
(C) Blood group O **(D)** Blood group AB

10. The alternate forms of a gene are called:

LHR(GI-17)

- (A) Genotype (B) Phenotype
(C) Alleles (D) Replication

11. The genotype of "O" blood group is:

LHR(GII-17)

- (A) $I^A I^A$ (B) $I^B I^B$
(C) ii (D) $I^B i$

12. Phenotypes ratio in incomplete dominance is:

LHR(GII-17)

- (A) 1:3:3 (B) 3:1 (C) 1:3 **(D) 1:2:1**

13 Making a normal pigmentation is example of:

LHR(GI-18)

- (A) Phenotype** (B) Genotype
 (C) Traits (D) Chromosomes

14 Alternate form of a gene is called:

GUJ(GI-15)

- (A) translation **(B) allele**
 (C) genotype (D) phenotype

15 Which scientist presented the law of segregation?

GUJ(GII-15)

- (A) Mendel** (B) Newton
 (C) La-Mark (D) De-devis

16 Albinism is a trait.

GUJ(GII-15)

- (A) co-dominant (B) dominant
 (C) heterozygous **(D) recessive**

17 These are the unit of inheritance.

GUJ(GI-17)

SWL(GII-14)

- (A) genes** (B) alleles
 (C) phenotype (D) genotype

18. Position of genes on chromosome is called:

GUJ(GII-18)

- (A) genome (B) nucleosome
 (C) trait **(D) locus**

19. Transmission of characteristics from parents to offspring is:

GUJ(GII-18)

- (A) genetics **(B) inheritance**
 (C) Trait (D) chromosome

20. In DNA nucleotide guanine forms pair with:

(GI-18)

- (A) Cytosine** (B) thymine
 (C) uracil (D) adenine

21. Inherited characters are called: MTN(GI-14)

- (A) Genes **(B) Traits**
 (C) Genetics (D) Fertilization

22. The specific combination of genes in an individual is called:

MTN(GI-14)

- (A) Phenotype **(B) Genotype**
 (C) Homozygous (D) Heterozygous

23. An example of Discontinuous Variations is :

MTN(GII-14) FBD(GII-16)

RWP(GI-18) SGD(GI-18)

- (A) Height (B) Weight
 (C) Intelligence **(D) Blood groups**

24. The book natural selection written by Darwin was published in

MTN(GI-16)

- (A) 1859** (B) 1860
 (C) 1959 (D) 1960

25.hydrogen bonds are present b/w cytosine

MTN(GII-16)

- (A) 2 **(B) 3** (C) 4 (D) 5

26. Chromatin Material is made up of:

MTN(GI-17)

- (A) DNA (B) Protein
 (C) RNA **(D) DNA and Protein**

27. Theory of Natural Selection was presented by:

MTN(GI-17)

- (A) Aristotle (B) Lamarck
(C) Darwin (D) Malthus

28. The location of gene on chromosome is called:

MTN(GII-17)

- (A) Locus** (B) Allel
 (C) Trait (D) Centromere

29. In human cells the number of homologous chromosomes pairs is:

MTN(GI-18)

BWP(GI-16) SGD(GI-16)

- (A) 26 (B) 25
 (C) 24 **(D) 23**

30. _____ presented the Law of Segregation:

MTN(GI-18)

- (A) Lamarck (B) Watson
(C) Mendel (D) Darwin

31. _____ flower is not found in Four O clock plant:

MTN(GII-18)

- (A) Pink colour (B) Red colour
 (C) White colour **(D) Blue colour**

32. The number of hydrogen bonds between Cytosine and Guanine is:

MTN(GII-16)

- (A) Three** (B) Two
 (C) Four (D) One

33. Alternative form of a gene are called

BWP(GI-14)

- (A) Alleles (B) DNA
(C) Chromosomes (D) Gametes

34. Example of stem tuber is BWP(GII-14)

- (A) Tulip (B) Garlic
(C) Ginger (D) Potato

35. Is diploid (2n) BWP(GII-14)

- (A) Egg cell (B) Sperm cells
(C) Zygote (D) Endosperm

36. Person with genotype has blood group

BWP(GII-14)

- (A) A (B) B (C) AB (D) O

37. In a nucleosome, DNA is wrapped around proteins named BWP(GII-14)

- (A) Insulin (B) Interferon
(C) Histone (D) Hemoglobin

38. A cross in which only one trait is studied is called: BWP(GI-15)

- (A) Simple cross (B) Monohybrid cross
(C) Dihybrid cross (D) Mutualism

39. Place of existence of gene consumer:

BWP(GI-16)

- (A) Locus (B) Karyotype
(C) Chromatid (D) Centromere

40. Alternate forms of gene are called:

BWP(GII-16)

- (A) Loci (B) Alleles
(C) Genotype (D) Phenotype

41. The Allele which is not expressed is called: BWP(GI-17)

- (A) Dominant (B) Recessive
(C) Homozygous (D) Heterozygous

42. Which relationship is found in Alleles of Blood Group I^A and I^B: BWP(GII-17)

- (A) Co-Dominance (B) Recessive
(C) Incomplete Dominance
(D) Complete Dominance

43. A definite combination of Genes is an individual is called: BWP(GII-17)

- (A) Phenotype (B) Hybrid
(C) Breeds (D) Genotype

44. DNA Wraps around Histone Protein and forms round structures: BWP(GI-18)

SGD(GI-15)

- (A) Nucleotide (B) Nucleus
(C) Nucleosome (D) Nucleoside

45. Branch of Biology in which we study about inheritance: BWP(GI-18)

- (A) Physiology (B) Ecology
(C) Genetics (D) Pharmacology

46. In Four O Clock Plants which colour Allele does not present: BWP(GII-18)

- (A) Red (B) White
(C) Pink (D) Black

47. How many Hydrogen Bonds are present in between Cytosine and Guanine:

BWP(GII-18)

- (A) 1 (B) 2
(C) 3 (D) 4

48. Dominant alleles are represented by:

FBD(GII-14)DGK(GI-16)

- (A) Small letters (B) Capital letters
(C) Roman numbers (D) Numerical numbers

49. On which vegetable, Mendel carried out a large number of experiments: FBD(GI-14)

- (A) garden pea (B) tomato
(C) potato (D) cabbage

50. A process in which genetic material of one generation is transmitted to next is known as: FBD(GI-14)

- (A) reproduction (B) respiration
(C) reduction (D) circulation

51. Physical appearance of organisms such as colour and height etc. are called:

FBD(GII-14)

- (A) Genotype (B) Phenotype
(C) Karyotype (D) Genome

52. How many pairs of homologous chromosomes are present in human body cells: FBD(GII-14)

- (A) 22 (B) 23 (C) 24 (D) 25

53. Alternative forms of genes are called:

FBD(GI-15)

- (A) Genotype (B) Phenotype
(C) Homologous (D) Allele

54. The expression of genotype in the form of traits is known as: FBD(GII-15)

- (A) Genotype (B) Phenotype
(C) Gene flow (D) Segregation

55. Expression of genotype into traits in the In the organism is called FBD(GII-16)

- (A) Genotype (B) Karyotype
(C) Phenotype (D) Blood type

56. Hydrogen bonds present between adenine and thymine are: FBD(GI-18)SWL(GI-15)

- (A) 1 (B) 2 (C) 3 (D) 4

57. Changes in DNA are called: FBD(GI-18)

- (A) Zygous (B) Mutations
(C) Heterozygous (D) Homozygous

58. Chromatin material is made up of: FBD(GII-18)

- (A) RNA (B) Ovule
(C) Protein (D) DNA & protein

59. The expression of the genotype in the form of trait is known as: FBD(GII-18)

- (A) Genotype (B) Phenotype
(C) dominant (D) Recessive

60. Formation of messenger RNA from DNA is called: RWP(GI-14)

- (A) Translation (B) Transduction
(C) Transcription (D) Translocation

61. Three alleles I^A , I^B and i control human blood group. What is the blood group of a person having two alleles it: RWP(GI-14)

- (A) Blood group A (B) Blood group B
(C) Blood group AB (D) Blood group O

62. The types of inheritable variations are: RWP(GII-15)

- (A) 2 (B) 3 (C) 4 (D) 5

63. Which organism has a short but fast life cycle by Mendal: RWP(GII-15)

- (A) Ginger (B) Pea
(C) Onion (D) Tulip

64. Gene consist of RWP(GI-16)

- (A) RNA (B) M_rna
(C) Protein (D) DNA

65. True breeding means RWP(GII-16)

- (A) Homozygous (B) Heterozygous
(C) Karyotype (D) Phenotype

66. In this branch of Biology we study inheritance: RWP(GI-17)

- (A) Genetics (B) Ecology
(C) Physiology (D) Morphology

67. Cytosine always pairs with: RWP(GI-18)

- (A) Thymine (B) Adenine
(C) Guanine (D) Uracil

68. The actual location of gene on chromosome is: RWP(GII-18)

- (A) Chromatid (B) Locus
(C) Centromere (D) Karyotype

69. Bred plants are called: RWP(GII-18)

- (A) Cultivars (B) Breeds
(C) Carnivore (D) Insectivore

70. Chromatin material is made up of: SGD(GII-15)

- (A) Protein (B) DNA
(C) RNA and protein (D) DNA and protein

71. Pea plant with genotype RR yy will produce seeds SGD(GII-15)

- (A) Round yellow (B) Round green
(C) Wrinkled yellow
(D) Wrinkled green

72. There are hydrogen bonds b/w cytosine and guanine: SGD(GII-16)SWL(GI-17)

- (A) 2 (B) 3
(C) 4 (D) 5

73. The alternate forms of a gene are called. SGD(GI-17)

- (A) Phenotype (B) Genotype
(C) Gene (D) Alleles

74. The no. of pea plants which Mendel used in his experiments: SGD(GI-18)

- (A) 2700 (B) 28000
(C) 2800 (D) 3700

75. Genetics is the branch of biology in which was study: DGK(GI-14)

- (A) Functions (B) Fossils
(C) Inheritance (D) Evolution

76. Locations of genes on chromosomes are called: DGK(GI-14)

- (A) Loci (B) Alleles
(C) Phenotypes (D) Genotypes

77. The points of attachment of genes on chromosomes are called: DGK(GII-14)

- (A) Transcription (B) Translation
(C) Loci (D) Phenotype

78. The no. of pairs of homologous chromosome in human is: DGK(GI-15)

- (A) 23 (B) 46
(C) 28 (D) 48

79. Expression of gene in the form of trait is called: DGK(GI-15)

- (A) Genotype (B) Karyotype
(C) Phenotype (D) Prototype

80. It is hereditary (genetic) material: DGK(GI-18)

- (A) DNA (B) mRNA
(C) RNA (D) tRNA

81. The ratio of phenotype in the law of independent assortment is:

- SWL(GI-14, GII-18)
(A) 9:3:2:1 (B) 9:3:3:1
(C) 9:3:1:3 (D) 9:3:1:4

82. In dihybrid crosses, the ratio of these phenotypes was: SWL(GII-14)

- (A) 9:3:3:1 (B) 3:1
(C) 9:4:3:0 (D) 4:0

83. Four O Clock plants: SWL(GI-15)

- (A) red (B) green
(C) white (D) pink

84. Such person having no antigen in his blood will have blood group: SWL(GII-15)

- (A) A (B) AB (C) O (D) B

85. Branch of biology in which we study about inheritance: SWL(GII-15)

- (A) pharmacology (B) physiology
(C) ecology (D) genetics

86. The positions of genes on chromosomes are known as: SWL(GI-17)

- (A) trait (B) character
(C) centromere (D) loci

87. Chromatin is made of: SWL(GII-17)

- (A) DNA and proteins (B) RNA
(C) proteins (D) both B and C

88. The specific combination of genes in an individual is called: SWL(GII-17)

- (A) phenotype (B) traits
(C) genotype (D) alleles

89. Alternative form of a gene are called: SGD(GI-19)

- (A) DNA (B) chromosome
(C) allele (D) gamete

90. Units of inheritance is called: SGD(GI-19)

- (A) phenotype (B) allele
(C) genotype (D) genes

91. The specific combination of genes in an individual is called: SGD(GII-19)

- (A) genotype (B) phenotype
(C) dominant (D) recessive

92. Guanine forms pair with: SGD(GII-19)

- (A) adenine (B) thymine
(C) cytosine (D) carbon

93. Gene consist of: RWP(GI-19)

- (A) RNA (B) mRNA
(C) protein (D) DNA

94. Number of hydrogen bonds between Adenine and Thymine is: RWP(GII-19)

GUJ(GI-19)FBD(GII-19)

- (A) 1 (B) 2
(C) 3 (D) 4

95. The branch of biology in which we study about inheritance is called: RWP(GII-19)

- (A) genetics (B) ecology
(C) morphology (D) physiology

96. A cross in which only one trait studied at a time is called: RWP(GI-19)BWP(GII-19)

- (A) dihybrid (B) true breeding
(C) monohybrid (D) dominant

97. The location of genes on chromosomes are called: GUJ(GII-19)

- (A) loci (B) alleles
(C) genotype (D) phenotype

98. The blood group of a person having genotype (ii) is: GUJ(GII-19)

- (A) A (B) B
(C) AB (D) O

99. The genotype in which the gene pair contains two different Alleles are called:

BWP(GI-19)

- (A) locus (B) mutation
(C) homozygous (D) heterozygous

100. The ratio of phenotype in law of independent assortment is: BWP(GI-19)

- (A) 9 : 3 : 1 : 4 (B) 9 : 3 : 3 : 1
(C) 9 : 3 : 1 : 3 (D) 9 : 3 : 2 : 2

101. Part of DNA that contains the instruction for the synthesis of a particular protein is called: BWP(GII-19)

- (A) locus (B) gene
(C) chromosome (D) polysome

102. Cytosine always pair with: FBD(GI-19)

- (A) guanine (B) thymine
(C) adenine (D) uracil

103. The genotype in which the gene pair contains identical alleles are called:

FBD(GII-19)

- (A) locus (B) mutation
(C) homozygous (D) heterozygous

104. The number of pairs of homologous chromosomes in human cell: LHR(GII-19)

- (A) 26 (B) 25
(C) 24 (D) 23

105. The genotype of blood group O is:

DGK(GII-19)

- (A) $I^A I^A$ (B) $I^B I^B$
(C) $I^A I$ (D) ii

++++

SECTION II**SHORT QUESTION****From Exercise:****1. Define phenotype & genotype?**

GUJ(GI,II-15, GII-18)FBD(GII-14)MTN(GI-14,18)
 BWP(GI-15)LHR(GII-15)RWP(GI-16,17)
 SGD(GI-16, 17, GII-15)FBD(GI-19)RWP(GI-19)
 SGD(GII-19)

Ans: The expression of this genotype in the form of trait (in our example, being albino or having normal pigmentation) is known as the phenotype.

The specific combination of genes in an individual is known as genotype. It is of two types i.e. homozygous and heterozygous.

2. What do you mean by dominant and recessive alleles?

LHR(GII-19)
 GUJ(GI-19)MTN(GII-19)FBD(GI-19)

Ans: Dominant Allels:

In the heterozygous condition one allele masks or prevents the expression of the other. It is called the dominant allele.

It is represented by capital letter.

Recessive Allel:

The allele which is not expressed is called recessive allele. It is represented by small letter.

3. What are the homozygous and heterozygous genotypes?

GUJ(GI-15)BWP(GII-14)FBD(GI-15)SGD(GI-14)
 LHR(GI-18)SWL(GI-14)LHR(GI-19)MTN(GI-19)

Ans: The genotype in which the gene pair contains two alleles (AA or aa), is called homozygous genotype. The genotype, in which the gene pair contains two different alleles (Aa), is called heterozygous genotype.

PUNJAB BOARDS

2014, 15, 16, 17, 18, 19

1. What are the homologous chromosomes? How many pairs in human begins.

LHR(GII-14), SGD(GII-17), FSD(GI-14, GI-16)
 GUJ(GII-19)

Ans: The two chromosomes of a pair are known as homologous chromosomes. In human body cells, there are 23 pairs of homologous chromosomes for a total of 46 chromosomes.

2. What is trait? Write two human traits?

LHR(GII-14, GI-18), RWP(GII-17), DGK(GII-18)
 RWP(GII-19)

Ans: A phenotypic trait, or simply trait, is a distinct variant of a phenotypic characteristic of an organism; it may be either inherited or determined environmentally, but typically occurs as a combination of the two. For example, eye color is a character of an organism, while blue, brown and hazel are traits.

3. Define Monohybrid & Dihybrid?

LHR(GII-14), BWP(GI-18), DGK(GII-15, GII-18)

Ans:

Monohybrid	Dihybrid
Across in which only one trait is studied at a time is called as a monohybrid cross.	Mendel studied two contrasting traits at a time such crosses are called dihybrid crosses.

4. What is gene? LHR(GII-14), GUJ(GII-15), FBD(GI-14), DGK(GI-18), SWL(GII-15)

Ans: Equal number of chromosomes from each parent is combined during fertilization. The chromosomes carry the units of inheritance called the genes.

5. State the law of segregation of Mendel?

LHR(GII-15, GII-17), GUJ(GII-17), MTN(GII-17)
 BWP(GI-14, GII-17, GII-18), SGD(GI-14), SWL(GI-14)
 DGK(GII-19)

Ans: During gamete formation, the genes (alleles) of each pair segregate from each other and each gamete receives one gene from the pair. When the gametes of male and female parents unite the resulting offspring again gets the genes in pairs. These conclusions were called the Law of Segregation.

6. What are nucleosomes?

LHR(GI-16, GII-17), BWP(GII-17), SGD(GII-17)
SWL(GI-15)MTN(GI-19)RWP(GI-19)

Ans: DNA wraps around histone proteins and forms round structures, called nucleosomes.

7. Differentiate between transcription and translation? OR

Define both transcription and translation? LHR(GII-15, GII-16)

MTN(GI-17), FBD(GII-14, GII-15, GI-16),
SWL(GII-15, GII-16)LHR(GII-19)

Ans: The specific sequence of DNA nucleotides is copied in the form of messenger RNA (mRNA) nucleotides. This process is called transcription. The mRNA carries the sequence of its nucleotides to ribosome. The ribosome read this sequence and joins specific amino acids according to it, to form protein. This step is known as translation.

8. Differentiate between breed & varieties?

LHR(GII-16, GII-18),
MTN(GI-18), BWP(GII-17, GII-18)SGD(GI-19)
BWP(GII-19)

Ans: In artificial selection, the bred animals are known as breeds, while bred plants are known as varieties or cultivars.

9. Describe two major processes of Organic Evolution?

LHR(GI-17)
LHR(GII-19)

Ans. (i) Alternation in genetic characteristics of a type of organism over time.

(ii) Creation of new types of organisms from a single type.

10. What is theory of Special Creation?

GUJ(GII-18), LHR(GI-17), SGD(GI-17)LLHR(GI-19)

Ans. The study of evolution determines the ancestry and relationship among different kinds of organisms. The anti-evolution ideas support that all living things had been created in their current form only a few thousand years ago. It is known as the "Theory of Special creation".

11. Enlist the nitrogenous bases present in the DNA double helix?

LHR(GI-17)
RWP(GI-16), SGD(GI-14)

Ans: Guanine, Cytosine, Thymine and Adenosine.

12. What is Inheritance?

LHR(GII-17)

Ans. The transmission of Characteristics from parents to offspring.

13. State Mendel's law of independent assortment.

LHR(GI-18), GUJ(GII-14)

MTN(GI-17), BWP(GI-17), DGK(GII-18)
GUJ(GI-19)MTN(GI-19)BWP(GII-19)

Ans: When two or more characteristics are inherited, individual hereditary factors assort independently during gamete production, giving different traits an equal opportunity of occurring together.

14. What is punnet square?

GUJ(GI-17), GUJ(GI-18), DGK(GI-15)FBD(GI-19)
SGD(GI-19)

Ans: The Punnett square is a diagram that is used to predict an outcome of a particular cross or breeding experiment

15. Define transcription?

GUJ(GI-17), DGK(GI-16)GUJ(GII-19)

Ans: The specific sequence of DNA nucleotides is copied in the form of messenger RNA (mRNA) nucleotides. This process is called transcription. The mRNA carries the sequence of its nucleotides to ribosome.

16. Write two possible genotypes for Blood Group A.

MTN(GI-14)

Ans: AA or AO.

17. Write all possible Genotypes of Blood Group A and Blood Group B.

MTN(GII-14)

Ans: The genotypes of blood group A having a genotype AA or AO and the genotype of blood group B having a genotype BB or BO.

18. Why Mendel used Pea plant in his experimental work? MTN(GI-15, GI-18)

Ans: He argued that an organism for genetic experiments should have the following features:

- There should be a number of different traits that can be studied.
- The organism should have contrasting traits e.g. for the trait of height there should be only two very different phenotypes i.e. tallness and dwarfness.
- the organism (if it is a plant) should be self-fertilizing but cross fertilization should also be possible.
- The organism should have a short but fast life cycle.

All these features are present in pea plant.

19. What is the importance of Selective Breeding? MTN(GI-15)

Ans: Artificial selection (or selective breeding) means intentional breeding between individuals for certain traits, or combination of traits.

20. Differentiate between Gene and Allele.

MTN(GII-15, GII-16, GII-18), FSD(GI-14), SGD(GII-15), DGK(GI-15)

Ans: Equal number of chromosomes from each parent is combined during fertilization. The chromosomes carry the units of inheritance called the genes.

The alternate forms of a gene are called alleles. If an individual has an Aa gene pair, 'A' and 'a' are the alleles of one another.

21. What is meant by Natural Selection?

LHR(GII-18), MTN(GII-17), FSB(GI-14), SGD(GI-15), SGD(GII-19)

Ans: Natural selection is the process by which the better genetic variations become more common in successive generation of a population.

22. What is Central Dogma? MTN(GII-17)

Ans: The Central Dogma is the process by which the instruction in DNA are converted into a functional product.

23. Define Dihybrid Cross? BWP(GII-16)

Ans: Mendel studied two contrasting traits at a time such crosses are called dihybrid cross. He performed experiments on two seed traits e.g. shape and colour.

24. What is in-complete dominance?

FBD(GI-15), RWP(GII-17), SGD(GI-15), DGK(GI-15), SWL(GII-17)FBD(GII-19)

Ans: In-complete dominance is the situation where, in heterozygous genotype, both the alleles express as a blend (mixture) and neither allele is dominant over the other. As a result of this blending, an intermediate phenotype is expressed.

25. Define dominant allele? FBD(GI-16)

Ans: When in the heterozygous condition one allele masks or prevents the expression of the other, it's called the dominant allele.

26. What is selective breeding? FBD(GI-16)

Ans: Artificial selection (or selective breeding) means intentional breeding between individuals for certain traits, or combination of traits.

27. What is heterozygous Genotype?

RWP(GI-17)BWP(GI-19)RWP(GI-19)

Ans: The genotype in which the gene pair contains two alleles (AA or aa), is called homozygous genotype. (The genotype, in which the gene pair contains two different alleles (Aa), is called heterozygous genotype).

28. What is meant by Translation?

BWP(GI-18), SGD(GI-18), RWP(GI-17)

Ans: The specific sequence of DNA nucleotides is copied in the form of messenger RNA (mRNA) nucleotides. This process is called transcription. (The mRNA carries the sequence of its nucleotides to ribosome. The ribosome read this sequence and joins specific amino acids according to it, to form protein. This step is known as translation).

29. What is meant by Albinism. SGD(GI-15)

Ans: Albinism is a recessive trait i.e. it is produced when both alleles are recessive.

30. How does the DNA of chromosome work? SGD(GII-17)

Ans: DNA is a genetic material, it contains the instructions to direct all functions of cells. It performs its role by giving instructions for the synthesis of specific proteins. Some proteins perform structural roles while others act as enzyme to control all biochemical reactions of cells. In this way, whatever a cell does, is actually controlled by its DNA.

31. Define gene & loci?

DGK(GI-14)

Ans: Equal number of chromosomes from each parent is combined during fertilization. The chromosomes carry the units of inheritance called the genes. The location or positions of genes on chromosomes are known as loci (Singular, locus).

32. Write 4 contrasting traits of Pea plant?

SGD(GII-14)

Ans: He performed experiment on two seed traits

Shape: Round and wrinkled

Colour: Yellow and green

33. Write genotype of blood group AB and O?

DGK(GII-14)

Ans: A blood test of either type AB or type O is more informative. Someone with blood type AB must have both the A and B alleles. The genotype must be AB. Someone with blood type O has neither the A nor the B allele. The genotype must be OO.

34. What will be the genotype & phenotype of plants produced as a result of cross b/w red flowered & white flowered four O clock plants?

(DGK-GI-14)

Ans: In four O clock plant, the trait of color is controlled by two alleles (let us say them R and r). The true breeding plants RR and rr have red and white flowers, respectively. When a homozygous red flowered plant (RR) is crossed with homozygous white flowered plant (rr), the heterozygous (Rr) plants of F₁ generation produce pink flowers (pink is a blend of red and white colors). This result clearly indicates that neither of the red flower allele (R) and. White flower allele (r) is dominant. However, when two heterozygous plants with pink flowers (Rr) are crossed, F₂ generation shows phenotypes of red, pink and white flower in the ratio 1:2:1.

35. Write down the scientific name of pea plant. How many pea plants were used by mendel?

DGK(GII-15)

Ans: Pea scientific name is *Pisum sativum*. 2 pea plants were used by mendel.

36. What meant by is phenotype?

DGK(GI-16)

Ans: The expression of this genotype in the form of trait (in our example, being albino or having normal pigmentation) is known as the phenotype.

37. What is meant by homozygous chromosomes?

DGK(GI-16)RWP(GII-19)

Ans: The genotype in which the gene pair contains two alleles (AA or aa), is called homozygous genotype.

38. Define crossing over?

SWL(GI-15)

Ans: The exchange of genes between homologous chromosomes, resulting in a mixture of parental characteristics in offspring called crossing over.

39. Define monohybrid cross?

SWL(GII-15)

Ans: If only one pair of contrasting character is being studied the hybrids are called Monohybrids.

40. What is template Stand?

SWL(GI-17), DGK(GI-18)

Ans: During replication, the DNA double helix is unwound and the two strands are separated, much like the two sides of a zipper. Each strands act as a template and produce another strand.

41. What nitrogenous base is present in DNA?

BWP(GII-18), FBD(GII-15)

Ans: Thymine, Cytosine, Guanine and Adenine.

**SECTION III****LONG QUESTION****PUNJAB BOARDS**

2014, 15, 16, 17, 18, 19

1. Describe the structure of chromatin.
2. Describe Mendel's law of segregation.
3. Explain how Mendel proved the law of independent assortment.



SECTION I

Chapter — 16

MAN & HIS ENVIRONMENT (MCQ's)

From Exercise:

1. Which one of the following is the abiotic component of the ecosystem?

RWP(GI-16) SGD(GII-16)

- (A) Producers (B) Herbivores
(C) Carnivores (D) Oxygen

2. When we eat onion, our trophic level is:

- (A) Primary consumer
(B) Secondary consumer
(C) Decomposer (D) Producer

4. In food chain "tree → caterpillar → robin → hawk → coyote" which is the secondary consumer?

- (A) Caterpillar (B) Robin
(C) Hawk (D) Coyote

5. In ecosystems, the flow of ----- is one way, while ----- is/are constantly recycled.

- (A) Minerals, energy (B) Energy, minerals
(C) Oxygen, energy (D) Glucose, water

6. In food chain "grass → rabbit → fox → bear → mushroom" how many types of decomposers are present?

- (A) 1 (B) 2 (C) 3 (D) 4

7. Organisms in the ecosystems that are responsible for the recycling of plant and animal wastes are: FBD(GII-15)DGK(GII-15)

- (A) Producers (B) Consumers
(C) Decomposers (D) Competitors

PUNJAB BOARDS

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1. All the ecosystem of the world together form the..... LHR(GI-16)

- (A) Population (B) Biosphere
(C) Community (D) Habitat

2. Naturally found in graphite & Diamond? LHR(GII-16)

- (A) Nitrogen (B) Carbon
(C) Oxygen (D) Hydrogen

3. Interrelationship between environment is called: LHR(GI-15)

- (A) Mycology (B) Physiology
(C) Ecology (D) Morphology

4. Example of Ectoparasite is. LHR(GI-15)

- (A) Ascaris (B) Entamoeba
(C) Lice (D) Plasmodium

5. The total amount of living matter in an ecosystem at any time is called: LHR(GI-17)

- (A) Biomass (B) Energy
(C) Food chain (D) Food web

6. R-2 means: LHR(GII-17)

- (A) Reduce (B) Recycle
(C) Renewable (D) Reuse

7. Non-renewable resources are: LHR(GI-18)

- (A) Fossil fuels (B) Wind
(C) Water (D) Soil

8. Type of symbiosis in which both partners are benefited and neither is harmed is called: GUJ(GI-15)

- (A) mutualism (B) symbiosis
(C) commensalism (D) parasitism

9. Which are put in first trophic level?

GUJ(GII-15)

- (A) carnivores (B) producers
(C) herbivores (D) consumers

10. Study of the relationship between organism and their environment is called:

GUJ(GI-17)

- (A) histology (B) ecology
(C) genetics (D) anatomy

11. The example of ectoparasite is: GUJ(GI-18)

- (A) mosquito (B) tape worm
(C) ascaris (D) plasmodium

12. All ecosystems of the world together form: GUJ(GII-18)

- (A) population (B) community
(C) habitat (D) biosphere

13. Dengue fever is an infection. GUJ(GII-15)

- (A) viral (B) bacterial
(C) fungal (D) algal

14. Conversion of Nitrates into Nitrogen gas is called: MTN(GI-14)

- (A) Denitrification (B) Assimilation
(C) Ammonification (D) Nitrogen Fixation

15. Example of Endoparasites is: MTN(GII-14)

- (A) Plasmodium (B) Mosquito
(C) Leech (D) Lices

16. Bred plants are called MTN(GI-15)

- (A) Breed (B) Cultivars
(C) Carnivores (D) Herbivores

17. The primary source of energy for all ecosystems is the MTN(GI-15)

- (A) Moons (B) Stars
(C) Suns (D) Environment

18. The study of relation b/w living organisms & their environment is called MTN(GII-15)

- (A) Ecology (B) Biology
(C) Histology (D) Morphology

19. The base of food chain is always a: MTN(GII-15)

- (A) Animal (B) Sun
(C) Bacteria (D) Plant

20. For all ecosystems the basic source of energy is MTN(GI-16)

- (A) Plants (B) Water
(C) Sun (D) Fire

21. is a biotic component of ecosystem MTN(GII-16)

- (A) Producers (B) Herbivores
(C) Carnivores (D) Oxygen

22. Biosphere surrounding the Earth is about:

- (A) 17 km (B) 18 km
(C) 19 km (D) 20 km

23. "The R3" means: MTN(GII-17, GI-18)

- (A) Less use (B) Reuse
(C) Recycle (D) Refuse

24. The study of the interrelationship between organisms and their environment is called: MTN(GII-18)

- (A) Cytology (B) Genetics
(C) Sociology (D) Ecology

25. A type of symbiosis in which one partner is benefited, other is neither benefited nor harmed is called. BWP(GI-15)

- (A) Commensalism (B) Parasitism
(C) Symbiosis (D) Predation

26. An example of exo-parasite is:

- (A) Plasmodium (B) Cuscuta
(C) Ascaris (D) Antamoebia

27. The change of Nitrogen Gas into Nitrate is called: BWP(GI-17)

- (A) Nitrification (B) Denitrification
(C) Ammonification (D) Nitrogen Fixation

28. The basic source of Energy for all Eco Systems is: BWP(GII-17)

- (A) Plants (B) Sun
(C) Water (D) Animals

29. The thickness of Biosphere is about: BWP(GII-18)

- (A) 15 K.M (B) 20 K.M
(C) 25 K.M (D) 30 K.M

30. A group of organisms of the same species living in a particular area is called:

- (A) Population (B) Community
(C) Abiotic factor (D) Ecology

31. In Scotland, in 1997 what an embryologist Ian Wilmut produced from the body cell of an adult sheep: FBD(GI-14)

- (A) Sheep (Dolly) (B) Goat
(C) Cow (D) Buffalo

- 32. Decomposers are** FBD(GII-16)
 (A) Algae (B) Mosses
 (C) Animals
 (A) Fungi and bacteria
- 33. Materials can be recycled:** FBD(GI-18)
 (A) Plastic (B) Glass
 (C) Paper (D) All these
- 34. Which of the following animals is a tertiary consumer:** RWP(GI-14)
 (A) Deer (B) Owl
 (C) Larvae of butterfly (D) Rabbit
- 35. It is a perfect cycle in the sense that is returned to atmosphere as soon as it is removed:** RWP(GII-15)
 (A) Carbon cycle (B) Nitrogen cycle
 (C) Water cycle (D) Oxygen cycle
- 36. Example of ectoparasite.** RWP(GII-17)
 DGK(GI-14)
 (A) Bacteria (B) Mosquitoes
 (C) Virus (D) Ascaris
- 37. The symbiotic relationship in which both partners get benefit is:** RWP(GII-18)
 (A) Parasitism (B) Competition
 (C) Mutualism (D) Commensalism
- 38. Basic source of energy for an ecosystem is** SGD(GI-15)
 (A) Plant (B) Animal
 (C) Sun (D) Water
- 39. A-biotic component of an ecosystem is** SGD(GI-15)
 (A) Producer (B) Consumer
 (C) Decomposer (D) Light
- 40. Which are decomposers?** SGD(GI-16)
 (A) Fungi and bacteria
 (B) Algae and mosses
 (C) Animals
 (D) Plants
- 41. Biotic component of an ecosystem is** SGD(GII-15)
 (A) Light (B) Water
 (C) Air (D) Plant
- 42. An example of endoparasite is.** SGD(GI-17)
 (A) Plasmodium (B) Lice
 (C) Leech (D) Mosquitoes
- 43. The study of the interrelationship between organism & their environment is called:** SGD(GII-17)
 (A) Ecology (B) Ecosystem
 (C) Biology (D) Physiology
- 44. Mosquitoes, lice and leaches are example of:** SGD(GI-18)
 (A) Ectoparasite (B) Endoparasite
 (C) Obligate parasite (D) Both A,B
- 45. Which one is not biotic factor:** DGK(GI-14)
 (A) Plants (B) Animals
 (C) Soil (D) Bacteria
- 46. To convert nitrogen gas into nitrate is called:** DGK(GI-15)
 (A) Denitrification (B) Nitrogen fixation
 (C) Assimilation (D) Ammonification
- 47. The biggest decomposer of biosphere are:** DGK(GI-15)
 (A) Fungi (B) Bacteria
 (C) Bacteria and fungi (D) Virus
- 48. Change of nitrogen gas into nitrates is called:** DGK(GI-18)
 (A) Nitrogen fixation
 (B) Ammonification
 (A) Nitrification
 (D) Assimilation
- 49. Symbiosis in which both partners get benefit, is the example of:** SWL(GI-14)
 (A) parasitism (B) mutualism
 (C) predation (D) competition
- 50. It is an example of secondary consumers:** SWL(GII-14)
 (A) Cattle (B) Snake
 (C) Lion (D) Tiger
- 51. For all the living things, the source of materials is:** SWL(GI-15)
 (A) sun (B) earth
 (C) air (D) lactic acid
- 52. pH range of acid rain are:** SWL(GII-15)
 (A) 2 to 4 (B) 3 to 5 (C) 5 to 8 (D) 3 to 6
- 53. Dengue fever is an infection of:** SWL(GI-17)
 (A) algal (B) viral
 (C) fungal (D) bacterial

54. The primary source of energy for all ecosystems is: SWL(GH-17)

- (A) producers (B) sun
(C) fertilizers (D) decomposers

55. Which are decomposers: LHR(GI-19)

- (A) plants (B) animal
(C) algae
(D) fungi and bacteria

56. Which product is formed during industrial nitrogen fixation: FBD(GI-19)

- (A) urea (B) ammonia
(C) nitrite (D) carbon dioxide

57. Formation of nitrates from ammonia is called: FBD(GH-19)

SGD(GH-19)

- (A) denitrification
(B) ammonification
(C) nitrification
(D) nitrogenfixation

58. A recycling of one tonne of paper can save _____: BWP(GI-19)

- (A) 7 trees (B) 17 trees
(C) 27 trees (D) 37 trees

59. Maldives might become uninhabitable:

BWP(GH-19)

- (A) with in 10 years
(B) within 100 years
(C) with in 500 years
(D) with in 1000 years

60. Smog forms a yellowish brown haze and hamper visibility during: GUJ(GH-19)

- (A) summer (B) spring
(C) winter (D) autumn

61. _____ break down complex organic compound: MTN(GI-19)

- (A) consumers (B) producers
(C) decomposers (D) all

62. _____ is the Abiotic component of Ecosystem: MTN(GH-19)

- (A) plants (B) animal
(C) decomposer (D) water

63. Example of ectoparasite is: RWP(GI-19)

- (A) leach (B) viruses
(C) tapworm (D) plasmodium

64. Primary source of energy for all ecosystem is: RWP(GH-19)

- (A) electricity (B) sun
(C) fire (D) nutrients

65. For all ecosystems the basic source of energy is: LHR(GI-19)

- (A) plants (B) water
(C) sun (D) fire



SECTION II**SHORT QUESTIONS****From Exercise:**

1. What are the different levels of ecological organization? MTN(GI-17)

BWP(GI-17)

Ans: Levels of organization in ecology include the population, community, ecosystem, and biosphere. An ecosystem is all the living things in an area interacting with all of the a-biotic parts of the environment.

2. Define ecosystem and its components?

FBD(GI-18)LHR(GI-19)MTN(GI-19)

Ans: The self-sufficient unit of an environment that is formed as a result of interactions between its biotic community and the a-biotic components is known as an ecosystem.

The a-biotic components include the non-living factors present in ecosystem. The important non-living factors are light, air, water, soil and the basic elements and compounds. The biotic components comprise the living part (organisms) of the ecosystem.

4. Define between food chain & food web?

LHR(GI-18, GI-17) GUJ(GI-14)MTN(GI-14)

BWP(GI-15)FBD(GI-15)DGK(GI-14)

SWL(GI-15, GI-17, 18)GUJ(GI-19)FBD(GI-19)

SGD(GI-19)

Ans: A food chain is a series of organisms within an ecosystem, in which each organism feeds on the one before it and is fed by the one after it. Food web can be defined as, "a network of food chains which are interconnected at various trophic levels."

5. What do you mean by the concept of 3Rs with reference to the conservation of natural resources?

Ans: Materials such as paper, plastic, glass etc. can be recycled. This decreases the volume of refuse and helps in conservation of natural resources. A recycling of one tonne of paper can save 17 trees. This is 3R.

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1. What are the producers? If producers end then what will happen? LHR(GI-14)

Ans: The producers are the Autotrophs present in an ecosystem. Producers include plants, algae and photosynthetic bacteria. These organisms are able to synthesize complex organic compounds (food) from inorganic raw materials. If they end from ecosystem, then the whole world ecosystem is in danger and food cycle will be stopped.

2. Define the symbiosis. Difference between Mutualism & Commensalism.

LHR(GI-14), BWP(GI-14), FBD(GI-14)RWP(GI-19)

Ans: Symbiosis is a relationship between members of different species, in which they live together for longer or shorter periods of time.

In mutualism both partners (of different species) get benefit and neither is harmed. For example, termites eat wood but are not able to digest it.

In commensalisms in which one partner is benefited while the other is neither benefited nor harmed.

3. What are biogeochemical cycles?

LHR(GI-14), GUJ(GI-14), DGK(GI-18)

MTN(GI-19)

Ans: Biogeochemical cycles are the cyclic pathways through which materials move from environment to organism and back to environment.

4. Write the name of two nitrogen fixation types? LHR(GI-14)

Ans: Conversion of nitrogen gas into nitrates is called nitrogen fixation. It occurs in following ways:

- Atmospheric nitrogen fixation
- Biological nitrogen fixation.
- Industrial hydrogen fixation.

5. Difference between ecosystem & biosphere? OR What is biosphere?

LHR(GII-14, GII-15), RWP(GI,II-14), DGK(GI-18)
SGD(GII-19)

Ans: The self-sufficient unit of an environment that is formed as a result of interactions between its biotic community and the a-biotic components is known as an ecosystem.

All ecosystems of the world together form the biosphere. Biosphere ranges from the floor of oceans to the tops of the highest mountains. It is out 20 kilometers thick.

6. Difference between nitrification and denitrification? LHR(GI-15), GUJ(GI-18)

Ans: Ammonification is the breakdown of the proteins of dead organisms and nitrogenous wastes (urea, uric acid etc.) To ammonia: It is done by ammonifying bacteria. After the formation of ammonia, it is converted into nitrates and nitrites. It is called nitrification and is done by nitrifying bacteria like nitrosomonas and nitrobacter.

Denitrification is a biological process in which nitrates and nitrites are reduced to nitrogen gas by denitrifying bacteria. By this process, nitrogen is returned to atmosphere.

7. What do you mean by tropic level?

LHR(GI-15), DGK(GI-15), SWL(GII-15,GI-17)

Ans: Tropic (food) level is the level at which an organism feeds in food chain.

8. Write a short note on ecological pyramid? LHR(GI-15), BWP(GII-15, GI-16),

FBD(GI-14, GI-15)

Ans: It is the graphic representation of the number of individuals or amount of biomass or energy present in various trophic levels of a food chain. It has three types.

9. Define competition & give example?

LHR(GI-15)

Ans: In ecosystems, the natural resources e.g. Nutrients, space etc. are usually in short supply. So there is a competition among the organisms of ecosystem for the utilization of resources.

Examples: Plant show competition for space, light water and minerals.

10. Define the community?

LHR(GI-16, GI-18), DGK(GI-14)

Ans: All the populations that live in a habitat and interact in various ways with one another are collectively called a community.

11. What are the a-biotic and biotic components on an ecosystem?

LHR(GI-16), GUJ(GI-15), BWP(GII-18), FBD(GI-16)
FBD(GI-19)

Ans: The a-biotic components include the non-living factors present in ecosystem. The important non-living factors are light, air, water, soil and the basic elements and compounds. The biotic components comprise the living part (organisms) of the ecosystem.

12. Differentiate between the intra-specific interaction and inter-specific interaction?

LHR(GI-17), BWP(GI-16), FBD(GI-14)

Ans: The interactions between the members of the same species are called intra-specific interactions while the interactions between the members of different species are called inter-specific interactions.

13. What is meant by predation? Give an example? LHR(GI-17), GUJ(GII-15, GI-17),

MTN(GII-15), GII-16), BWP(GII-14, GII-15)
MTN(GII-19)BWP(GII-19)

Ans: In predation, one organism (the predator) attacks, kills and feeds on other organism (the prey). All carnivore animals are predators. For example, frog (predator 1) is preyed upon by a snake (predator 2) and snake is preyed upon by an eagle (predator 3).

14. What is meant by Nitrogen Fixation?

LHR (GII-17), MTN(GII-14)

Ans: Conversion of nitrogen gas into nitrates is called nitrogen fixation.

15. From where producers get their energy & in which form they store it?

GUJ(GII-14)

Ans: Producers get their energy from sun by photosynthesis. They store it in the form of glucose.

16. What are Endo-parasites? Give 2 examples.

GUJ(GI-15), DGK(GI-14)

Ans: Endoparasites live inside the body of host and get food and shelter. Bacteria, viruses, tapeworm, Ascaris, Entamoeba, Plasmodium etc. are the examples of endoparasites.

17. What is meant by denitrification?

GUJ(GII-15)LHR(GI-19)

Ans: It is a biological process in which nitrates and nitrites are reduced to nitrogen gas by denitrifying bacteria. By this process, nitrogen is returned to atmosphere.

18. What is intra-specific interaction?

GUJ(GII-15)

Ans: The interactions between the members of the same species are called intra-specific interactions.

19. What are the effects of denitrification above normal?

GUJ(GI-17)MTN(GII-19)

LHR(GI-19)

Ans: Excessive denitrification reduces soil fertility and is stimulated by water logging, lack of aeration and accumulation of organic matter in the soil.

20. Name different types of Symbiosis?

GUJ(GII-17)

Ans: (i) Parasitism (ii) Mutualism
(iii) Commensalism

21. Write Symptoms of Dengue fever?

GUJ(GII-17)

Ans: Symptoms of Dengue fever include high fever, severe headache, pain behind the eyes, muscles and joint pains and rashes.

22. Define Ecology? MTN(GI-17), FBD(GI-16)

Ans: The study of the interrelationship between organisms and their environment is called ecology.

23. Define consumers with example?

MTN(GI-17)GUJ(GII-19)

Ans: The consumers are heterotrophs. They cannot synthesize their food and so depend upon producers for food. Consumers include all animals, fungi, protozoan and many of the bacteria.

24. Define commensalisms with one example.

BWP(GI-14, GI-15, GI-17), GUJ(GII-18),

FBD(GI-14), SGD(GI-15, GI-18), DGK(GII-15)

FBD(GII-19)

Ans: Commensalism is a type of symbiosis in which one partner is benefited while the other is neither benefited nor harmed.

Example: Sucker fish attaches to the surface of sharks by its sucker. In this way the sharks provides easy transport to the sucker fish to new feeding grounds.

25. What are Decomposers? BWP(GII-14)

FBD(GII-16), SGD(GII-15)LHR(GI-19)

Ans: Decomposers or reducers break down the complex organic compounds of dead matter (of plants and animals) into simple compounds.

26. Differentiate between population and community.

BWP(GI,II-15,GI-17)

FBD(GII-15, GI-16), DGK(GII-18)MTN(GI-19)

RWP(GI-19)

Ans: A group of the organisms of the same species inhabiting a specific geographical area (habitat) at a particular time is called a population. All the populations that live in a habitat and interact in various ways with one another are collectively called a community.

27. What are Ectoparasites? Give two examples.

BWP(GI-16), RWP(GI-16), SGD(GI-15)

BWP(GII-19)

Ans: Ecto-parasites live outside i.e. On the surface of host's body and get food from there. Mosquitoes, leaches, lice etc.

- 28. What is Eutrophication? Write its any one reason.** BWP(GII-16), FBD(GI-15)
SGD(GI-19)

Ans: Enrichment of water with inorganic nutrients (nitrates and phosphates) is called Eutrophication.

- 29. Define Symbiosis?** BWP(GII-17)

Ans: It is a relationship between members of different species in which they live together for longer or shorter periods of time.

- 30. Define the assimilation?**

FBD(GII-15), SGD(GI-14), DKG(GII-18)

Ans: The nitrates formed are absorbed by plants and are utilized for making proteins etc. Animals take nitrogenous compounds from plants. The utilization of nitrates by organisms is called assimilation.

- 31. Define nitrification?** FBD(GII-16)

Ans: After the formation of ammonia, it is converted into nitrates and nitrites. It is called nitrification and is done by nitrifying bacteria like nitrobacter.

- 32. What are the food chains with an example?** RWP(GII-14,GI-16)

Ans: A food chain is a series of organisms within an ecosystem, in which each organism feeds on the one before it and is fed by the one after it. For example, frog is preyed upon by a snake and snake is preyed upon by an eagle.

- 33. What is meant by 3R?** RWP(GI-17)

Ans: To ensure sustainable use of resources in our environment, we should act upon the principle of 3R i.e. Reduce, Reuse and Recycle.

- 34. Write Biological name of dengue mosquito?** RWP(GI-17)

Ans: Aedes aegypti.

- 35. What is biological Nitrogen Fixation?**

RWP(GII-17)

Ans: Some bacteria also have the ability to transform gaseous nitrogen into nitrates. It is called biological nitrogen fixation.

- 36. What are epiphytes?** RWP(GII-17)

Ans: Epiphytes are small plants found growing on other plants for space only. They absorb water and minerals from atmosphere and prepare their own food.

- 37. Differentiate b/w Ecto-parasites & Endo-parasites?** BWP(GI-18), SGD(GI-14, GI-17, GI-18), SWL(GII-15)

BWP(GI-19)SGD(GII-19)

Ans: Ecto-parasites live, outside i.e. On the surface of host's body and get food from there. Mosquitoes, leaches, lice etc. are the examples of ecto-parasites. Endoparasites live inside the body of host and get food and shelter. Bacteria, viruses, tapeworm, Ascaris, Entamoeba, Plasmodium etc. are the examples of endoparasites.

- 38. Define Biomass.** SGD(GI-15)

Ans: The total amount of living or organic matter in an ecosystem at any time is called "biomass".

- 39. What is mutualism give example?**

SGD(GII-15)

Ans: In this type of symbiotic interaction, both partners (of different species) get benefit and neither is harmed. For example, termites eat wood but are not able to digest it.

- 40. If producers are eliminated from Ecosystem what will happen?** SGD(GI-17)

Ans: If we remove all the producers then the entire food system shuts down because there is no food for the consumers.

- 41. Define Parasitism?**

DKG(GII-14, GI-16), SWL(GII-18)

Ans: Parasitism is a relationship between two things in which one of them (the parasite) benefits from or lives off of the other, like fleas on your dog. Parasitism and its root, parasite, come from para-, meaning "beside" or "next to," and sito, meaning "bread or food."

- 42. What is difference b/w producers & consumers?** FBD(GI-18), DKG(GII-14)

DKG(GII-19)

Ans: Producers are organisms that make their own food; they are also known as autotrophs. Consumers are organisms that need to eat (i.e. consume) food to obtain their energy. These organisms are called heterotrophs, meaning they must eat something else (hetero) as food.

43. Define biosphere? DGK(GI-15)FBD(GII-19)

Ans: The regions of the surface and atmosphere of the earth or another planet occupied by living organisms.

44. Name big decomposers of biosphere?

DGK(GI-15)

Ans: Big decomposers of biosphere are many types of bacteria and fungi.

45. Describe biotic component of an ecosystem? DGK(GII-15)

Ans: The biotic components comprise the living part (organisms) of the ecosystem like human, plants and animal etc.

46. How can control the land pollution?

DGK(GII-15)GUJ(GI-19)

Ans: Non-biodegradable materials like plastic, glass, metals etc. Should be recovered and recycled. Inorganic pesticides should be replaced by organic pesticides.

47. Differentiate b/w carnivores and herbivores? DGK(GI-16)

Ans: Carnivores are animals that only eat meat. ... An example of a carnivore that lives at Algonquin park is the otter. An otter's diet includes fish, crabs, sea urchins, snails, clams and more. And herbivore are animals that only eat plants. e.g goat.

48. Define reducers and give examples? OR

What is meant by decomposers? Give an example? DGK(GI-15),(GI-17)

Ans: Decomposers or reducers break down the complex organic compounds of dead matter (of plants and animals) into simple compounds.

49. Differentiate b/w ammonification & nitrification? DGK(GII-15)SGD(GI-19)

Ans: Ammonification:

It is the breakdown of proteins of dead organisms and nitrogenous wastes (urea, uric acid etc) to ammonia. It is done by ammonifying bacteria.

Nitrification:

The conversion of ammonia into nitrates and nitrites is called as nitrification. It is called as nitrification. It is done by nitrifying bacteria like nitrosomonas.

SECTION III**LONG QUESTION****PUNJAB BOARDS**

2014, 15, 16, 17, 18, 19

1. Explain what do you mean by the pyramids of number and biomass.
4. Write notes on competition, predation and symbiosis.



SECTION I**Chapter — 17****BIOTECHNOLOGY****(MCQ's)****From Exercise:**

- Find the correct match for the fermentation product and organism involved: LHR(GI-15)
 (A) Formic acid – *Saccharomyces*
 (B) Ethanol – *Saccharomyces*
 (C) Ethanol – *Aspergillus*
 (D) Glycerol – *Aspergillus*
- Which one is NOT an object of genetic engineering?
 (A) Production of cheese and yogurt by lactic acid bacteria
 (B) Isolation of a particular gene or part of a gene
 (C) Production of RNA and protein molecules
 (D) Correction of genetic defects in higher organisms
- Which of these is an antiviral protein?
 BWP(GI-17)FBD(GI-15)DGK(GI-14)
 (A) Urokinase (B) Thymosin
 (C) Insulin (D) Interferon
- The first step in genetic engineering is:
 (A) Growth of genetically modified organism
 (B) Transfer of the recombinant DNA into the host organism
 (C) Isolation of the gene of interest
 (D) Insertion of a gene into a vector
- The complete map of human genome was published in: LHR(GI-18)
 (A) 1902 (B) 2000 (C) 2002 (D) 2005
- The enzyme which used to dissolve blood clots is: LHR(GI-18)MTN(GI-18)
 (A) Amylase (B) Pepsin
 (C) Trypsin (D) Urokinase
- Fungi used in alcoholic fermentation is called. GUJ(GI-15)
 (A) *saccharomyces*
 (B) *basidiomycetes cervisiae*
 (C) *zygomycetes*
 (D) *algin*
- This product is used in the production of soap. GUJ(GI-17)
 (A) glycerol (B) formic acid
 (C) sulphuric acid (D) acrylic acid
- The industrial product from *aspergillus* is: GUJ(GI-18)
 (A) formic acid (B) ethanol
 (C) glycerol (D) acrylic acid
- Organisms with modified genetic set up are called: GUJ(GI-18)
 (A) hybrid (B) transgenic
 (C) transformed (D) rearranged
- When did scientists become able to cut and unite DNA: GUJ(GI-15)
 (A) 1945 (B) 1924
 (C) 1944 (D) 1925
- Micro organism used for Formic Acid: MTN(GI-14)
 (A) *Saachromyces* (B) *Aspergillus*
 (C) Ammonification (D) Nitrogen Fixation
- The enzyme which is used to dissolve blood clots is MTN(GI-16, 17)
 (A) Urokinase (B) Interferons
 (C) Thymosin (D) Beta-endorphin
- _____ is an Anti-Viral Protein. MTN(GI-16,17)BWP(GI-18)
 (A) Urokinase (B) Interferons
 (C) Thymosin (D) Insulin
- Genetic engineering plasmid is used as..... BWP(GI-14)
 (A) Vector (B) Endonuclease
 (C) Ligases (D) Donors

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- Alcoholic fermentation is processed by LHR(GI-16)
 (A) Virus (B) Bacteria
 (C) Fungi (D) Algae
- When was the work on Genetic Engineering started. LHR(GI-15)
 (A) 1930 (B) 1940 (C) 1944 (D) 1973
- E-coli bacterium was made in: LHR(GI-17)(GI-18)
 (A) 1970 A.D (B) 1977 A.D
 (C) 1975 A.D (D) 1980 A.D

15. Glycerol is used BWP(GII-16)

- (A) In textile
(B) In production of vinegar
(C) In printing
(D) In beverage

16. The enzyme used for joining Gene is:

BWP(GII-18)

- (A) Lipase **(B)** Ligase
(C) Amylase (D) Endonuclease

17. Vector DNA and gene of interest collectively called: BWP(GI-15)

- (A) Gene
(B) recombinant gene
(C) recombinant DNA
(D) GMO

18. Who presented the idea of sterile surgery for the first time: FBD(GI-14)

- (A) Sir Alexander Fleming
(B) Joseph Lister
(C) Thomas Grill
(D) Lamarck

19. Which organism is used in fermentation for the preparation of glycerol: FBD(GII-14)

- (A) Aspergillus **(B)** Saccharomyces
(C) Bacillus (D) Streptococcus

20. Fungi used in alcoholic fermentation is called FBD(GI-16)

- (A)** Saccharomyces cerevisiae
(B) Basidiomycetes
(C) Zygomycetes
(D) Deuteromycetes

21. Algae grown in ponds produce protein per acre / year: FBD(GI-18)

- (A) 10 tons **(B)** 20 tons
(C) 30 tons (D) 40 tons

22. Large mammals that feed on honey:

FBD(GII-18)

- (A) Rabbit (B) Camel
(C) Badger (D) Elephant

23. A hormone produced by genetically modified organisms, used to cure cancer of brain and lungs, is: RWP(GI-14)

- (A) Insulin **(B)** Thymosin
(C) Thyroxin
(D) Anti diuretic hormone

24. The enzyme used to dissolve blood clots is

RWP(GI-16)

- (A)** Urokinase (B) Insulin
(C) Lipase (D) Thymosin

25. An antiviral protein is: RWP(GI-17)

- (A)** Interferons (B) Ligase
(C) Amylase (D) Urokinase

26. The micro organism used in formic acid is: RWP(GII-17)

- (A) Glycerol **(B)** Aspergillus
(C) Bacillus (D) Saccharomyces

27. Painkiller chemical produced by brain is: RWP(GI-18)

- (A) Insulin (B) Interferon
(C) Thymosin **(D)** Betaendorphin

28. Lactic acid fermentation is carried out by many: RWP(GII-18)

- (A)** Fungi (B) Algae
(C) Bacteria (D) Protozoans

29. The microorganisms used for formation of formic acid is SGD(GI-15)

- (A) Saccharomyces (B) Bacillus
(C) Aspergillus (D) Cocci

30. Streptomycin is obtained from: SGD(GII-15)

- (A) Fungi (B) Algae
(C) Bacteria (D) Fox glove

31. In the process of glycolysis, glucose molecule is broken down into 2 molecules of SGD(GII-15)

- (A)** Pyruvic acid (B) Lactic acid
(C) Ethanol (D) Ethanol and CO₂

32. The Enzyme which is used to cut the gene of interest is. SGD(GI-17)

- (A) Lipase (B) Amylase
(C) Ligase **(D)** Endonuclease

33. Human Genome Project was launched in. SGD(GII-17)

- (A) 1890 **(B)** 1990
(C) 1880 (D) 1680

34. An example of Antiviral protein: SGD(GI-18)

- (A) Insulin (B) Pepsinogen
(C) Zymogen **(D)** Interferon

35. Human insulin gene was transferred into: DGK(GI-14)

- (A) yeast **(B)** Bacteria
(C) Virus (D) Algae

36. The microorganism used in the formation of Ethanol is: DGK(GI-15)

- (A) E-Coll (B) Virus
(C) Bacillus (D) Sacchromyces

37. Insulin was prepared by inserting insulin gene in bacteria: DGK(GII-15)

- (A) 1978 (B) 1980
(C) 1982 (D) 1984

38. The enzyme used to dissolve blood clots is called DGK(GI-16)

- (A) Urokinase (B) Amylase
(C) Pepsin (D) Trypsin

39. Human insulin gene was transferred:

DGK(GI-18)

- (A) Fungi (B) Virus
(C) Bacteria (D) Yeast

40. When was the work on Genetic Engineering started: DGK(GII-18)

- (A) 1934 (B) 1944
(C) 1954 (D) 1964

41. This product is used in the production of vinger and beverages: SWL(GII-14)

- (A) formic acid (B) acrylic acid
(C) ethanol (D) glycerol

42. In glycolysis, the glucose molecule after its breakdown produces two molecules of:

SWL(GI-15)

- (A) acetic acid (B) formic acid
(C) pyruvic acid (D) lactic acid

43. The raw material for microorganism for the production of single cell protein is:

SWL(GI-17)

- (A) industrial wastes
(B) protozoans
(C) agricultural wastes
(D) fungi

44. In biotechnology the production of a product by the mass culture of microorganism is called: SWL(GII-17)

- (A) fermentation (B) mutation
(C) fertilization (D) fermenter

45. The complete map of human genome was published in: SWL(GI-14)

- (A) 2002 (B) 2004
(C) 2006 (D) 2008

46. In genetic engineering plasmid is used as: SGD(GI-19)

- (A) donor (B) ligase
(C) endonuclease (D) vector

47. This product uses in the production of vinger and beverage: SGD(GII-19)

- (A) glycerol (B) ethanol
(C) acrylic acid (D) formic acid

48. Glucose molecule is broken into pyruvic acid: RWP(GI-19)

- (A) 5 (B) 3
(C) 2 (D) 6

49. Which one is fermented food: RWP(GII-19)

- (A) wheat flour (B) powder milk
(C) vitamins (D) yogurt

50. The complete map of human genome was published in: MTN(GII-19)

- (A) 2002 (B) 2004
(C) 2006 (D) 2008

51. _____ is an anti viral protein: GUJ(GII-19)
LHR(GI-19)

- (A) urokinase (B) thymosin
(C) insuline (D) interferon



SECTION II

SHORT QUESTIONS

From Exercise:

1. How would you define the fermentation with reference to biotechnology?

BWP(GI-15, GII-16)DGK(GII-18)SWL(GII-18)

Ans: This is the process in which there is incomplete oxidation-reduction of glucose.

2. Name any two industrial products made by fermentation, also describe their uses in the industry?

Ans: Fermentation often makes the food more nutritious, more digestible and testier.

Cereal products: bread is the commonest type of fermented cereal product. Wheat dough is fermented by *S. cerevisiae* along with some lactic acids bacteria.

Dairy products: cheese and yogurt are important fermentation products. Cheese is formed when a milk protein is coagulated.

3. What are the products of the two types of carbohydrate fermentation?

BWP(GII-16)RWP(GI-16)SGD(GI-15)RWP(GI-19)

Ans: Sugars are the most common substrate of fermentation, and typical examples of fermentation products are ethanol, lactic acid, carbon dioxide, and hydrogen gas (H_2). However, more exotic compounds can be produced by fermentation, such as butyric acid and acetone.

4. Give an example how biotechnology is helping for better environment?

LHR(GI-17)

Ans: The important objectives of genetic engineering are as follows:

- Isolation of a particular gene or part of a gene for various purposes such as gene therapy.
- Production of particular RNA and protein molecules.
- Improvement in the production of enzymes, drugs and commercially important organic chemicals.

5. In biotechnology, what is meant by Genetically Modified Organism (GMO)? How is it made?

Ans: A genetically modified organism (GMO) is any organism whose genetic material has been altered using genetic engineering techniques. GMOs are used to produce many medications and genetically modified foods and are widely used in scientific research and the production of other goods.

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1. Define the biotechnology?

LHR(GII-14), GUJ(GI-17, GI-18), MTN(GI-18), FBD(GII-17, GII-16), SGD(GI-16), SWL(GII-18) LHR(GI-19)

Ans: Biotechnology is defined as the use of living organisms in processes for the manufacture of useful products or for services.

2. Define recombinant DNA? One advantage. OR

What is Recombinant DNA?

LHR(GI-14, GII-17, GI-18), GUJ(GII-15, GII-18) SGD(GI-16)

Ans: DNA that has been formed artificially by combining constituents from different organisms called as recombinant DNA. Recombinant DNA is transferred to the target host. In this way, host organisms are transformed into a genetically modified organism (GMO).

3. Write down the object points of genetic engineering?

LHR(GII-15, GII-18), GUJ(GII-18), BWP(GII-14), FBD(GII-14) BWP(GII-19)MTN(GII-19)SGD(GI-19)

Ans: The important objectives of genetic engineering are as follows:

- Isolation of a particular gene or part of a gene for various purposes such as gene therapy.
- Production of particular RNA and protein molecules.
- Improvement in the production of enzymes, drugs and commercially important organic chemicals.

4. Write any two achievements of genetic engineering? OR

Define genetic engineering? FBD(GII-18)
LHR(GI,II-15,GII-17), GUJ(GII-14,17),
BWP(GI-14), RWP(GII-14,15), SGD(GII-18)
SGD(GII-19)

Ans: Various achievements of genetic engineering are as follows.

- Human insulin gene was transferred into bacteria. The genetically modified bacteria became able to synthesize insulin. Diabetics are now receiving this insulin.
- In 1977 an *E. coli* bacterium was created that was capable of synthesizing the human growth hormone.
- The hormone *thymosin* which may prove effective against brain and lung cancer has been produced by genetically modified microorganisms.
- Beta-endorphin*, a pain killer produced by the brain, has also been produced by genetic engineering techniques.
- Genetic engineers produced a safe vaccine against the foot and mouth disease (a viral disease in cattle, goats and deer). Similarly many vaccines have been produced against human diseases such as hepatitis B.

5. Define vector in genetic engineering?

LHR(GII-16), BWP(GII-16)FBD(GII-19)

Ans: In molecular cloning, a vector is a DNA molecule used as a vehicle to artificially carry foreign genetic material into another cell, where it can be replicated and/or expressed. A vector containing foreign DNA is termed recombinant DNA.

6. What is Beta-endorphin? It's use?

LHR(GI-16, GII-18)

Ans: Beta-endorphin, a pain killer produced by the brain, has also been produced by genetic engineering techniques.

7. Define gene therapy? LHR(GII-16)SWL(GI-14)

Ans: The introduction of normal genes into cells in place of missing or defective ones in order to correct genetic disorders called gene therapy.

8. Write any two characteristics of transgenic animals? LHR(GII-17)

Ans: Transgenic goats, chickens, cows give more food and milk etc. Many animals like mice, goats, cow etc have been made transgenic to get medicine through their milk, blood or urine.

9. Define glycolysis and name its product?

GUJ(GII-14), DGK(GI-18)GUJ(GII-19)

Ans: Glycolysis, in which the glucose molecule is broken into two molecule of pyruvic acid. Like alcoholic fermentation.

10. Name 4 products of fermentation?

GUJ(GII-14)SGD(GI-18)SWL(GI-15)

Ans: 1. Cereal products, 2. Beverage products, 3. Dairy products and 4. alcoholic products are industrial products by fermentation.

11. Define genetic engineering?

GUJ(GI-15, GI-18), BWP(GI-16, GII-18),
MTN(GII-17), SGD(GI-14, GII-15, GI-16),
RWP(GII-17), SWL(GII-14, GI-17)MTN(GI-19)

Ans: Genetic engineering i.e. the artificial synthesis modification, removal, addition and repair of the genetic material (DNA) are considered as modern biotechnology.

12. How lactic acid fermentation is carried out?

GUJ(GI-15)BWP(GI,II-15)
LHR(GII-18)SGD(GI-15)DGK(GI,II-14, GI-18)
SWL(GI-15)

Ans: In Lactic acid fermentation, pyruvic acids is reduced to lactic acids. It is carried out by many bacteria e.g. streptococcus. It is quite important dairy industry where it is used for souring milk and also for production of various types of cheese.

13. What are plasmids? GUJ(GII-15)

Ans: A vector is selected for the transfer of the isolated gene of interest to the host cell. The vector also called as plasmid.

14. Write 2 benefits of the use of fermenter?

GUJ(GII-15), DGK(GI-18), SWL(GII-18)

Ans: For each biotechnological process, the environment provided to the organisms must be monitored and controlled such a

controlled environment is provided by fermenter. A fermenter optimizes the growth of the organisms by controlling many factors like nutrients, oxygen, growth inhibitors, pH and temperature. A fermenter may hold several thousand liters of the growth medium.

15. What is malted food? GUJ(GI-17)

Ans. Malted food are e.g. powdered milk, a mixture of barley, wheat flour and whole milk.

16. Is inherited disease haemophilia curable? If yes then how? GUJ(GII-17)

Ans. It has become possible to modify the genes in the human egg cell. This can lead to the elimination of inherited diseases like haemophilia.

17. What is interferon? GUJ(GII-17)

Ans. Interferon's are antiviral proteins produced by cells infected with viruses.

18. What are the beverage products?

BWP(GI-14)RWP(GI-14)

Ans: Beverage products: beer is products from cereal grains which have been malted, dried and ground into fine powder. Fermentation of the powder is done by yeast. This grape can be directly fermented by yeasts to wine.

19. What is the role of thymosin?

BWP(GI-14, 15, GII-18), FBD(GII-18)

Ans: The hormone thymosin which may prove effective against brain and lung cancer has been produced by genetically modified microorganisms.

20. Write any two uses of Glycerol?

LHR(GII-18), BWP(GI-17)RWP(GI-19)

Ans. Used as solvent, used in the production of plastics, cosmetics and soaps, used in printing used as sweetener.

21. What is Alcoholic fermentation?

OR How alcoholic fermentation produced by yeast? BWP(GII-17)SGD(GI-14, 16)

SWL(GII-17)BWP(GI-19)RWP(GII-19)

Ans: Alcoholic fermentation is carried out by many types of yeast such as *saccharomyces cerevisiae* this process is quite important and is used to produce bread, beer, wine and distilled spirits.

22. Write the uses of ethanol? BWP(GI-14)

Ans: Ethanol is used as a solvent and in the production of vinegar and beverages.

23. Describe the uses of formic acid?

OR Write two uses of formic acid.

BWP(GI-15)DGK(GI-15)LHR(GI-19)RWP(GII-19)

DGK(GII-19)

Ans: Formic acid used in textiles dyeing, leather treatment, electroplating, rubber manufacture.

24. What are the roles of Biotechnology in the field of medicines? RWP(GI-14)

SWL(GII-17)FBD(GII-19)

Ans: In the field of medicine, biotechnologists synthesized insulin and interferon (antiviral proteins) from bacteria and released for sale. A large number of vaccine and antibodies human growth hormone and other medicine have also been produced. Gene therapy (treatment through genes) has become important in recent years.

25. Describe scope and importance of biotechnology? RWP(GII-15)

Ans. In recent years biotechnology is growing as a separate science. It has attracted the attention of many intellectuals from diverse fields like agriculture, medicine, microbiology and organic chemistry. The scope for biotechnology is so wide that it is difficult to recognize the limits. The following are some areas of application of biotechnology (i) Biotechnology in the field of Medicine (ii) Biotechnology is filed of Food and Agriculture (iii) Biotechnology and Environment.

26. What are transgenic organisms?

RWP(GII-17)SWL(GI-17)GUJ(GI-19)RWP(GII-19)

Ans. Transgenic (organism with modified set-up) plants are being developed in which desirable characteristics are present e.g. more yields and resistance against diseases, insects and herbicides. Transgenic goats chickens, cows give more food and milk etc.

27. What is the full name of GMO?

RWP(GII-17)

Ans. Genetically Modified Organisms.

28. What are endonuclease and ligase?

OR what is the function of endonucleases and ligase?

SGD(GI-14)DGK(GI-15)

GUJ(GII-19)

Ans: Endonucleases are enzymes that cleave the phosphodiester bond within a polynucleotide chain. An enzyme which brings about ligation of DNA or another substance is called as ligase.

29. Write name of Enzyme which is used to cut gene.

SGD(GI-15)

Ans: Restriction endonucleases, are used to cut the identified gene from the total DNA of donor organisms.

30. How genetic engineers have reduced the need of fertilizers for plants.

SGD(GII-17)

Ans. Genetic engineers have developed plants that can fix nitrogen directly from the atmosphere. Such plants need less fertilizers.

31. Write 2 purpose of genetic engineering?

DGK(GI,II-14)

Ans: Genetic engineering or recombinant DNA technology involves the artificial synthesis, modification removal, addition and repair of the genetic material (DNA).

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SECTION III

LONG QUESTION

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1. Define biotechnology and describe its importance.
3. Describe the achievements of genetic engineering in medicine, agriculture and environment.
4. What basic steps a genetic engineer adopts during the manipulation of genes?

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SECTION I

Chapter — 18

PHARMACOLOGY

(MCQ's)

From Exercise:

- Antibiotics are used for the:
 - Treatment of viral infections
 - Treatment of bacterial infections
 - Immunization against infections
 - Both 'a' and 'b'
- The substance used for the treatment, cure, prevention or diagnosis of disease are called:
 - Medicinal drugs
 - Narcotics
 - Hallucinogens
 - Sedatives
- Aspirin is categorized as: MTN(GI-16)
 - A drug from animals
 - A synthetic drug
 - A drug from plants
 - A drug from minerals
- The drugs used to reduce pain are known as: LHR(GI-15)GUJ(GI-15)RWP(GI-16)
 - Analgesics
 - Antiseptics
 - Antibiotics
 - Sedatives
- Which of the following drugs is obtained from plants? MTN(GI-17) RWP(GI-15)DGK(GI-16)SWL(GI-14)
 - Aspirin
 - Opium
 - Cephalosporin
 - Insulin
- Which of these addictive drugs are also used as painkillers?
 - Narcotics
 - Sedatives
 - Hallucinogens
 - All can be used
- Sulfonamides affect bacteria in the following way:
 - Break the cell wall
 - Inhibit protein synthesis
 - Stop the synthesis of new cell wall
 - Stop the synthesis of folic acid

8. What is true about vaccines?

- Protect against the future viral and bacterial infections
- Treat the existing bacterial infections only
- Treat existing infections and also protect against future infections
- Protect against viral infections only

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- Is prepared from opium LHR(GI-16)
 - Vaccine
 - Aspirin
 - Morphine
 - Paracetamol
- Reduce the possibility of infections on skin. LHR(GI-15)BWP(GI-18)
 - Analgesics
 - Antibiotics
 - Disinfectants
 - Antiseptics
- The number of drug addicts in Pakistan is currently estimated to be about. LHR(GI-15)
 - 10,00,000
 - 8,00,000
 - 6,00,000
 - 5,00,000
- Penicillin was discovered by: LHR(GI-17)
 - Joseph Lister
 - Edward Jenner
 - Alexander Flemming
 - Bu-Ali Sina
- Diazepam is a drug of: LHR(GI-17, GI-18)
 - Vaccine
 - Narcotics
 - Hallucinogens
 - Sedative
- Sir Alexander Fleming was awarding the nobel price in LHR(GI-16)
 - 1940
 - 1945
 - 1950
 - 1960
- The pain reliever morphine is obtained from the flowers of which plant? GUJ(GI-15)
 - brassica
 - rose
 - foxglove
 - opium
- This group includes mescaline and psilocin. GUJ(GI-17)
 - sedatives
 - narcotics
 - hallucinogens
 - vaccines
- The study of drug composition, properties and medical application is called: GUJ(GI-18)
 - Pharmacology
 - Pharmaceutical
 - pharmacy
 - drug science

10. Diazepam is a type of drug: MTN(GI-14)

- (A) Analgesics (B) Antibiotics
(C) Sedatives (D) Vaccines

11. Drug (medicine) derived from Minerals:

MTN(GII-14)

- (A) Morphine (B) Aspirin
 (C) Antitoxins **(D)** Tincture Iodine

12. Pathogens contains special proteins called

MTN(GI-15)

- (A) Antigens **(B)** Antibodies
 (C) Antibiotics (D) Antiseptics

13.drug is obtained from the plants:

MTN(GII-16)

- (A) Aspirin **(B)** Opium
 (C) Cephalosporin (D) Insulin

14. Sir Alexander Fleming was awarded the Noble Prize in:

MTN(GI-17)

- (A)** 1945 (B) 1940
 (C) 1950 (D) 1935

15. Destroy micro organisms found on non-living objects.

MTN(GI-18)

- (A)** disinfectants (B) antibiotics
 (C) antiseptics (D) sedatives

16. Penicillin was discovered by: MTN(GI-18)

- (A) Lamarck **(B)** Darwin
 (C) Sir Alexander Fleming
 (D) Robert Hook

17. Morphine is prepared from: MTN(GII-18)

- (A)** Opium (B) Fungi
 (C) Bacteria (D) Foxglove

18. Drug interact with central nervous system to depress its activities belong to the group of drug called BWP(GI-15)

- (A) Sedative **(B)** Narcotics
 (C) Analgesics (D) Vaccine

19. Anti-biotic prohibit or kill the.....

BWP(GI-16)

- (A) Worms (B) Virus
(C) Bacteria (D) Yeast

20. Hallucinogen affect on the BWP(GII-16)

- (A)** Sympathetic nervous system
 (B) Central nervous system
 (C) Spinal cord
 (D) Hypothalamus

21. The drugs used to reduce pain are:

BWP(GI-17)SGD(GI-18)

- (A) Sedatives (B) Antibiotics
 (C) Vaccines **(D)** Analgesics

22. Mescaline is obtained from a plant:

BWP(GII-17)

- (A) Datura (B) Cannabis
 (C) Morning Glory **(D)** Cactus

23. Joseph Lister introduce an acid to clean the wounds:

BWP(GI-18)

- (A)** Carbolic Acid (B) Hydrochloric Acid
 (C) Sulphuric Acid (D) Nitric Acid

24. Penicillin was discovered by BWP(GII-15)

- (A) La-mark (B) Darwin
 (C) Robert hook
(D) Alexander Fleming

25. From which pain killer drug morphine is obtained: FBD(GII-14)

- (A) Foxglove leaves **(B)** Opium
 (C) Fish liver (D) Fungi

26. What are pain killers: FBD(GI-15)

- (A)** Analgesic (B) Anticeptics
 (C) Antibiotics (D) Sedatives

27. Joseph Lister introduced an acid to sterile the surgical instruments and to clean wounds: FBD(GII-15)

- (A) Carbonic acid (B) Acetic acid
 (C) Nitric acid **(D)** Carbolic acid

28. Edward Jenner introduce vaccine of which disease? FBD(GI-16)

- (A)** Smallpox (B) AIDS
 (C) Hepatitis (D) Malaria

29. Medicines with expired date are hazardous to FBD(GII-16)

- (A)** Heart (B) Lungs
 (C) Stomach (D) Kidneys

30. Which reduces the possibility of infections on skin? FBD(GI-18)

- (A) Disinfectants (B) Antibodies
(C) Antiseptics (D) Antibiotics

31. In cattle, goats and deer, the foot and mouth disease is: FBD(GII-18)

- (A) Bacterial **(B)** Viral
 (C) Fungal (D) None of these

32. Which destroys microorganisms found on non-living objects: FBD(GII-18)

- (A)** Disinfectants (B) Antibodies
 (C) Antiseptics (D) Antibiotics

33. Which of the following diseases is cured by vaccines: RWP(GI-14)

- (A) Diabetes (B) Hepatitis
(C) Cancer (D) AIDS

34. Antibiotics inhibit or kill the:

RWP(GII-14)(GII-17)

- (A) Worms (B) Viruses
(C) Bacteria (D) Yeast

35. Study of composition and medical applications of drugs is called RWP(GII-16)

- (A) Mycology (B) Biotechnology
(C) Pharmacology (D) Physiology

36. This drug is obtained from plants:

RWP(GI-17)

- (A) Codeine (B) Cephalosporins
(C) Sulpha drug (D) Tetracyclines

37. Which drug is obtained from plants?

RWP(GII-18)

- (A) Aspirin (B) Penicillin
(C) Cephalosporin (D) Opium

38. Medicines prepared in laboratory are called SGD(GI-15)

- (A) Synthetic (B) Plant media
(C) Animals made (D) Minerals made

39. It is prepared from opium SGD(GI-16)

- (A) Quinine (B) Aspirin
(C) Paracetamol (D) Morphine

40. It affects the production of sperms in men and also weakens the short term memory SGD(GII-16)

- (A) Morphine (B) Psilocin
(C) Marijuana (D) Carffeine

41. One of the drugs derived from minerals.

SGD(GI-17)

- (A) Streptomycin (B) Iodine tincture
(C) Opium (D) Aspirin

42. Is an Analgesic. SGD(GII-17)

- (A) Diazepam (B) Aspirin
(C) Paracetamol (D) Both b & c

43. Which drug is obtained from bacteria:

SGD(GI-18)

- (A) Aspirin (B) Paracetamol
(C) Terramycin (D) Streptomycin

44. Fleming discovered the: DGK(GI-14)

- (A) Tetracycline (B) Aspirine
(C) Cephalosporin (D) Pincilline

45. Medicine (drug) derived from animals:

DGK(GII-14)

- (A) Morphine (B) Aspirine
(C) Antitoxins (D) Tincture Iodine

46. A material which contain weekend pathogen is called: DGK(GI-15)

- (A) Vaccine (B) Antigen
(C) Anti body (D) Antibiotic

47. Pain killer drugs are called: DGK(GII-15)

- (A) Analgesics (B) Antibiotics
(C) Sedatives (D) Vaccines

48. To which group aspirin belongs?

DGK(GII-18)

- (A) Drug from animals
(B) Drug from plants
(C) Drug from bacteria
(D) Synthetic drug

49. Addictive drugs which are used as strong painkiller, are: SWL(GI-14)

- (A) sedatives (B) narcotics
(C) marijuana (D) antibiotics

50. Psilocin is obtained from: SWL(GI-15, GII-16)

- (A) algae (B) funaria
(C) bacteria (D) mushroom

51. The cardiotonic known as digitalis, is obtained from a plant. SWL(GI-17)

- (A) accacia (B) Brassica
(C) memosa (D) fox glove

52. It is a hallucinogen. SWL(GII-17)

- (A) marijuana (B) aspirin
(C) morphine (D) codeine

53. Mescaline belongs to: DGK(GI-19)

- (A) antibiotics (B) vaccine
(C) sulpha drugs (D) hallucinogens

54. Chemicals which kills micro organisms on non-living objects are called: DGK(GII-19)

GUJ(GII-19)

- (A) antiseptics (B) antigens
(C) antibiotics (D) disinfectants

55. Drug obtained from minerals is:

RWP(GII-19)

- (A) morphine (B) aspirin
(C) antitoxin (D) iodinetincture

56. Which one of the following disease is cured by vaccines:

LHR(GII-19)

- (A) AIDS (B) smallpox
(C) cancer (D) malaria

57. Which inhibits or kills bacteria within or on the body:

FBD(GII-19)

- (A) disinfectants (B) antibodies
(C) antiseptics (D) antibiotics

58. Which of these reduce the possibility of infection on skin:

BWP(GI-19)

- (A) disinfectant (B) antibodies
(C) antiseptics (D) antibiotics

59. He prompted the idea of sterile surgery for the first time:

BWP(GII-19)

- (A) Joseph (B) Joseph Fisher
(C) Joseph Lister (D) Joseph Espdm

60. Medicine derived from plant is:

SGD(GI-19)

- (A) inteferon (B) thymosin
(C) insuline (D) morphine

61. Sir Alexander Fleming discovered the:

SGD(GII-19)

- (A) pencillin (B) cephalosporin
(C) aspirine (D) tetracycline

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SECTION II**SHORT QUESTIONS****From Exercise:**

1. Define pharmacology and distinguish it from pharmacy? BWP(GI-17)

DGK(GI-18)SWL(GII-18)BWP(GI-19)

Ans: Pharmacology is the study of drug composition properties and medical applications. Pharmacology is not synonymous with pharmacy, which is the name used for a profession, though in common usage the term are confused.

2. Differentiate between medicinal drug & addictive drug? BWP(GI-15, GII-17)

GUJ(GII-19)

Ans: A pharmaceutical drug is a drug used to diagnose, cure, treat, or prevent disease is called as medical drug. Some drugs often make person dependent on them, or addicted. These may be called as addictive drugs.

3. Differentiate between analgesic and antibiotics? GUJ(GI-18)BWP(GII-17)

FBD(GII-14)SGD(GI-15)SWL(GI-15)

Ans: Analgesics (Painkillers):

There are painkillers used to reduce pain e.g aspirin, paracetamol etc.

Antibiotics:

Antibiotics inhibit or kill bacteria and treat bacterial infections e.g tetracycline, cephalosporin etc.

4. What is marijuana? To which category of addictive drugs, it belongs?

MTN(GII-19)

Ans: Marijuana is a hallucinogen, which is smoked. It is obtained from the flower, stems, and leaves of the marijuana plant. Small doses of marijuana result in a feeling of well-being that lasts two to three hours. High doses increase heart rate. It also affects the production of sperms in men and also weakens the short-term memory.

5. Differentiate between narcotics and hallucinogens?

Ans: Narcotics are strong painkillers. These are used to relieve pain for patients with chronic diseases such as cancer. Morphine and codeine are the narcotics, derived from opium (poppy). Morphine acts directly on central nervous system to relieve pain. The most commonly abused narcotic i.e. heroin is a semi-synthetic drug from morphine.

Hallucinogens are the drugs that cause change in perception, thought, emotion and consciousness. Hallucinogens affect on the sympathetic nervous system. e.g. mescaline and psilocin.

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1. What is drug with an example?

LHR(GI-14, GII-14), MTN(GII-17), SWL(GII-17)

Ans: Any substance that, when absorbed into the body of a living organism, alters normal body functions is known as a drug. Drugs are broadly classified into two types. Eg. Opium is a pain reliever drug.

2. Differentiate between bactericidal & bacterio-static antibiotic? LHR(GII-16)

BWP(GI-16)FBD(GII-19)LHR(GII-19)MTN(GII-19)

Ans: Some antibiotics are bactericidal meaning that they kill bacteria. Other bacteriostatic, meaning that they work by stopping bacterial growth.

3. Define sedative and give example? OR

What are sedatives? Give an example?

LHR(GI-15, GII-17)LHR(GII-19)SGD(GI-19)

Ans: Sedatives induce sedation by reducing irritability or excitement e.g. diazepam. And Sedative drugs induce dizziness, lethargy, slow brain function and depression. Long-term use of sedative induces suicidal thoughts.

4. Define pharmacology?

LHR(GII-15, GII-17), GUJ(GII-18), LHR(GII-19)

FBD(GI-14, GII-15, GII-18), SGD(GII-15)MTN(GII-16)

SGD(GII-19)

Ans: Pharmacology is the study of drug composition properties and medical applications. The source of drugs also studied in pharmacology.

5. What is hallucinogen? OR**Define hallucinogen?** LHR(GI-II-18, GI-17).

FBD(GI-18), SWL(GI-17, GI-18)

Ans: Hallucinogens are the drugs that cause change in perception, thought, emotion and consciousness. Hallucinogens affect on the sympathetic nervous system.

7. What are tetracyclines? Give an example? LHR(GI-17)SGD(GI-16)

Ans: These are broad-spectrum bacteriostatic antibiotics and inhibit bacterial protein synthesis. Tetracyclines are used in the treatment of infection of respiratory tract, urinary tract, intestine etc.

8. What are synthetic drugs?

LHR(GI-17), RWP(GII-14,16)BWP(GII-14, GI-16)

DGK(GII-16)SGD(GI-16)

Ans: Such drugs do not occur naturally but are synthesized in laboratory. Pharmaceutical companies produce these drugs e.g. aspirin.

9. Write about some drugs obtained from plants? LHR(GI-17)MTN(GI-16,18)

Ans: Many important medicines are obtained from plants. These medicines include antibiotics, cardiotonics and certain analgesics.

10. From which morphine and digitalis is obtained? GUJ(GII-14)RWP(GI-19)

Ans: Morphine is obtained from opium and digitalis obtained from animals.

11. Define vaccine. Name 2 vaccines being used? GUJ(GII-14), DGK(GI-18)**OR What is meant by vaccines?**

GUJ(GII-15)BWP(GII-14)MTN(GII-14,16)

GUJ(GII-19)MTN(GII-19)RWP(GII-19)BWP(GII-19)

Ans: An antigenic substance prepared from the causative agent of a disease or a synthetic substance, used to provide immunity against one or several diseases. These are 2 vaccines are being used:

- (i) Tefanus (ii) Booster shots.

12. Write effects of hallucinogen? GUJ(GI-15)

Ans: Hallucinogens are the drugs that cause change in perception, thought, emotion and consciousness. Hallucinogens affect on the sympathetic nervous system.

13. Why sedative drugs are used? GUJ(GI-15)

Ans: Sedatives induce sedation by reducing irritability or excitement e.g. diazepam.

15. Define antibiotics? GUJ(GII-15)BWP(GII-19)

Ans: Antibiotics inhibit or kill bacteria within or on the body.

16. What are addictive drugs?

GUJ(GI-17), MTN(GI-17), FBD(GI-14)FBD(GII-19)

Ans: A substance intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease. A substance (other than food) intended to affect the structure or any function of the body are called as medical drugs. Example, morphine. Some drugs often make person dependent on them, or addicted. These may be called as addictive drugs. By using this drug the persons body become familiar to it and user can't function proper without it.

17. What are prescription drugs? GUJ(GI-17)

Ans: Prescription drugs are sold only on physician's prescription. These include barbiturates, tranquilizers, antibiotics etc.

19. Sulpha drugs are used against which diseases? GUJ(GII-17)GUJ(GI-17)

MTN(GII-17)LHR(GI-19)

Ans: They inhibit the folic acid synthesis in bacteria. They are used to treat pneumonia and urinary tract infection.

20. Name different sources of drugs?

GUJ(GII-17)

Ans: (i) Synthetic drugs

(ii) Drugs from plants and Fungi

(iii) Drugs from Animals

(iv) Drugs from Minerals

(v) Drugs from Bacteria

22. Write a note on antigens and antibodies? MTN(GI-16)DGK(GI-16)**OR Difference between antigen and antibodies.** MTN(GII-17)SGD(GI-18)

SGD(GII-19)

Ans: Pathogens contain special proteins I called antigen. when pathogens enter the body (blood) of host, these proteins stimulate the immune response in host i.e. synthesis of antibodies, antibodies bind to pathogens and destroy them. In addition, memory cells are produced, which remain in blood and provide protection against future infection with the same pathogens.

25. Differentiate between Antiseptic and Antibiotics? MTN(GI-17)GUJ(GI-19) SGD(GI-19)

Ans. Antiseptic reduces the possibility of infections on skin. Antibiotics inhibit or kill bacteria within or on the body.

26. What is meant by Drugs obtained from Animals? Give its two example?

LHR(GI-18), MTN(GI-17, GI-18)

Ans. Drugs obtain from Animals are usually their glandular products. Fish liver oils, musk, bee's wax, certain hormones and antitoxins are obtained from animal sources.

27. What is meant by Hallucinations?

BWP(GII-18), MTN(GII-17)

Ans. Hallucinations are perceptions that have no basis in reality but that appear entirely realistic.

29. What are narcotics? BWP(GI-14)

GUJ(GII-18), LHR(GI-18)FBD(GII-16)

RWP(GI-14, GII-16)LHR(GI-19)

Ans: Narcotics are strong painkillers. These are used to relieve pain for patients with chronic diseases such as cancer. Morphine and codeine are the narcotics, derived from opium (poppy). Morphine acts directly on central nervous system to relieve pain. The most commonly abused narcotic i.e. heroin is a semi-synthetic drug from morphine.

30. Difference between disinfectant & antibiotics? OR Define antibiotic?

LHR(GI-18), BWP(GI-14, GI-16)DGK(GII-14)

FBD(GI-14, GII-15,16)SWL(GII-14)BWP(GII-19)

Ans: Disinfectants destroy microorganisms found on non-living objects. Antibiotics inhibit or kill bacteria within or on the body.

34. Which bacteria killed by Cephalosporin? Write two uses? OR What are cephalosporin medicines?

BWP(GII-16)SWL(GI-14)RWP(GII-19)

DGK(GII-19)

Ans: Cephalosporins interfere with synthesis of bacterial cell wall and so are bactericidal. Cephalosporins are used to treat pneumonia, sore throat, tonsillitis, bronchitis etc.

35. What is meant by broad spectrum & narrow spectrum?

BWP(GII-16),SGD(GII-17) DGK(GII-15, GI-18)

Ans: The term broad-spectrum antibiotic refers to an antibiotic that acts against a wide range of disease-causing bacteria. A broad-spectrum antibiotic acts against both Gram-positive and Gram-negative bacteria, in contrast to a narrow-spectrum antibiotic, which is effective against specific families of bacteria.

37. Describe the role of Joseph lister in Biology?

BWP(GI-17), GUJ(GII-17, GII-18), SGD(GI-14)

MTN(GI-19)

Ans: He is the "Father of Antiseptic Surgery", Joseph Lister's contributions paved the way to safer medical procedures. His introduction of the antiseptic process dramatically decreased deaths from childbirth and surgery and changed the way the medical industry looked at sanitation and proper hygiene.

38. Differentiate between Analgesics and Sedatives? BWP(GII-18)FBD(GII-19)

Ans. An Analgesic or painkiller is any member of the group of drugs used achieve analgesia, relief from pain.

Sedatives induce sedation by reducing irritability or excitement e.g diazepam. And sadative drugs induce dizziness, lethargy, slow brain function and depression.

39. What is Terramycin? BWP(GII-17)

LHR(GII-19)

Ans. Terramycin is an antibiotic, which is used to treat many infections.

41. What are Cephalosporin & Tetracyclines? BWP(GII-18), FBD(GI-15)

DGK(GI,II-14, GII-18)

Ans: Cephalosporins interfere with synthesis of bacterial cell wall and so are bactericidal. Cephalosporins are used to treat pneumonia, sore throat, tonsillitis, bronchitis etc.

Tetracyclines are broad-spectrum bacteriostatic antibiotics and inhibit bacterial protein synthesis. Tetracyclines are used in the treatment of infection of respiratory tract, urinary tract, intestine etc.

- 43. In 1796, How Edward Jenner use vaccine? OR**

Write work of edward jenner?

FBD(GII-14, GI-16), SGD(GII-16)RWP(GI-19)

Ans: In 1796 a British physician, Edward Jenner, infected a young boy with cowpox, by injecting pus cells. After the boy had recovered from cowpox, Jenner injected the pus cells from a small pox patient into him. The boy did not get small pox. So it became clear that intentional infection with cowpox protected people from small pox. This method was named vaccination and substance used to vaccinate was called a vaccine.

- 45. Write a short note on marijuana?**

GUJ(GI-18), FBD(GI-16)BWP(GII-19)SGD(GI-19)

Ans: Marijuana is a hallucinogen, which is smoked. It is obtained from the flower, stems, and leaves of the marijuana plant. Small doses of marijuana result in a feeling of well-being that lasts two to three hours. High doses increase heart rate. It also affects the production of sperms in men and also weakens the short-term memory.

- 47. Differentiate b/w pharmaceutical drug & addictive drug?**

FBD(GII-16), SGD(GI-18)LHR(GI-19)

Ans: A pharmaceutical drug or medicinal drug is defined as any chemical substance used in the diagnosis, cure, treatment, or prevention of disease. Some drugs often make person dependent on them, or addicted. These may be called as addictive drugs.

- 48. What is meant by drug and Pharmaceutical drug?**

LHR(GI-18), FBD(GII-18), RWP(GI-17)MTN(GI-19)

Ans: Any substance that when absorbed into the body of a living organism, alters normal body function is known as a drug.

A pharmaceutical drug medicinal drug is defined as any chemical substance used in the diagnosis, cure, treatment or prevention of disease.

- 49. Define Analgesic an example?**

RWP(GI-17), SGD(GI-18)

Ans: An analgesic or painkiller is any member of the group of drugs used to achieve analgesia, relief from pain. e.g. aspirin and paracetamol.

- 50. Difference between disinfectant & antiseptics?**

SGD(GI-14)SGD(GII-19)

Ans: Disinfectants destroy microorganisms found on non-living objects. An antiseptic is a substance which inhibits the growth and development of microorganisms.

- 52. Write names of two types of Antibiotics.**

SGD(GI-15)

Ans: These are the types of antibiotics (bactericidal & Bacteriostatic).

- 54. Describe two precautions before taking medicine?**

MTN(GI-18), SGD(GI-17)

DGK(GII-19)

Ans. (i) Always check the instruction on doctor's prescription slip and make sure you take the doses of medicines strictly as your doctor prescribed.

(ii) Do not take medicine in the dark.

- 55. Which drugs are obtained from minerals?**

GUJ(GII-18), SGD(GI-17), DGK(GII-18)

RWP(GII-19)

Ans. Several common drugs are obtained from minerals. The mineral iodine is used in making tincture of Iodine, a liquid that helps prevent infection when applied to cuts and bruises.

- 56. Describe the importance of Antibiotics and vaccines?**

SGD(GI-14)

Ans. Antibiotics are used to treat many different bacterial infections. Antibiotics are among the most frequently prescribed medications in modern science. Vaccines are used to develop immunity against viral and bacterial infections.

- 57. What are antigens.**

SGD(GII-17)

Ans: Pathogen contain special proteins called antigens. When pathogen enter the body of host, these proteins stimulate the immune response in host.

- 58. Write the name of drugs obtained from animals?**

SGD(GII-17)DGK(GI-16)

GUJ(GI-19)

Ans: Glandular products, Fish liver oil musk, bees wax, certain hormones.

- 62. What is the functions of antibodies in blood?**

DGK(GII-15)

Ans: Pathogens contain special proteins I called antigen. when pathogens enter the body (blood) of host, these proteins stimulate the immune response in host i.e. synthesis

of antibodies, antibodies bind to pathogens and destroy them. In addition, memory cells are produced, which remain in blood and provide protection against future infection with the same pathogens.

67. What is meant by social stigma?

MTN(GII-18)DGK(GI-16)SWL(GI-17)
RWP(GI-19)

Ans: Social stigma refers to extreme disapproval of (or discontent with) a person or group on socially characteristic grounds that are perceived, and serve to distinguish them, from other members of a society. Stigma may then be affixed to such a person, by the greater society, who differs from their cultural norms.

71. Write a short note on vaccine?

LHR(GI-18), SWL(GII-15)

Ans: When a vaccine i.e. weakened or dead pathogen is introduced into bloodstream, the white blood cells are stimulated. B lymphocytes recognize the weakened or dead pathogens as enemies and start producing antibodies against them. These antibodies remain in blood and provide protection against pathogens. If real pathogens enter blood the already present antibodies kill them.

72. What are synthetic drugs? Write name of 2 drugs obtained from minerals.

SWL(GII-15)GUJ(GI-19)

Ans: Such drugs do not occur naturally but are synthesized in laboratory. Pharmaceutical companies produce these drugs e.g. aspirin. The mineral iodine is used in marking tincture of iodine, a liquid that helps prevent infection of iodine when applied to cuts and bruises.

73. What is interferon & Urokinase?

FBD(GII-18), SGD(GI-18), DGK(GII-18), SWL(GII-15)

Ans: Interferon is anti-viral proteins produced by cells infected with viruses. In 1980, interferon was produced in the genetically microorganisms, for first time. The enzyme Urokinase which is used to dissolve blood clots.

74. What is morphine, Write its uses?

SWL(GI-17)

Ans. Morphine is the narcotics derived from opium. Morphine acts directly on central nervous system to relieve pain. Morphine has a high potential for addiction.

76. Write down achievement of Alexander Flemming? SWL(GI-17)

Ans. Sir Alexander Flemming was a Scottish biologist. He discovered the antibiotics penicillin from the fungus *Penicillium notatum* for which he was awarded the Nobel Prize in 1945.

77. Differentiate between sedative and disinfection. BWP(GI-19)

Ans: Sedative induce sedation by deducing irritability excitement e.g. diazepam. Disinfectants destroy microorganisms found on non-living objects.

78. Differentiate between Hallucination and Hallucinogens. BWP(GI-19)

Ans: Hallucination: Hallucination are perception that have no basis in reality but that appear entirely realistic.

Hallucinogen: Hallucinogens are the drugs that cause change in perception, thought, emotion and consciousness. Hallucinogens affect on sympathetic nervous.



SECTION III

LONG QUESTION

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1. What are the sources of drugs? Give examples.
2. Write a note on sedatives, narcotics and hallucinogens.
3. Describe the main groups of antibiotics.
4. Write a note on resistance against antibiotics.
5. Describe the mode of action of vaccines.

