

ROLL NUMBER				
----------------	--	--	--	--

SET	A
-----	---



**INDIAN SCHOOL MUSCAT  
HALF YEARLY EXAMINATION 2022  
BIOLOGY(044)**



CLASS : XI  
DATE: 21/11/2022

TIME ALLOTTED : 3 HRS.  
MAXIMUM MARKS:70

**GENERAL INSTRUCTIONS:**

- (i) *All questions are compulsory.*
- (ii) *The question paper has five sections and 33 questions. All questions are compulsory.*
- (iii) *Section–A has 16 questions of 1 mark each; Section–B has 5 questions of 2 marks each; Section–C has 7 questions of 3 marks each; Section– D has 2 case-based questions of 4 marks each; and Section-E has 3 questions of 5 marks each.*
- (iv) *There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.*
- (v) *Wherever necessary, neat and properly labeled diagrams should be drawn.*

1. Binomial nomenclature means – 1
  - (a) One name given by two scientists
  - (b) One scientific name consisting of a generic and specific epithet
  - (c) Two names, one latinised, other of a person
  - (d) Two names, one scientific, other local
2. Consider the following statements with respect to characteristic features of the kingdom. 1
  - I. In Animalia, the mode of nutrition is autotrophic.
  - II. In *Monera*, the nuclear membrane is present.
  - III. In *Protista*, the cell type is prokaryotic.
  - IV. In *Plantae*, the cell wall is present.

Which of the above statements is/are correct?

  - (a) Only I
  - (b) Only II
  - (c) Only III
  - (d) Only IV





3. Match the following columns.

1

Column I		Column II	
A.	Chrysophytes	1.	<i>Gonyaulax</i>
B.	Dinoflagellates	2.	<i>Euglena</i>
C.	Euglenoids	3.	Diatoms
D.	Slime moulds	4.	<i>Plasmodium</i>

Codes

	A	B	C	D
(a)	1	3	2	4
(b)	1	4	2	3
(c)	3	2	4	1
(d)	3	1	2	4

4. Water → Ostia → Spongocoel → Osculum

1

The above pathway of water helps in

- (a) Food gathering
- (b) Respiratory exchange
- (c) Removal of waste
- (d) All

5. The cells of the body of a multicellular fungus are organised into rapidly growing individual filament called:

1

- (a) mycelium
- (b) rhizoids
- (c) hyphae
- (d) lichens

6. Who gave the term 'Virus'?

1

- (a) D.J Iwanosky
- (b) M.W. Beijernek
- (c) Pasteur
- (d) W.M. Stanley



7. A somatic cell that has just completed the S phase of its cell cycle, as compared to gamete of the same species has. 1
- (a) Twice the number of chromosomes and four times the amount of DNA
  - (b) Four times the number of chromosomes and twice the amount of DNA
  - (c) Twice the number of chromosomes and twice the amount of DNA
  - (d) Same number of chromosomes but twice the amount of DNA
8. Lipid come under acid insoluble fraction during analysis of chemical composition of tissues. Why? 1
- (a) On grinding, the biomembranes are broken into pieces and form insoluble vesicles
  - (b) It has high molecular weight
  - (c) It is polymer
  - (d) It has low molecular weight
9. Which of the following statement gives best explanation for evolutionary advantage of meiosis? 1
- (a) Meiosis alternates with mitosis from generation to generation.
  - (b) Genetic recombination occurs during meiosis.
  - (c) Meiosis is must for sexual reproduction.
  - (d) The same genetic material passes on generation after generation.
10. Which one of the following mineral deficiency will cause hypo secretion of Thyroid hormones? 1
- (a) Iron
  - (b) Iodine
  - (c) Calcium
  - (d) Phosphorus
11. The human heart is covered by: 1
- (a) Single walled membranous pericardium
  - (b) A double walled membranous pericardium
  - (c) Single walled capsule
  - (d) A double walled membranous pleura



12. It is a cartilaginous box in the respiratory system to produce sound: 1
- (a) Glottis
  - (b) Epiglottis
  - (c) Larynx
  - (d) Trachea

**Question No. 13 to 16 consist of two** statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- A. Both A and R are true and R is the correct explanation of A.  
B. Both A and R are true and R is not the correct explanation of A.  
C. A is true but R is false.  
D. A is False but R is true.
13. Assertion (A): In prokaryotes, mitochondria are absent. 1  
Reason (R): In prokaryotes, mesosomes are present which help in respiration.
14. Assertion (A): Arachidic acid is an unsaturated fatty acid. 1  
Reason (R): There are one or more variable double bonds between carbon atoms in unsaturated fatty acids.
15. Assertion (A): In humans, Blood group “O” is called universal donor. 1  
Reason (R): This blood group can be donated to persons with any other blood groups.
16. Assertion (A): The immune responses of old persons become weak. 1  
Reason (R): Thymus is degenerated in old individuals resulting in a decreased production of thymosins.

### SECTION – B

17. R H Whittaker proposed Five kingdom classification. On what bases he classified organisms into five kingdoms. 2
18. People use products of algae for various purposes. *Agar* is obtained from algae. Name any two algae from which it is obtained and state how is it useful? 2

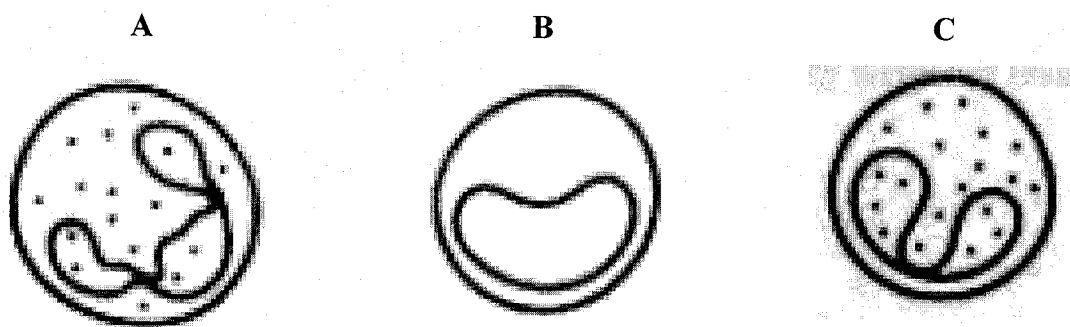




19. Polyps and Medusa are the two forms of Cnidarians. How do they differ from each other? 2
20. Mention the two divisions of peripheral neural system and where they transmit the impulses from central nervous system. 2
21. What will happen if 2
- Excess of Growth hormone is secreted in adults?
  - ADH is not secreted sufficiently?

### SECTION – C

22. Carbon di oxide diffuses from blood to alveolus through diffusion membrane. Describe the structure of diffusion membrane and why diffusion of carbon di oxide through diffusion membrane, per unit difference in partial pressure, is much higher than oxygen? Write two factors other than partial pressure of gases contribute for the diffusion of gases. 3
23. Given below are various types of white blood cells. Label them and state their functions in our body. 3



OR

Rajesh's blood group is type A and Ashish's Blood group is type B. How is blood grouping done in humans? Can Rajesh donate blood to Ashish? Justify your answer.

24. Nephrons are the filtration units of kidney. Correlate the parts with the steps in urine formation. Which parts of the human excretory system are associated with counter current mechanism? 3
25. Human vertebral column is made up of 26 vertebrae. Mention the functions of the vertebral column. 3



26. Peculiarities of certain cell organelles are given below: 3
- Involved in protein synthesis.
  - Made up of many flat, disc shaped sacs or cisternae.
  - Bear ribosomes on their surface.
  - Rich in hydrolytic enzymes.
  - Membrane is absent.

Copy the table given below and write the above peculiarities in appropriate column.

Lysosomes	Golgi apparatus	Ribosomes

27. An improved model of the structure of plasma membrane was proposed by Singer and Nicholson. 3
- What is this model called?
  - Which component forms bilayer?
  - Identify two types of proteins present in cell membrane.
28. Kingdom plantae consists of various groups of plants. Which plant group 3
- is known as ‘amphibians of plant kingdom’?
  - is considered as ‘first terrestrial plants’?
  - has naked seeds?

OR

Reason out

- Animals of porifera are diploblastic.
- Platyhelminthes are acoelomates.
- Members of the class Aves can fly but not Mammals.

### SECTION – D

Q.no 29 and 30 are case based questions. Each question has subparts with internal choice in one subpart.

29. The functions of the organs/organ systems in our body must be coordinated to maintain homeostasis. Coordination is the process through which two or more organs interact and complement the functions of one another. For example, when we do physical exercises, the energy demand is increased for maintaining an increased muscular activity. The supply of oxygen is also increased. The increased supply of oxygen necessitates an increase in the rate of respiration, heart beat and increased blood flow via blood vessels. When physical exercise is 4



stopped, the activities of nerves, lungs, heart and kidney gradually return to their normal conditions. Thus, the functions of muscles, lungs, heart, blood vessels, kidney and other organs are coordinated while performing physical exercises. In our body the neural system and the endocrine system jointly coordinate and integrate all the activities of the organs so that they function in a synchronized fashion.

- i) Define the term “coordination”.
- ii) Neural system and endocrine system work together to integrate all the activities of the various organs. However, they differ in their action. How?
- iii) Which parts of the brain are involved in regulating the breathing rate?
- iv) Name the neurotransmitters produced at the neuro-muscular junction. What is its function?

OR

What is synapse? Mention its types.

30. Mitochondria and plastids are energy factories of a cell. Plastids like chloroplasts convert the light energy into chemical energy whereas mitochondria break down the simple carbohydrates and releasing energy. Both these cell organelles need a lot of enzymes to carry out their function. A Plant cell contains both chloroplasts and mitochondria. Animal cells contain mitochondria only. 4

- i) Which cell is called power house of the cell?
- ii) How chloroplasts and mitochondria are different in structures?( 2 points only)
- iii) Write one similarity between chloroplasts and mitochondria.

OR

Why these two organelles chloroplasts and mitochondria are called semiautonomous organelles?

### SECTION – E

31. Adrenal gland is an important gland found at the anterior side of both the kidneys. What are the three regions of the adrenal cortex and what hormones do they produce? State their functions. 5

OR

How do you classify the neurons based on the number of dendrites and axon? Explain. Also how to you call the gaps between two adjacent myelin sheath?



32. Skeletal muscles will help in locomotory actions and changes of body postures in humans. How does a muscle shorten during its contraction and return to its original form during relaxation? 5

OR

Draw a standard ECG and explain the different segments in it.

33. A vegetative cell or a somatic cell undergoes a type of cell division. Name the cell division and explain the various stages of the cell division. 5

OR

Enzymes are the biocatalysts carrying out various biochemical reactions. How do you classify enzymes based on their mode of action?

**\*\*\*\*END OF THE QUESTION PAPER\*\*\*\***





9/11/22

ROLL NUMBER				
----------------	--	--	--	--

SET	B
-----	---



**INDIAN SCHOOL MUSCAT  
HALF YEARLY EXAMINATION 2022  
BIOLOGY(044)**



CLASS : XI  
DATE: 21/11/2022

TIME ALLOTTED : 3 HRS.  
MAXIMUM MARKS:70

**GENERAL INSTRUCTIONS:**

- (i) *All questions are compulsory.*
  - (ii) *The question paper has five sections and 33 questions. All questions are compulsory.*
  - (iii) *Section–A has 16 questions of 1 mark each; Section–B has 5 questions of 2 marks each; Section– C has 7 questions of 3 marks each; Section– D has 2 case-based questions of 4 marks each; and Section-E has 3 questions of 5 marks each.*
  - (iv) *There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.*
  - (v) *Wherever necessary, neat and properly labeled diagrams should be drawn.*
1. Who gave the term 'Virus'? 1
    - (a) D.J Iwanosky
    - (b) M.W. Beijerinck
    - (c) Pasteur
    - (d) W.M. Stanley
  2. Which one of the following mineral deficiency will cause hypo secretion of Thyroid hormones?
    - (a) Iron
    - (b) Iodine
    - (c) Calcium
    - (d) Phosphorus

3. Which one of the following is a substituted methane? 1
- (a) Starch
  - (b) Nucleic acid
  - (c) Amino acid
  - (d) Lipids
4. Which of the following statement gives best explanation for evolutionary advantage of meiosis? 1
- (a) Meiosis alternates with mitosis from generation to generation.
  - (b) Genetic recombination occurs during meiosis.
  - (c) Meiosis is must for sexual reproduction.
  - (d) The same genetic material passes on generation after generation.
5. Three layers present in the embryo of the animals are called Triploblastic. Which one of the following groups of animals are Triploblastic? 1
- (a) Platyhelminthes
  - (b) Porifera
  - (c) Protozoa
  - (d) Cnidaria
6. The human heart is covered by 1
- (a) Single walled membranous pericardium
  - (b) A double walled membranous pericardium
  - (c) Single walled capsule
  - (d) A double walled membranous pleura

7. Match the following columns.

1

Column I		Column II	
A.	Chrysophytes	1.	<i>Gonyaulax</i>
B.	Dinoflagellates	2.	<i>Euglena</i>
C.	Euglenoids	3.	Diatoms
D.	Slime moulds	4.	<i>Plasmodium</i>

Codes

	A	B	C	D
(a)	1	3	2	4
(b)	1	4	2	3
(c)	3	2	4	1
(d)	3	1	2	4

8. It is a cartilaginous box in the respiratory system to produce sound

1

- (a) Glottis
- (b) Epiglottis
- (c) Larynx
- (d) Trachea

9. Each basidium produces ..... basidiospores exogenously after meiosis in Basidiomycetes.

- (a) 8
- (b) 4
- (c) 2
- (d) 6

10. Diatomaceous earth is formed by the members of: 1
- (a) Chrysophytes
  - (b) Dinoflagellates
  - (c) Protozoans
  - (d) Euglenoids
11. Binomial nomenclature means – 1
- (a) One name given by two scientists
  - (b) One scientific name consisting of a generic and specific epithet
  - (c) Two names, one latinised, other of a person
  - (d) Two names, one scientific, other local
12. A somatic cell that has just completed the S phase of its cell cycle, as compared to gamete of the same species has: 1
- (a) Twice the number of chromosomes and four times the amount of DNA
  - (b) Four times the number of chromosomes and twice the amount of DNA
  - (c) Twice the number of chromosomes and twice the amount of DNA
  - (d) Same number of chromosomes but twice the amount of DNA

**Question No. 13 to 16 consist of two** statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- A. Both A and R are true and R is the correct explanation of A.
  - B. Both A and R are true and R is not the correct explanation of A.
  - C. A is true but R is false.
  - D. A is False but R is true.
13. Assertion (A): The immune responses of old persons become weak. 1
- Reason (R): Thymus is degenerated in old individuals resulting in a decreased production of thymosins.

14. Assertion (A): In humans, Blood group "O" is called universal donor. 1  
Reason (R): This blood group can be donated to persons with any other blood groups.
15. Assertion (A) : In prokaryotes, mitochondria are absent. 1  
Reason (R): In prokaryotes, mesosomes are present which help in respiration.
16. Assertion (A) : Arachidic acid is an unsaturated fatty acid. 1  
Reason (R) : There are one or more variable double bonds between carbon atoms in unsaturated fatty acids.

### SECTION – B

17. What will happen if: 2  
a) Excess of Growth hormone is secreted in adults?  
b) ADH is not secreted sufficiently?
18. *Sphagnum* is a bryophyte. Write any two uses of it. 2
19. Polyps and Medusa are the two forms of Cnidarians. How do they differ from each other? 2
20. Mention the two divisions of peripheral neural system and where they transmit the impulses from central nervous system. 2
21. Bacteria are having different shapes. Name any four major types of bacteria based on their shapes. 2

## SECTION – C

22. There are 12 pairs of ribs in human beings. How do you classify them? 3
23. Proximal Convoluted tubule is the part of nephron. Describe its role in urine formation. 3
24. Peculiarities of certain cell organelles are given below: 3
- a. Involved in protein synthesis.
  - b. Made up of many flat, disc shaped sacs or cisternae.
  - c. Bear ribosomes on their surface.
  - d. Rich in hydrolytic enzymes.
  - e. Membrane is absent.

Copy the table given below and write the above peculiarities in appropriate column.

Lysosomes	Golgi apparatus	Ribosomes

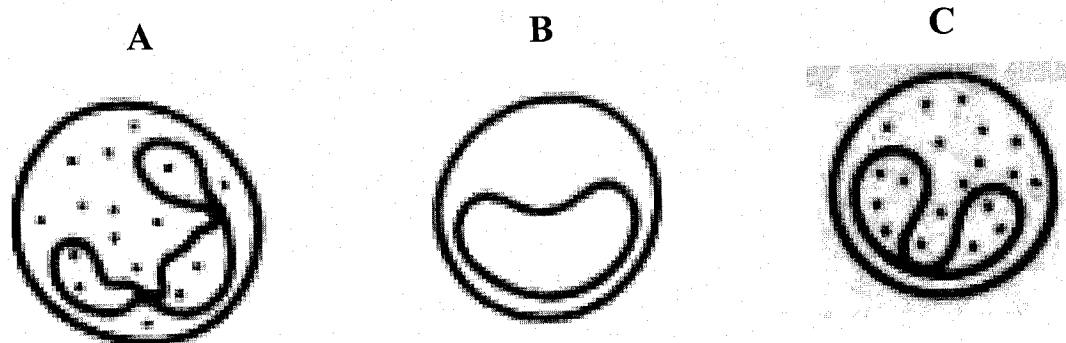
25. Kingdom plantae consists of various groups of plants. Which plant group 3
- a) is known as ‘amphibians of plant kingdom’?
  - b) is considered as ‘first terrestrial plants’?
  - c) has naked seeds?

OR

Reason out

- a) Animals of porifera are diploblastic.
- b) Platyhelminthes are acoelomates.
- c) Members of the class Aves can fly but not Mammals.

26. Given below are various types of white blood cells. Label them and state their functions in our body. 3



OR

Rajesh's blood group is type A and Ashish's Blood group is type B. How is blood grouping done in humans? Can Rajesh donate blood to Ashish? Justify your answer.

27. Carbon di oxide and oxygen are the respiratory gases. How is carbon di oxide produced in tissues during cellular respiration carried to alveolus? 3
28. An improved model of the structure of plasma membrane was proposed by Singer and Nicholson. 3
- a. What is this model called?
- b. Which component forms bilayer?
- c. Identify two types of proteins present in cell membrane.

### SECTION – D

Q.no 29 and 30 are case based questions. Each question has subparts with internal choice in one subpart.

29. The functions of the organs/organ systems in our body must be coordinated to maintain homeostasis. Coordination is the process through which two or more organs interact and complement the functions of one another. For example, when we do physical exercises, the energy demand is increased for maintaining an increased muscular activity. The supply of oxygen is also increased. The increased supply of oxygen necessitates an increase in the rate of respiration, heart beat and increased blood flow via blood vessels. When physical exercise is stopped, the activities of nerves, lungs, heart and kidney gradually return to their normal conditions. Thus, the functions of muscles, lungs, heart, blood vessels, kidney and other organs are coordinated while performing physical exercises. In our body the neural system and the endocrine system jointly coordinate and integrate all the activities of the organs so that they function in a synchronized fashion. 4

- i) Define the term “coordination”.
- ii) Neural system and endocrine system work together to integrate all the activities of the various organs. However, they differ in their action. How?
- iii) Which parts of the brain are involved in regulating the breathing rate?
- iv) Name the neurotransmitters produced at the neuro-motor junction. What is its function?

OR

What is synapse? Mention its types.

30. Mitochondria and plastids are energy factories of a cell. Plastids like chloroplasts convert the light energy into chemical energy whereas mitochondria break down 4



the simple carbohydrates and releasing energy. Both these cell organelles need a lot of enzymes to carry out their function. A Plant cell contains both chloroplasts and mitochondria. Animal cells contain mitochondria only.

- i) Which cell organelle is called power house of the cell?
- ii) How chloroplasts and mitochondria are different in structures?( 2 points only)
- iii) Write one similarity between chloroplasts and mitochondria.

OR

Why these two organelles chloroplasts and mitochondria are called semiautonomous organelles?

### SECTION – E

31. Why is pancreas known as composite gland? What is the endocrine part of the pancreas known as? Explain the type of secretory cells present in it with their functions. 5

OR

Why is brain known as 'control and command system' of our body? Explain.

32. Skeletal muscles will help in locomotory actions and changes of body postures in humans. How does a muscle shorten during its contraction and return to its original form during relaxation? 5

OR

Draw a standard ECG and explain the different segments in it.

33. A vegetative cell or a somatic cell undergoes a type of cell division. Name the cell division and explain the various stages of the cell division. 5

OR

Enzymes are the biocatalysts carrying out various biochemical reactions. How do you classify enzymes based on their mode of action?

**\*\*\*END OF THE QUESTION PAPER\*\*\***



27/11

ROLL NUMBER				
----------------	--	--	--	--

SET	C
-----	---



**INDIAN SCHOOL MUSCAT  
HALF YEARLY EXAMINATION 2022  
BIOLOGY(044)**



CLASS : XI  
DATE: 21/11/2022

TIME ALLOTTED : 3 HRS.  
MAXIMUM MARKS:70

**GENERAL INSTRUCTIONS:**

- (i) All questions are compulsory.
- (ii) The question paper has five sections and 33 questions. All questions are compulsory.
- (iii) Section–A has 16 questions of 1 mark each; Section–B has 5 questions of 2 marks each; Section–C has 7 questions of 3 marks each; Section– D has 2 case-based questions of 4 marks each; and Section-E has 3 questions of 5 marks each.
- (iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- (v) Wherever necessary, neat and properly labeled diagrams should be drawn.

1. Who gave the term 'Virus'? 1
  - (a) D.J Iwanosky
  - (b) M.W. Beijernek
  - (c) Pasteur
  - (d) W.M. Stanley
2. Which one of the following mineral deficiency will cause hypo secretion of Thyroid hormones? 1
  - (a) Iron
  - (b) Iodine
  - (c) Calcium
  - (d) Phosphorus
3. Which of the following statement gives best explanation for evolutionary advantage of meiosis? 1
  - (a) Meiosis alternates with mitosis from generation to generation.
  - (b) Genetic recombination occurs during meiosis.
  - (c) Meiosis is must for sexual reproduction.
  - (d) The same genetic material passes on generation after generation.

4. The RNA contains a base uracil in place of 1
- Adenine
  - Guanine
  - cytosine
  - thymine
5. The human heart is covered by 1
- Single walled membranous pericardium
  - A double walled membranous pericardium
  - Single walled capsule
  - A double walled membranous pleura
6. Match the following columns. 1

Column I		Column II	
A.	Chrysophytes	1.	<i>Gonyaulax</i>
B.	Dinoflagellates	2.	<i>Euglena</i>
C.	Euglenoids	3.	Diatoms
D.	Slime moulds	4.	<i>Plasmodium</i>

Codes

	A	B	C	D
(a)	1	3	2	4
(b)	1	4	2	3
(c)	3	2	4	1
(d)	3	1	2	4

7. It is a cartilaginous box in the respiratory system to produce sound 1
- Glottis
  - Epiglottis
  - Larynx
  - Trachea

8. The body of the Euglenoids are covered by 1
- a) Cell membrane
  - b) Cell wall
  - c) Pellicle
  - d) Middle lamella
9. Cells arranged in two embryonic layers i.e., external ectoderm and internal endoderm. These 1  
animals are said to be diploblastic. Which one of the following groups of animals are  
diploblastic?
- (a) Platyhelminthes
  - (b) Aschelminthes
  - (c) Annelida
  - (d) Porifera
10. Binomial nomenclature means – 1
- (a) One name given by two scientists
  - (b) One scientific name consisting of a generic and specific epithet
  - (c) Two names, one latinised, other of a person
  - (d) Two names, one scientific, other local
11. A somatic cell that has just completed the S phase of its cell cycle, as compared to gamete of 1  
the same species has.:
- (a) Twice the number of chromosomes and four times the amount of DNA
  - (b) Four times the number of chromosomes and twice the amount of DNA
  - (c) Twice the number of chromosomes and twice the amount of DNA
  - (d) Same number of chromosomes but twice the amount of DNA
12. ....are Called as 'Fungi Imperfecti' as sexual form (perfect stage) is not known 1  
for them.
- (a) Basidiomycetes
  - (b) Deurteromycetes
  - (c) Ascomycetes
  - (d) Physcomycetes

**Question No. 13 to 16 consist of two** statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true and R is not the correct explanation of A.
- C. A is true but R is false.
- D. A is False but R is true.

13. Assertion (A): The immune responses of old persons become weak. 1  
Reason (R): Thymus is degenerated in old individuals resulting in a decreased production of thymosins.
14. Assertion (A): In humans, Blood group ‘‘O’’ is called universal donor. 1  
Reason (R): This blood group can be donated to persons with any other blood groups.
15. Assertion (A) : In prokaryotes, mitochondria are absent. 1  
Reason (R): In prokaryotes, mesosomes are present which help in respiration.
16. Assertion (A) : Arachidic acid is an unsaturated fatty acid. 1  
Reason (R) : There are one or more variable double bonds between carbon atoms in unsaturated fatty acids.

### SECTION – B

17. What will happen if 2  
a) Excess of Growth hormone is secreted in adults?  
b) ADH is not secreted sufficiently?
18. i) Prothallus is a plant body of Pteridiophyta. Which generation does it represent? 2  
ii) What is meant by heterospory?
19. Polyps and Medusa are the two forms of Cnidarians. How do they differ from each other? 2

OR

Give four peculiar features of Birds.

20. Mention the two divisions of peripheral neural system and where they transmit the impulses from central nervous system. 2
21. Archaeobacteria are the types of bacteria seen in diverse, harsh habitats. Name any two major groups of Archaeobacteria with their features. 2

### SECTION – C

22. The functioning of the kidneys is efficiently monitored and regulated by hormonal feedback mechanisms involving the hypothalamus, JGA and the heart. How are osmoreceptors activated? What is its effect on hypothalamus? 3
23. Peculiarities of certain cell organelles are given below: 3
- Involved in protein synthesis.
  - Made up of many flat, disc shaped sacs or cisternae.
  - Bear ribosomes on their surface.
  - Rich in hydrolytic enzymes.
  - Membrane is absent.

Copy the table given below and write the above peculiarities in appropriate column.

Lysosomes	Golgi apparatus	Ribosomes

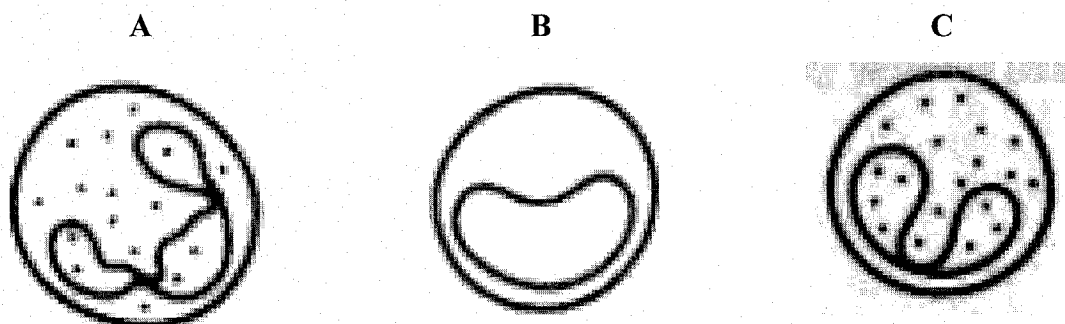
24. Kingdom plantae consists of various groups of plants. Which plant group: 3
- is known as ‘amphibians of plant kingdom’?
  - is considered as ‘first terrestrial plants’?
  - has naked seeds?

OR

Reason out

- Animals of porifera are diploblastic.
- Platyhelminthes are acoelomates.
- Members of the class Aves can fly but not Mammals.

25. Given below are various types of white blood cells. Label them and state their functions in our body. 3



OR

Rajesh's blood group is type A and Ashish's Blood group is type B. How is blood grouping done in humans? Can Rajesh donate blood to Ashish? Justify your answer.

26. Each limb is made up of 30 bones in humans. Name the bones of forelimb. 3
27. An improved model of the structure of plasma membrane was proposed by Singer and Nicholson. 3
- a. What is this model called?
- b. Which component forms bilayer?
- c. Identify two types of proteins present in cell membrane.
28. Amanda is a chain smoker. Name the chronic disorder she is likely to suffer from. How does it affect her breathing process? 3

#### SECTION – D

Q.no 29 and 30 are case based questions. Each question has subparts with internal choice in one subpart.

29. The functions of the organs/organ systems in our body must be coordinated to maintain homeostasis. Coordination is the process through which two or more organs interact and complement the functions of one another. For example, when we do physical exercises, the energy demand is increased for maintaining an increased muscular activity. The supply of oxygen is also increased. The increased supply of oxygen necessitates an increase in the rate of respiration, heart beat and increased blood flow via blood vessels. When physical exercise is stopped, the activities of nerves, lungs, heart and kidney gradually return to their normal conditions. Thus, the functions of muscles, lungs, heart, blood vessels, kidney and other organs 4



are coordinated while performing physical exercises. In our body the neural system and the endocrine system jointly coordinate and integrate all the activities of the organs so that they function in a synchronized fashion.

- i) Define the term “coordination”.
- ii) Neural system and endocrine system work together to integrate all the activities of the various organs. However, they differ in their action. How?
- iii) Which parts of the brain are involved in regulating the breathing rate?
- iv) Name the neurotransmitters produced at the neuro-motor junction. What is its function?

OR

What is synapse? Mention its types.

30. Mitochondria and plastids are energy factories of a cell. Plastids like chloroplasts convert the light energy into chemical energy whereas mitochondria break down the simple carbohydrates and releasing energy. Both these cell organelles need a lot of enzymes to carry out their function. A Plant cell contains both chloroplasts and mitochondria. Animal cells contain mitochondria only. 4

- i) Which cell is called power house of the cell?
- ii) How chloroplasts and mitochondria are different in structures?( 2 points only)
- iii) Write one similarity between chloroplasts and mitochondria.

OR

Why these two organelles chloroplasts and mitochondria are called semiautonomous organelles?

#### SECTION – E

31. Skeletal muscles will help in locomotory actions and changes of body postures in humans. How does a muscle shorten during its contraction and return to its original form during relaxation? 5

OR

Draw a standard ECG and explain the different segments in it.

32. Adrenal gland is an important gland found at the anterior side of both the kidneys. What are the three regions of the adrenal cortex and what hormones do they produce? State their functions. 5

OR

How do you classify the neurons based on the number of dendrites and axon? Explain. Also how do you call the gaps between two adjacent myelin sheath?

33. A type of cell division in which chromosome number is reduced to half in a daughter cell. 5  
Explain how this type of cell division will bring variations in organisms.

OR

Cellulose, Starch, inulin, Glycogen and chitin are polysaccharides. Explain how do they differ from each other?

**\*\*\*\*END OF THE QUESTION PAPER\*\*\*\***