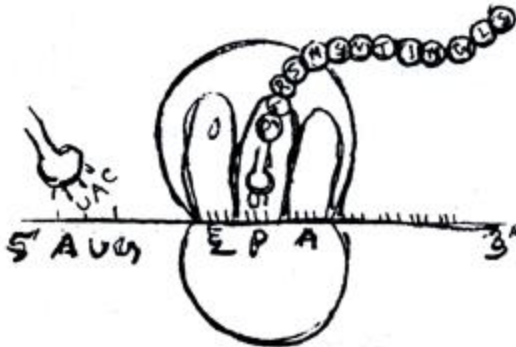


Time: 2 Hrs 10 min

Full marks: 40

[Answer any four questions.]

1. Observe the diagram and answer the question.



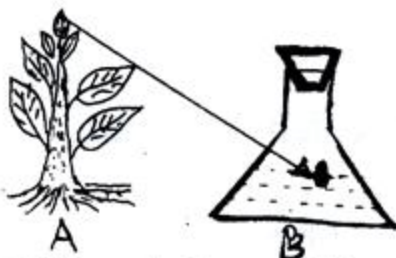
- What is Hyaloplasm? 1
- Draw a labelled diagram of Fluid Mosaic Model. 2
- Which process is associated with above figure? Describe with diagram. 3
- Diffefentiate the above mentioned process with another one. Where mRNA is produced. 4

2. Read the passage and answer the question.

Alvi observed the slides of different stages of a certain cell division under the microscope in his practical class. He noticed an 'x' like structure in between two chromatids of two homologous chromosomes. His teacher told him, in this point crossing over takes place and due to this, genetic variation occurs.

- What is crossing over? 1
- Mention the nucleotides of DNA and RNA in a table. 2
- Which stage of cell division was observed by Alvi? Describe the stage and its next stage with labelled diagram. 3
- Evaluate the statement of Alvi's teacher in above stimulus. 4

3. Observe the diagram and answer question.



- What is Recombinant DNA Technology? 1
- What do you mean by cell cycle? 2

c) Which process is carried on by above figure? Describe with diagram. 3

d) Analyze the significance of above process in our agricultural sector. 4

4. There is a carp which eat mud, sand, even the bottom detritus.

a) Define air bladder. 1

b) Why the circulation of rohu is called single circuit circulation? 2

c) Write the food and feeding mechanism of another animal studied by you which belongs to the phylum cnidaria. 3

d) Write the structure and function of the air bladder of the mentioned carp of the stem. 4

5.



Fig. A



Fig. B



Fig. C

a) Define metamerism. 1

b) Which animals belong to the pseudocoelomate group? 2

c) Write the identifying characteristics with example of figurer A and B. 3

d) The heart of figure C is three chambered— Discuss the characteristics with examples of the four chambered animal classes. 4

6. The zoology teacher explained the phenomenon regeration giving an example of a cniderian animal. She also taught mutualism from the some example.

a) What is operculum? 1

b) How hypnotoxin works? 2

c) Give a labelled diagram of the specialized cell of the mentioned animal by which it catch prey and perform locomotion also. 3

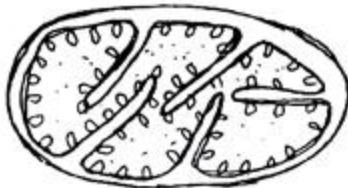
d) Mutualism is one kind of symbiosis Explain this line mentioning different symbiotic relation. 4

Time : 35 Minutes

[N.B. Fill the circle of the correct answer with a black ball point pen. Each question bears 1 mark.]

- Which organelle is known as the packaging centre of the cell?
 (a) Ribosome (b) Mitochondria
 (c) Lysosome (d) Golgi body
- Who named protoplasm?
 (a) F. Dujardin (b) Purkinje
 (c) Schultze (d) Denda

Observe the diagram and answer questions 3-4.



- Which is the percentage of DNA in above figure?
 (a) 5% (b) 0.5%
 (c) 4% (d) 0.4%
- The organelle in plant cell—
 i) Store ATP
 ii) Synthesises protein
 iii) Supplies enzymes
Which one is correct ?
 (a) i, ii (b) ii, iii
 (c) i, and iii (d) i, ii and iii
- If the nitrogen base sequence of one strand of DNA is GTTCAC, then the base sequence of other strand is—
 (a) CGTCAA (b) CAAGTG
 (c) AACGTT (d) TTCGAC
- Which are the stop or non-sense codon?
 i) AUG, GCC, UGA
 ii) AAA, AGU, GUC
 iii) UAA, UGA, UAG
Which one is correct ?
 (a) i (b) ii
 (c) iii (d) i, ii and iii
- The ATPase enzyme is present in—
 (a) Ribosome (b) Lysosome
 (c) Golgi body (d) Centriole

- According to fluid mosaic model, the main components of cell wall are—
 (a) Phospholipid and cholesterol.
 (b) Phospholipid and protein
 (c) Phospholipid and Glycocalyx
 (d) Glycocalyx and Cholesterol
 - Which pair is correct?
 (a) G₁, Phase-DNA replication
 (b) G₂ phase-preparation for mitosis
 (c) S phase cell division (d) M phase- cell growth
- Observe the diagram and answer the questions: 10-11.



- Which is the name of above fig.x?
 (a) Pro-metaphase (b) Metaphase
 (c) Anaphase (d) Telophase
- What is the name of A marked part of fig. X?
 (a) centromere (b) Centriole
 (c) Chromatid (d) Spindle
- What is the role of the spindle during mitosis?
 (a) It helps separate the chromosome
 (b) It breaks down the nuclear membrane
 (c) It duplicates the DNA
 (d) It divides the cell into half
- Gametes are produced by the process of—
 (a) mitosis (b) meiosis
 (c) crossing over (d) replication
- Crossing over occurs in the substage of—
 (a) Zygotene (b) pachytene
 (c) Diplotene (d) Diakinesis
- The term "homologous chromosomes"—
 (a) refers to replication of the same chromosome
 (b) is another name for sister chromatid
 (c) must be haploid
 (d) means a pair of chromosomes of the same kind

16. Who first introduced the term Biotechnology?
 Ⓐ E. Jenner Ⓑ Waksman
 Ⓒ Haberlandt Ⓓ K. Ereky
17. A small, circular DNA molecule used as a vector to transmit foreign DNA is a—
 Ⓐ Plasmid Ⓑ Prion
 Ⓒ Liposome Ⓓ Lipofectin
18. Transgenic organisms are—
 Ⓐ Produced by gene transfer technology
 Ⓑ extinct organism
 Ⓒ Naturally occurring and endemic
 Ⓓ Produced by traditional plant breeding technique
19. Which is included under the super class of dynathe?
 Ⓐ Myxine Ⓑ Petromyzon
 Ⓒ Latimeria Ⓓ Prostis
20. Which is known as connecting layer of Hydra?
 Ⓐ Epidermis Ⓑ Mesoglea
 Ⓒ Gastrodermis Ⓓ Neuritis
21. Which is not related with the capturing of food and locomotion of Hydra?
 Ⓐ Penetrant Ⓑ Cnidocil
 Ⓒ Nolvent Ⓓ Glutinant
22. Where rete mirabile is present?
 Ⓐ dirbladder Ⓑ Gill
 Ⓒ Stomach Ⓓ liver
23. The vein which carry blood from the anterior and posterior part of the fish is called—
 Ⓐ Branchial vein Ⓑ Cardinal vein
 Ⓒ Subcla vian Ⓓ Ductus Cuieri
- Answer the question no 24-27 from the following stem.**
 Arisha and her family went at Button Rouge restaurant for dinner. But Asisha's mother avoided three dishes there. One was tuna's salad another was crab curry and last was a dish made by hamellidens.
24. Tuna fish belongs to which class?
 Ⓐ Myxini Ⓑ Chondrichthyes
 Ⓒ Aues Ⓓ Amphibia
25. Which of the following belongs to the same phylum of Lamellidens?
 Ⓐ Apis Ⓑ Pila
 Ⓒ Tacnia Ⓓ Obelia
26. The characteristic of the phylum, where crab belongs to is—
 Ⓐ Jointed appendages Ⓑ Free living parasite
 Ⓒ Contain sucker Ⓓ Have tube feet
27. What is the similarities between the three animals of the stem?
 Ⓐ They all are marine
 Ⓑ They are segmented
 Ⓒ All contain heterocircal tail
 Ⓓ They contain hard shell
28. The bud of Hydra is formed by—
 Ⓐ Epithelio-muscular cell
 Ⓑ Interstitial cell
 Ⓒ Sensory cell Ⓓ Gland cell
29. In Rohu's body de-oxygenated blood is carried by—
 i) Afferent artery
 ii) Efferent artery
 iii) Capillary
- Which one is correct?**
 Ⓐ i Ⓑ ii
 Ⓒ iii Ⓓ i, ii & iii
30. The gills of rohu are located where?
 Ⓐ Branchial chamber Ⓑ Thoracic chamber
 Ⓒ Abdominal chamber Ⓓ None of the above
31. Which one is found in the common on carp?
 Ⓐ Ganoid scale Ⓑ Ctenoid scale
 Ⓒ Cycloid ceale Ⓓ Placoid scale
32. Which are not the characteristics of Acatinopterygii?
 i) Caudal fin homocircal
 ii) Placoid scale present
 iii) swin bladder absent
- Which one is correct ?**
 Ⓐ i, ii Ⓑ ii, iii Ⓒ i, and iii Ⓓ i, ii and iii
33. Mesoglea is formed in which stage of life cycle in Hydra?
 Ⓐ Morula Ⓑ Blastula
 Ⓒ Gastrula Ⓓ Cleavage
34. The production of a large number of genetically similar plants through plant tissue culture is called—
 Ⓐ hybridization
 Ⓑ Recombinant DNA technology
 Ⓒ Micropropagation Ⓓ gene therapy
35. Golden rice is—
 Ⓐ A hybrid rice developed by traditional breeding
 Ⓑ A rice variety obtained by tissue culture
 Ⓒ A rice variety obtained by recombinant DNA technology
 Ⓓ A hybrid rice developed by DNA fingerprinting