

PRACTICE PAPER-1

CLASS: XII

SUBJECT : BIOLOGY

Time Allowed : 3 hours

Maximum Marks : 70

General Instructions :

- (1) The question paper has five sections and 33 questions. All questions are compulsory.
- (2) 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
Section – E has 3 questions of 5 marks each.
- (3) There is no overall choice. However, internal choices have been provided in some questions. Student has to attempt only one of the alternatives in such questions.
- (4) Wherever necessary, neat and properly labelled diagrams should be drawn.

SECTION – A

1. Filiform apparatus is found in: [1]
(a) Central cell (b) Antipodal cell (c) Synergids (d) Egg cell
2. Seminal plasma, the fluid part of semen, is contributed by [1]
(i) Seminal vesicle (ii) Prostate gland (iii) Urethra (iv) Bulbourethral gland
(a) (i) and (ii) (b) (i), (ii) and (iv) (c) (ii), (iii) and (iv) (d) (i) and (iv)
3. In the F_2 generation of a Mendelian dihybrid cross the number of phenotypes and genotypes are- [1]
(a) Phenotypes – 4; Genotypes – 16 (b) Phenotypes – 9; Genotypes – 4
(c) Phenotypes – 4; Genotypes – 8 (d) Phenotypes – 4; Genotypes – 9
4. Oxygen in atmosphere has been formed by : [1]
(a) Evaporation of water (b) Photosynthesis of blue green algae
(c) Metabolism of microorganisms (d) Decaying organisms
5. If the sequence of nitrogen bases of the coding strand of DNA in a transcription unit is: 5'-ATGAATG-3', the sequence of bases in its RNA transcript would be: [1]
(a) 5-AUGAAUG-3. (b) 5'-UACUAC-3'. (c) 5'-CAUUC AU-3' (d) 5'-GUAAGUA-3'
6. The term 'Health' is defined in many ways. The most accurate definition of the health would be [1]
(a) Health is the state of body and mind in a balanced condition.
(b) Health is the reflection of a smiling face.
(c) Health is a state of complete physical, mental, and social well-being.
(d) Health is the symbol of economic prosperity

7. Which of the following are the reason (s) for Rheumatoid arthritis? Choose the correct option. [1]
 (i) Lymphocytes become more active.
 (ii) Body attacks self-cells.
 (iii) More antibodies are produced in the body.
 (iv) The ability to differentiate pathogens or foreign molecules from self-cells is lost.
 (a) (i) and (ii) (b) (ii) and (iv) (c) (iii) and (iv) (d) (i) and (iii)
8. Identify the odd one from the following: [1]
 (a) Labia minora (b) Fimbriae (c) Infundibulum (d) Isthmus
9. Which gases are produced in anaerobic sludge digesters? [1]
 (a) Methane and CO₂ only (b) Methane, hydrogen sulphide and CO₂
 (c) Methane, hydrogen sulphide and O₂ (d) Hydrogen sulphide and CO₂
10. A population has more young individuals compared to the older individuals. What would be the status of the population after some years? [1]
 (a) It will decline. (b) It will stabilize.
 (c) It will increase. (d) It will first decline and then stabilize.
11. Match the items in Column A and Column 'B' and choose the correct answer. [1]

S.No.	Column - A (Recombinant Proteins)		Column - B (Therapeutic uses)
a.	Insulin	(i)	For treating haemophilia A
b.	D-Nase-I	(ii)	For the treatment of diabetes mellitus
c.	Factor - VIII	(iii)	For treatment of cystic fibrosis
d.	Bovine growth hormone	(iv)	For increasing milk yield

The correct answer is:

- (a) a-i, b-ii, c-iii, d-iv (b) a-ii, b-iii, c-i, d-iv
 (c) a-iii, b-iv, c-ii, d-i (d) a-iv, b-ii, c-i, d-iii
12. Which one of the following is not a major characteristic feature of biodiversity hot spots? [1]
 (a) Large number of species (b) Abundance of endemic species
 (c) Mostly located in the tropics (d) Mostly located in the polar regions

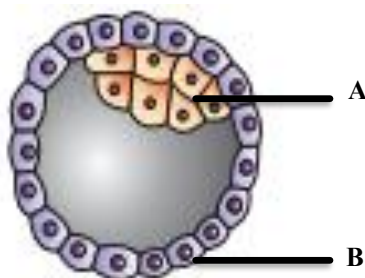
Question 13 to 16 consist of two statements - Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- (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 globular embryo is considered as pro-embryo.
Reason (R) : The plumule, radical and cotyledons start differentiation during heart stage of embryo. [1]
- (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.
14. **Assertion (A) :** Female birds are heterogametic and male are homogametic.
Reason (R) : In birds, the chromosomes composition of the egg determines the sex. [1]
- (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.
15. **Assertion (A):** 'Saheli' is considered as an improved form of contraceptive for human females.
Reason (R) : It is a non-steroidal preparation and is once a week pill. [1]
- (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.
16. **Assertion (A) :-** Trophic level represents a functional level.
Reason (R) :- Trophic level represents a species level. [1]
- (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.

SECTION – B

17. Study the figure given below and answer the questions that follow?



- (a) Name the stage of human embryo the figure represent.
 (b) Identify (A) in the figure and mention its function. [2]

18. About 8% male the human population are colourblind whereas only 0.4% of females are colourblind. Write an explanation to show how it is possible. [2]
19. Mention one application for each of the following :- [2]
 (a) Passive immunisation (b) Anti-histamine (c) Colostrum (d) Cytokinin-barrier
20. (a) Explain with the help of a suitable example the naming of a restriction endonuclease.
 (b) Name the source organism of Taq polymerase. Explain the specific role of this enzyme in PCR. [2]
21. Observe the set of Figures A, B and answer the following questions.



(A)

(B)

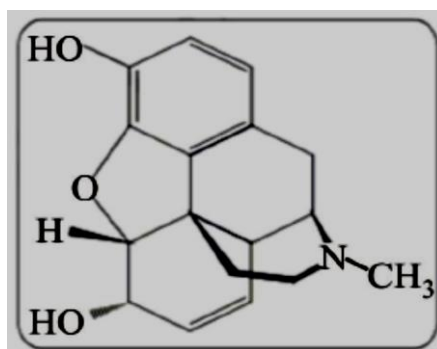
- (a) Which one of the figures shows mutualism?
 (b) What kind of association is shown in B? [2]

OR

Can you work out at how many trophic levels human beings functions in a food chain? [2]

SECTION – C

22. (a) Most of the zygotes divides only after certain a most of endosperms is formed. why?
 (b) Trace the development of an endosperm after fertilisation with reference to coconut.
 Mention the importance of endosperm development. [3]
23. Explain the functions of the following structures of the human sperm.
 (a) Mitochondria (b) Hydrolytic enzymes (c) Tail [3]
24. (a) Why both the strands are not copied during transcription? Give two reason.
 (b) All the reference point while defining a transcription unit is made from. [3]
25. Life originated from the Earth's inorganic atmosphere in the past, but this is no longer happens today. Give two reasons? [3]
26. The figure given below is a chemical structure of a drug obtain form a plant. Study it and give the answer of asked questions that follow.

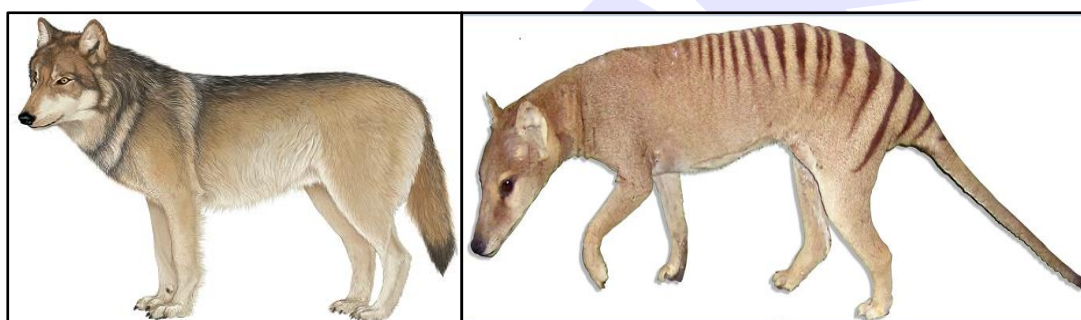


- (a) Write the name of given chemical structure.
 (b) What are the modes of consumption of these drugs?
 (c) Name the organ of the body which is affected by consumption of these drugs. [3]

OR

- (a) Name the lymphoid organ in humans where all the blood cells are produced.
 (b) Where do the lymphocytes produced by the lymphoid organ mentioned above migrate and how do they affect immunity? [3]

27. Refer to the figure given below and answer the questions that follow :



- (a) Recognize and explain the process by which Tasmanian wolf evolved.
 (b) Give one example of an animal that has evolved along with Tasmanian wolf. Name the process that result in evolution of wolf and Tasmanian wolf.
 (c) Compare the two animals shown. [3]
28. Since the origin of life on Earth , there were five episodes of mass extinction of species?
 (a) How is the 'Sixth Extinction', presently in progress, different from the previous episodes?
 (b) Who is mainly responsible for the 'Sixth Extinction'?
 (c) List any four points that can help to overcome this disaster. [3]

SECTION – D

Question 29 and 30 are case based questions. Each question has subparts with internal choice in one subpart.

29. Read the following passage and answer the given questions.

Your batchmate 'X' is the daughter of a HIV positive mother and she tests positive too. Most of the your classmates do not mingle with her at all and their parents want the school to send 'X' out. But the principal arranges for a lecture by a qualified doctors, now that the parents are convinced, 'X' continues to study in the same school.

- (a) Write the name of diagnostic test by which it is confirm that your batchmate 'X' is positive to HIV.
- (b) How the parents are convinced, that 'X' continues to study in the same school after a lecture by a qualified doctors.
- (c) Write any four way of transmission of HIV - infection.

OR

- (c) What programs has started by WHO to prevent the spreading of HIV infection. [4]

30. Read the following passage and answer the given questions.

Nucleic acids are long polymers of nucleotides. While DNA stores genetic information, RNA mostly helps in transfer and expression of information. Though DNA and RNA both function as genetic material, but DNA being chemically and structurally more stable is a better genetic material. However, RNA is the first to evolve and DNA was derived from RNA. The hallmark of the double stranded helical structure of DNA is the hydrogen bonding between the bases from opposite strands. The rule is that Adenine pairs with Thymine through two H-bonds, and Guanine with Cytosine through three H-bonds. This makes one strand complementary to the other. The DNA replicates semi-conservatively, the process is guided by the complementary H-bonding.

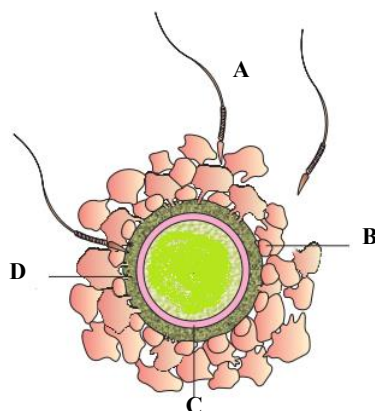
- (a) Which is better genetic material out of RNA and DNA?
- (b) What is the nature of the 2 strands of a DNA double helix?
- (c) Write the appropriate name of nitrogenous base that correctly fill in the blanks. Pyrimidines present in DNA are(A)..... and(B)..... while pyrimidines present in RNA are(C)..... and (D).....

OR

- (c) If a double stranded DNA has 20 per cent of cytosine, calculate the per cent of adenine in the DNA. [4]

SECTION – E

- 31.** Given below is the diagram of ovum surrounded by few sperms. Observe it and answer the question that follow : [5]



- (a) Labeled the A,B,C and D.
- (b) Analyze the changes occurring in the ovum during the process.

- (c) What is the role of zona pellucida in this process?
- (d) Mention what helps in the entry of sperm into the ovum?
- (e) Specify the region of female reproductive system where the event represented in the diagram takes place.

OR

The zygote passes through several developmental stages till implantation, Describe with a suitable diagrams. [5]

- 32.(a) Given below is the sequence of coding strand of DNA in a transcription unit.
3-AATGCAGCTATTAGG - 5 Write the sequence of : [5]
- (i) its complementary strand.
 - (ii) the mRNA
- (b) List two essential roles of ribosome during translation.

OR

Explain how does lac operon in *E.coli* operate.

- (a) in the absence of an inducer.
- (b) in the presence of an inducer.

[5]

33. Read the following passage and answer the given questions.

The crown gall is a neoplastic disease of most dicotyledonous plants and is caused by the soil bacterium *Agrobacterium tumefaciens*. A plasmid in these bacteria was found to be responsible for this disease plasmid is known as Ti plasmid. Bacteria free crown gall cells can be cultured in the absence of phytohormones. Ti plasmid is widely used in genetic engineering to deliver the desirable genes. The part of Ti plasmid transferred into plant cell is called T-DNA. T-DNA with desired DNA segment is inserted into the genome of host plant where it copies of itself.

- (a) What is represented by Ti in the given plasmid.
- (b) What is T- DNA in the Ti plasmid ?
- (c) What do you means by disarmed plasmid ?
- (d) Why *Agrobacterium tumefaciens* is known as a natural genetic engineer of plant ?
- (e) What are advantages of *Agrobacterium* mediated gene transfer?

[5]

OR

Read the following passage and answer the given questions.

The plants having foreign genes in their genome inserted through genetic engineering are called transgenic plants. Genes can be incorporated either through a vector or through direct introduction of DNA. Bt cotton is a genetic modified organism which is pest resistant. It is used to control the growth of some insects. Bt cotton can resist cotton bollworm and produce higher yields. Cry protein (Bt toxin) is produced by cry gene. It is an endotoxin which remains as protoxin in plants and converted to active toxin after getting ingested by the insects. The activated toxin creates pores in the midgut of the insects which in turn leads to their death.

- (a) Why does the toxin produced by *Bacillus thuringiensis* not kill the *Bacillus*?
- (b) Write the name of groups of insects which killed by protein produced by *Bacillus thuringiensis*?
- (c) How protoxin are converted in to active Bt toxins?
- (d) Mention the role of the proteins encoded by the genes cryIAC and cryIIAb.
- (e) How can *Bacillus thuringiensis* used is bio-pesticides?

[5]