



S.R. Study Material

S R SAMPLE PAPER 3

Class 12 - Biology

Time Allowed: 3 hours

Maximum Marks: 70

General Instructions:

1. All questions are compulsory.
2. The question paper has five sections and 33 questions. All questions are compulsory.
3. 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.
4. 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.
5. Wherever necessary, neat and properly labeled diagrams should be drawn.

Section A

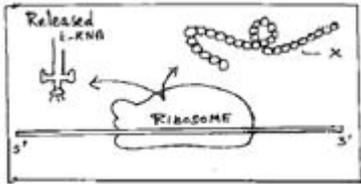
1. Filiform apparatus present at micropylar part of the Synergids help in: [1]
 - a) Providing nutrition to the embryo
 - b) Help in germination of seed
 - c) Help in absorption of water
 - d) Guiding the entry of pollen tube
2. The discovery that led to development of first antibiotic was made by: [1]
 - a) Pasteur
 - b) Flemming
 - c) Jenner
 - d) Pauling
3. The term Darwinian fitness among populations living together signifies: [1]
 - a) Carrying capacity
 - b) Population density
 - c) Reproductive fitness
 - d) Growth fitness
4. EtBr is a mutagen as: [1]
 - a) It is used to treat trypanosmosis
 - b) It causes mutations
 - c) It is carcinogenic
 - d) It fluoresces under UV
5. The taxon facing a very high risk of extinction in the wild and can become extinct any moment in the immediate future are called _____. [1]
 - a) Vulnerable
 - b) Date deficient
 - c) Critically endangered
 - d) Endangered
6. Physical and chemical changes in the egg cortex which occur after the sperm entry into the egg is called _____. [1]

- a) Cortical reaction
- b) Cleavage
- c) Metamorphosis
- d) Embryological changes

7. Which one of the following is related with genetic engineering? [1]

- a) Lysosomes
- b) Mitochondria
- c) Plastids
- d) Plasmids

8. What does X represent in the following diagram: [1]

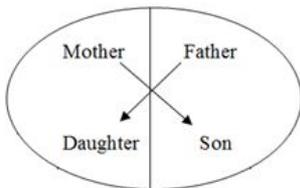


- a) Released tertiary protein
- b) Released polypeptide chain
- c) Released secondary protein
- d) Released 3D protein molecule

9. Continued self-pollination results in inbreeding depression as they: [1]

- a) Help in evolution
- b) Produce pure line
- c) New genes are accumulated
- d) Mutation is established

10. Represented below is the inheritance pattern of a certain type of trait in humans. Which one of the following conditions could be an example of this pattern? [1]

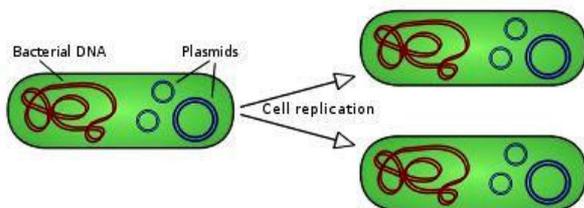


- a) Thalassaemia
- b) Haemophilia
- c) Sickle Cell anemia
- d) Phenyl ketonuria

11. To initiate translation, the mRNA first binds to: [1]

- a) The smaller ribosomal sub-unit
- b) The larger ribosomal sub-unit
- c) No such specificity exists
- d) The whole ribosome

12. Which of the following is true for a Plasmid - [1]



- a) It can be replicate independently
- b) It cannot replicate
- c) It lies together with chromosomes
- d) It shows independent assortment

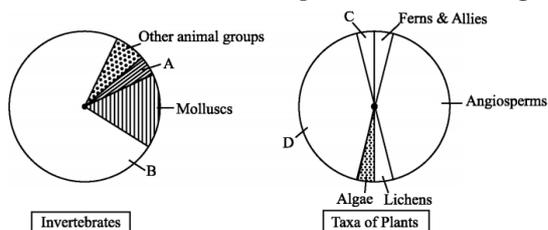
13. **Assertion (A):** In humans, the gamete contributed by the male determines whether the child produced will be male or female. [1]

Reason (R): Sex determination in humans is a polygenic trait depending upon a cumulative effect of some genes on X-chromosome and some on T-chromosome.

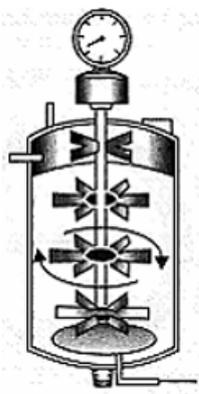
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true.
14. **Assertion (A):** The earliest organisms that appeared on the earth were non-green and presumably anaerobes. [1]
Reason (R): The first autotrophic organisms were the chemo-autotrophs that never released oxygen.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but 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):** Template or antisense strand, having 3' → 5' polarity takes part in transcription. [1]
Reason (R): Non-template or sense strand, having 5' → 3' polarity, does not take part in transcription.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but 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):** Immunity means all capacity of human body to resist almost all types of organisms or toxins that tend to damage the tissues and organs. [1]
Reason (R): Spleen is the only organ involved in immunity.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but 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

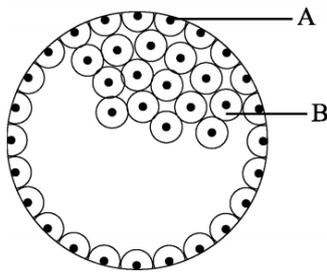
17. Some of the microbes used as biofertilizers are prokaryotes. Name the taxonomic group they come under. With the help of an example, mention how they act as biofertilizers. [2]
18. Study the pie-diagram and answer the questions which follows: [2]
 What do A, B, C and D represent in these diagrams.



19. Name the type of bioreactor shown. Write the purpose for which it is used. [2]



20. In the given figure, give the name and functions of parts labelled A and B. [2]



21. In the following table of interspecific interactions, fill the blanks with (+) sign for beneficial interaction, (-) sign for detrimental and 0 for neutral interaction. [2]

Species A	Species B	Name of Interaction
+		Mutualism
	-	Competition
	-	Predation
+		Parasitism
+		Commensalism
	0	Amensalism

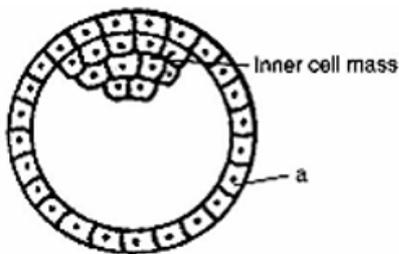
OR

Define the following terms:

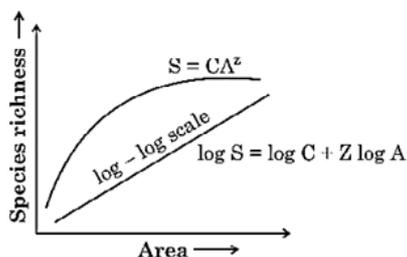
- (a) Leaching
(b) Photoperiodism

Section C

22. What are the drawbacks of use of enzymes in biotechnology as compared to inorganic catalyst? [3]
23. Study the below figure and answer the question that follows: [3]



- i. Identify 'a' and which part of the placenta is formed by 'a'?
ii. Mention the fate of the inner cell mass after implantation in the uterus.
iii. Where are the stem cells located in this embryo?
24. Mention any two autosomal genetic disorders with their symptoms. [3]
25. a. Write the inference drawn by Alexander von Humboldt after his extensive explorations of South American jungle. [3]
b. Study the graph given below:



As per Alexander von Humboldt, what do the symbols S, A, Z and C in the graph stand for, in respect of a species and area relationship?

26. List three strategies that a bisexual chasmogamous flower can evolve to prevent self-pollination (autogamy). [3]

OR

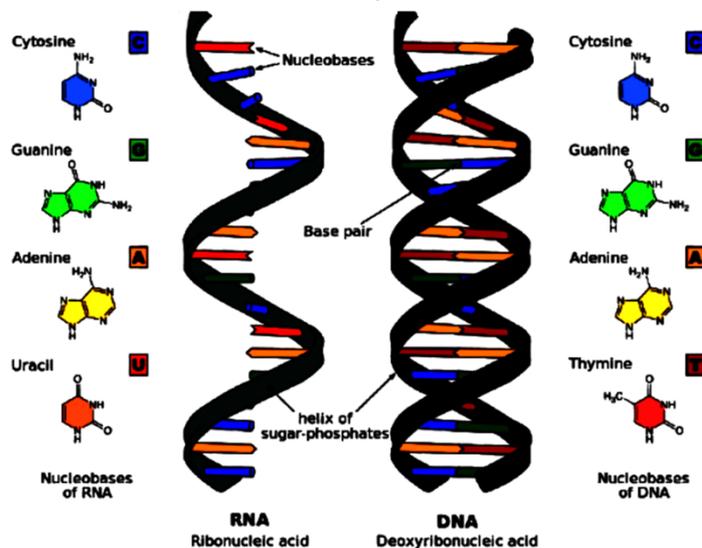
Explain the role of tapetum in the formation of pollen grain wall.

27. Flow of energy through various trophic levels in an ecosystem is unidirectional and non-cyclic. Explain. [3]
28. Briefly give an account of various intra uterine contraceptive measures. What are advantages? How do they function? [3]

Section D

29. **Read the text carefully and answer the questions:** [4]

RNA or ribonucleic acid is a single chain polyribonucleotide that functions as a carrier of coded genetic or hereditary information from DNA to cytoplasm for taking part in protein and enzyme synthesis. Six types of RNAs are ribosomal, transfer, messenger, genomic, small nuclear and small cytoplasmic RNA. Out of these, rRNA, mRNA and tRNA are major classes of RNAs that are involved in gene expression.



- (i) Why tRNA also referred as soluble RNA?
- (ii) The RNA that picks up specific amino acid from amino acid pool in the cytoplasm to ribosome during protein synthesis is tRNA. justify
- (iii) What is found in both DNA and messenger RNA?

OR

Write briefly about RNA?

30. **Read the text carefully and answer the questions:** [4]

Animals with manipulated genetic material (carrying recombinant DNA) are known as transgenic animals. Transgenic technology provides a method to rapidly introduce new genes into animals without cross breeding. It is a powerful technique for studying fundamental problems of mammalian development. Transgenic technology has been developed and found perfect in the laboratory on mice. The three most common gene transfer techniques namely: DNA microinjection, ES-cell mediated and Retrovirus mediated gene transfer are the most important to have enabled the production of transgenic cattle, sheep, goat, pig and other animals. Transgenic animals have the potential of agricultural applications like improved growth rate and carcass composition, improved resistance to disease, increased milk yield, improved wool production and so on. The scientific outlook of right and wrong opinions about transgenic animals is called ethics of transgenic animals. These

ethical and animal welfare issues surround transgenic animal technology and can only be minimized or avoided through awareness creation about the merit of this technology.

- (i) How are humans benefitted from transgenic animals?
- (ii) Name any r-DNA vaccine produced from transgenic organism?
- (iii) Name the vector which is most commonly used to produce transgenic animals and the organization set up by Indian Government to check safety of introducing transgenic animals for human services.

OR

Why are transgenic animals important?

Section E

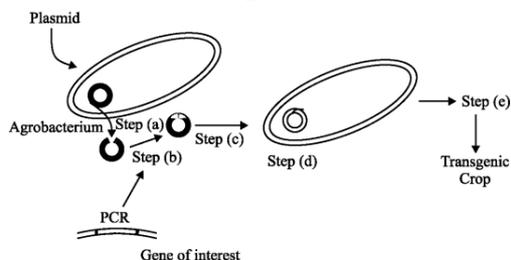
31. State and explain any three factors affecting allele frequency in populations. [5]

OR

State the theory of Biogenesis. How does Miller's experiment support this theory?

32. A transgenic crop is a genetically modified organism (GMO). Transgenic indicates that a transfer of genes has occurred using recombinant DNA technology [1]. Generally, a transgenic crop contains one or more genes that have been inserted artificially either from an unrelated plant or from different species altogether. [5]

In the given figure, Agrobacterium is utilized for the production of a transgenic crop. Explain the steps a, b, c, d and e shown in the figure.

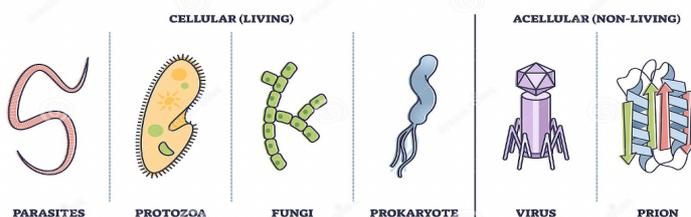


OR

- i. Name the insect that attacks cotton crops and causes a lot of damage to the crop. How has Bt cotton plants overcome this problem and saved the crop? Explain.
- ii. Write the role of gene Cry IAB.

33. The pathogen of a disease depends on RBCs of human for growth and reproduction. The person with this pathogen suffers with chill and high fever. [5]

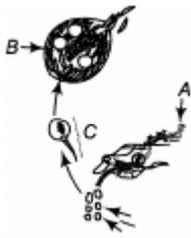
TYPES OF PATHOGENS



- i. Identify the disease.
- ii. Name the pathogen.
- iii. What is the cause of fever? **OR**
- iv. Represent the life cycle of the pathogen diagrammatically.

OR

Study a part of the life cycle of malarial parasite given below. Answer the questions that follows:



- i. Mention the role of A in the life cycle of the malarial parasite.
- ii. Name the event C and the organ where this event occurs.
- iii. Identify the organ B and name the cells being released from it.

TO GET THE SOLUTION OF THIS PAPER AT RS 25 CLICK HERE
<https://cbsestudymaterial.myinstamojo.com/product/4729471/sample-paper-3-solution-biology-65c37/>