

Sample Paper - 2015
Class – XII
Subject - Biology(044)

SET-I

Time: 3 hrs.

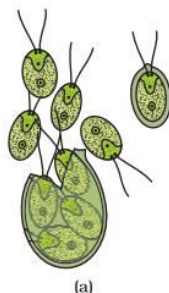
Maximum Marks. 70

General Instructions:

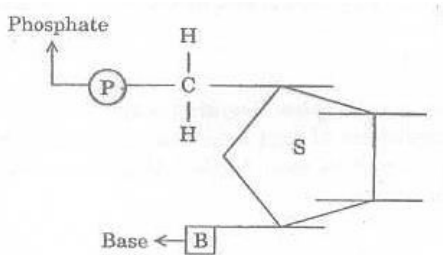
- i) All questions are compulsory.
- ii) This question paper consists of five sections A, B, C, D and E. Section A contains 5 questions of **one** mark each; section B contains 5 questions of **two** marks each, section C contains 12 questions of **three** marks each, section D contains 1 questions of **four** mark and section E contain 3 questions of **five** marks each.
- iii) There is no overall choice. However, an internal choice has been provided in one question of two marks, one question of three marks and all three questions of five marks Weightage. A student has to attempt only one of the alternatives in such questions.
- iv) Wherever necessary, the diagrams drawn should be properly labeled.

SECTION – A

1. Identify this reproductive structure and name the organism they are being released from. (1)



2. Mention the carbon positions to which the nitrogenous base and the phosphate molecule are respectively linked in the nucleotide given below: (1)



3. Why do certain genes tend to be inherited together in a cell at the time of cell division? (1)
4. State the significance of *Coelacanth* in evolution. (1)
5. Write the name of the following: (1)
 - (a) The most common species of bees suitable for apiculture.
 - (b) An improved breed of chicken.
 - (c)

SECTION – B

6. Fill in the missing columns (2)

COLUMN A	COLUMN B
Penicillium	A
Hydra	B
C	Gemmules
D	Bulbils

OR

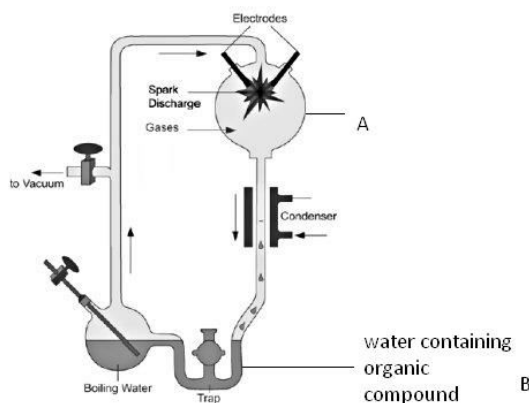
- Fill in the missing columns: (2)

COLUMN A	COLUMN B
A	Conidia
B	Bud
Water hyacinth	C
Ginger	D

7. Answer the following question in relation to the human genomic project: (2)
- (a) Name the non human model (free living non-pathogenic nematode) whose gene has been sequenced.
- (b) Write the total and last chromosome has been sequenced.
8. Is it possible that this pedigree given below is for an autosomal dominant trait? Explain and write the possible genotype of the parent and the progeny. (2)



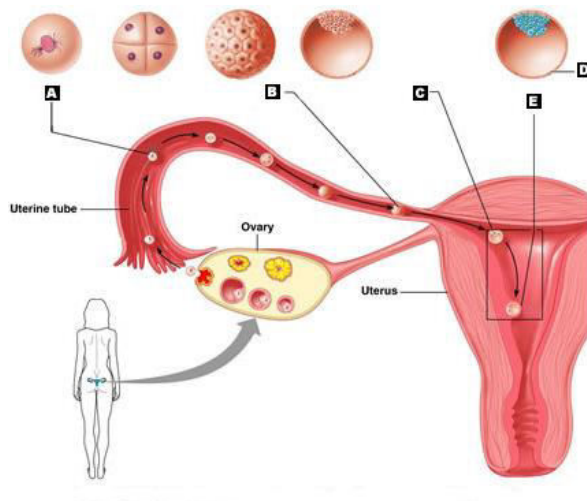
9. Given below is a diagrammatic representation of the experimental set-up used by S.L. Miller for his experiment: (2)



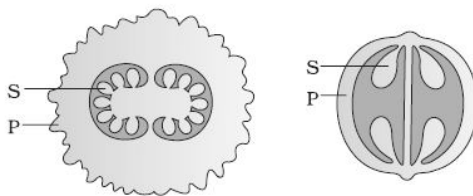
- (a) Write the names of different gases contained in flask 'A'.
- (b) State the type of organic molecule he collected in the water at 'B'.
10. Given below are pairs of disease and causative organism. Which out of these is not a matching pair and why? (2)
- | | | |
|------------|---|-------------------------------|
| Filariasis | : | <i>Wuchereria</i> |
| Ringworm | : | <i>Ascaris</i> |
| AIDS | : | Human immuno deficiency virus |
| Malaria | : | <i>Plasmodium</i> |

SECTION – C

11. How does the study of different parts of a flower help in identifying wind as its pollinating agent? (3)
12. Answer the following questions in relation to the diagram given below. (3)



- (a) Identify the structure labeled 'B'.
- (b) What you call to the process by which the structure 'A' converted into 'B'?
- (c) What are the two different types of cells present in structure 'D'?
13. Name and explain the surgical method advised to human males and females as a means of birth control. Mention its one advantage and one disadvantage. (3)
14. Study the following diagram and answer the questions given below: (3)



- (a) What do S and P denote?
- (b) Where do they develop from?
15. A tRNA is charged with the amino acid methionine: (3)
- (a) What is the actual structure of the tRNA?

- (b) Give the anticodon of this tRNA.
 (c) Write the polarity of the tRNA to which the methionine binds

OR

Answer the following questions: (3)

- (a) Name the scientist who called t-RNA an adapter molecule.
 (b) Draw a structure of t-RNA showing the following:
 i. Tyrosine attached to its amino acid site
 ii. Anticodon for this amino acid in its correct site (codon for tyrosine is UCA)
 (c) What is the secondary structure of the tRNA?

16. A cross was carried out between a pea plant heterozygous for round and yellow seeds with a pea plant having wrinkled and green seeds. (3)

- (a) Show the cross in a Punnett square.
 (b) Write the phenotype of the progeny of this cross.
 (c) What is this cross known as? What conclusion can you draw from the above result?

17. Study the given chart below and answer the questions that follow: (3)

- (a) S strain → into mice → mice die
 (b) R strain → into mice → mice live.
 (c) Heat killed S strain + live R strain → into mice → A
 (d) Heat killed S strain + DNase + live R strain → into mice → B
 i. Name the organism and differentiate between its two strains R and S respectively.
 ii. Write the results A and B obtained in step (c) and (d) respectively.
 iii. Name the Scientist who performed the steps (a), (b) and (c).

18. What is incomplete dominance? Explain with one example. How it differs from complete dominance. (3)

19. Answer the following questions: (3)

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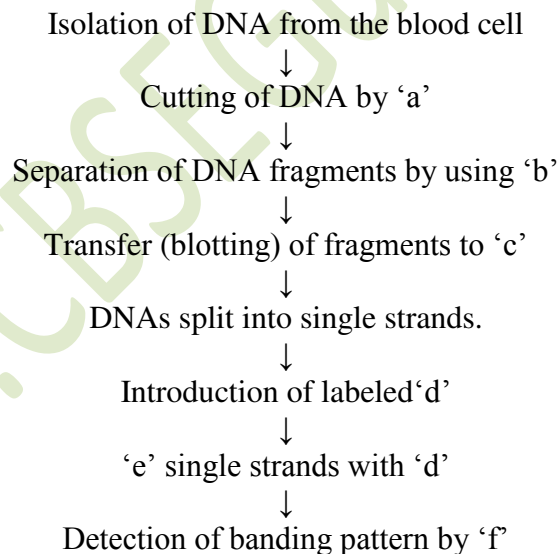
- a. Draw a diagram of antibody and label its two parts.
- b. Name the cell that produces this molecule.

20. Answer the following question in relation to transcription and translation: (3)

- (a) Write the full form of hnRNA.
- (b) Name the enzyme synthesize it.
- (c) Name the enzyme which catalyzes the peptide bond formation.

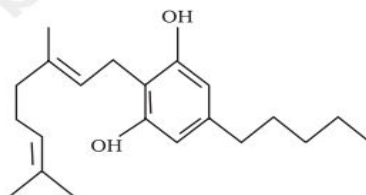
21. The following is the flow chart highlighting the steps in DNA fingerprinting technique. Identify a, b, c, d, e, and f.

(3)



22. The outline structure of a drug is given below. (3)

- (a) Which group of drugs does this represent?
- (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.



SECTION – D

23. A person in your colony has recently been diagnosed with AIDS. People/residents in the colony want him to leave the colony for the fear of spread of AIDS. (4)
- Write your view on the situation, giving reasons.
 - Name the pathogen causes AIDS.
 - List the methods by which AIDS didn't spread, otherwise the people thought/afraid.
 - Write the preventive measures by which we can stop spreading of AIDS.

SECTION - E

24. Answer the following questions: (5)
- What is protoplast?
 - Name the two enzymes used in producing protoplasts.
 - Describe the steps in producing somatic hybrid from protoplasts.
 - Mention the usefulness of somatic hybridization.

OR

- Answer the following questions: (5)
- Name the tropical sugar cane variety grown in South India. How has it helped in improving the sugar cane quality grown in North India?
 - Identify the 'a', 'b' and 'c' in the following table.

No.	Crop	Variety	Insect Pests
1.	Brassica	Pusa Gaurav	___(a)___
2.	Flat bean	Pusa Sem 2 Pusa Sem 3	___(b)___
3.	___(c)___	Pusa Sawani Pusa A-4	Shoot and fruit borer

25. Answer the following questions: (5)

(a) Draw a diagram of an enlarged view of T. S. of one microsporangium of an angiosperm and label the following parts:

Tapetum, Middle layer, Endothecium and Microspore mother cell.

(b) Mention the characteristic features and function of tapetum.

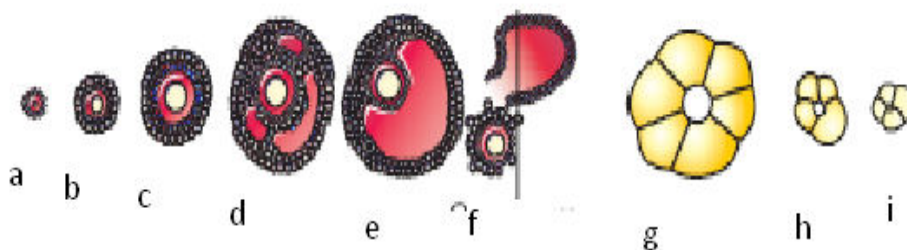
(c) Explain the following giving reasons:

- (i) Pollen grains are well preserved as fossils.
- (ii) Pollen tablets are in use by people these days.

OR

The following is the illustration of the sequence of ovarian events “a” to “i” in a human female:

(5)



(a) Identify the figure that illustrates corpus luteum.

(b) Which layer of the uterus is affected by the hormone secreted by corpus luteum?

(c) Name the hormone that promotes the events ‘e’ to ‘f’.

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- (d) At what stage exactly the event 'a' take place in human female?
 (e) Identify the event 'e'. Write its most characteristic feature.

26. Answer the following questions:

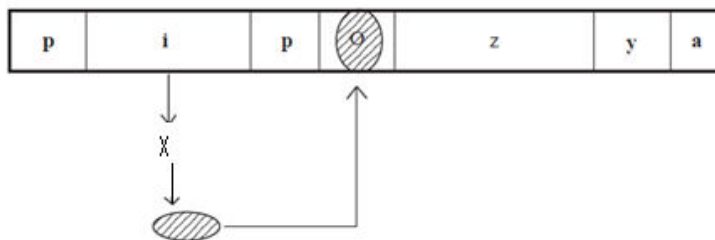
(5)

- (a) Explain the process of DNA replication with the help of a schematic diagram.
 (b) In which phase of the cell cycle does replication occur in Eukaryotes? What would happen if cell-division is not followed after DNA replication?

OR

Look at the figure above depicting lac operon of *E.coli* and answer the following questions:

(5)



- (a) What is 'X' in the above lac operon model?
 (b) Write the enzyme produced by gene 'z' explain its function.
 (c) Name the inducer.
 (d) What could be the series of events when an inducer is present in the medium in which *E.coli* is growing?

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