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Time : 2½ Hours

BIOLOGY

Subject Code

H	7	0	4
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Total No. of Questions : 5

(Printed Pages : 6)

Maximum Marks : 55

- INSTRUCTIONS :**
- (i) All questions are compulsory.
 - (ii) Answer each question on a fresh page.
 - (iii) Write the main questions and sub-questions clearly.
 - (iv) Draw diagram wherever specified in lead pencil only.
 - (v) The question paper has 5 main questions.
 - (vi) There is no overall choice however internal choice has been provided in one question each of 4 marks, 3 marks and two questions of 2 marks.
 - (vii) MCQs should be attempted only once on the answer book, if attempted more than once, it will not be evaluated.

1. (A) Choose the *correct* alternative and rewrite.

In a microsporangium, the wall layer that nourishes the developing pollen grains is : 1

- (i) Epidermis
- (ii) Middle layer

(iii) Tapetum

(iv) Endothecium.

- (B) A Moss plant *Funaria* produced very few male gametes as compared to female gametes. Predict the effect of this on fertilization. 1
- (C) Draw a neat diagrammatic representation of the mature embryo sac in flowering plants. 2
- (D) How can biodiversity be conserved using In Situ methods? 2
- (E) Draw a neat diagram of the sectional view of the human female reproductive system. 2
- (F) Describe the process of spermatogenesis in humans. 3

Or

Describe the process of embryonic development at various months of pregnancy in humans. 3

2. (A) Choose the correct alternative and rewrite.

In a pest control programme, dead cockroaches and rats were collected from a locality and buried. After few days it was noticed that rats had decomposed whereas cockroaches had not decomposed. This could be because of, 1

- (i) Presence of chitin in exoskeleton of cockroach
- (ii) Presence of sugar in exoskeleton of cockroach

- (iii) Presence of lignin in exoskeleton of cockroach 1
- (iv) Presence of lignin and sugar in exoskeleton of cockroach
- (B) Differentiate between carbon cycle and phosphorous cycle. 1
- (C) What is the role of lactose in a Lac Operon ? 1
- (D) Draw a neat diagram of DNA double helix. 2
- (E) Given below is a sequence from a transcription unit 2
- 3'-TACTGATAAAATACAGAAATC-5'
- 5'-ATGACTATTTTATGTCTTTAG-3'
- Obtain the following from it :
- (i) The mRNA
- (ii) The number of amino acids that will be required.
- (F) In SQUASH White fruit colour is dominant over yellow fruit colour. Pollen from the anther of a heterozygous white fruited plant is placed on the stigma of a yellow fruited plant. What type of fruits would we obtain from such a cross ? 2
- (G) Discuss the pattern of sex determination in grasshoppers and birds. 2

Or

Discuss the Mendelian disorder-Sickle cell anemia. 2

3. (A) Choose the *correct* alternative and rewrite. 1
- C-peptide of human insulin is :
- (i) A part of mature insulin molecule
 - (ii) Removed during maturation of pro-insulin to insulin
 - (iii) Introduced in mature insulin during maturation
 - (iv) Shares disulphide bond with B chain.
- (B) Write a note on Stirring type of bioreactor. 2
- (C) Describe any *two* benefits of transgenic animals ? 2
- (D) Give a detailed account of origin and evolution of man. 3
- (E) Explain any *three* methods used to introduce alien DNA into the host cells ? 3
4. (A) Choose the *correct* alternative and rewrite. 1
- (i) Streptokinase blood cholesterol lowering agent
 - (ii) Statins clot buster
 - (iii) Cyclosporin A immunosuppressive agent
 - (iv) Pectinase removes oily stains.
- (B) HIV infection leads to the decrease in T lymphocytes, the immune cells of the body. But the macrophages are called as the HIV factory. Give reason. 1

- (C) State of Gujarat is known for its Swachh Bharat Abhiyan. Lots of toilets are constructed under the scheme. This has generated extra sewage. There is no floating debris or grit in this sewage. Suggest the treatment that should be given to the sewage before releasing it in the sea. 2
- (D) Explain the Out-breeding methods in animals. 3
- (E) Give a brief account of the various measures that can be used to prevent and control drug and alcohol abuse among adolescents. 4

Or

Give a brief account of Causes of Cancer and add a note on its Detection and Diagnosis. 4

5. (A) Choose the *correct* alternative and rewrite.

Married couples avoid coitus from day 10 to day 17 of the menstrual cycle. This natural method is : 1

- (i) Coitus interruptus
- (ii) Periodic absence
- (iii) Periodic amenorrhea
- (iv) Periodic abstinence.

(B) Shiny was studying nesting habits in birds. She observed that a cowbird does not build its own nest; it lays its eggs in the nest of a sparrow. Identify the interaction. 1

(C) Discuss the morphological adaptations seen in *Opuntia* to cope with stressful conditions. 2

Or

Discuss the adaptations seen in kangaroo rat to cope with desert conditions. 2

(D) Explain sterilization as a method of contraception in humans. 3

(E) Describe the phenomenon of greenhouse effect. Write any *two* measures for controlling global warming. 4