

# **Series-B**

Roll No.....

Total No. of Questions—30] [Total No. of Printed Pages—16

**A-856-B-XII-2325**

## **BIOLOGY**

### **(Theory)**

Time Allowed—3 Hours      Maximum Marks—60

Candidates are required to give their answers in their own words as far as practicable.

Marks allotted to each question are indicated against it.

#### **Special Instructions :**

- (i) You must write Question Paper Series in the circle at top left side of title page of your Answer-book.

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P. T. O.

- (xi) Draw neat, clean and well labelled diagram wherever necessary.
- (xii) All questions given in Section-A (Multiple Choice Questions) are to be attempt on OMR sheet provided with Answer book.

### SECTION-A

#### (Multiple Choice Questions)

1. The method of producing thousands of plants through tissue culture is called : 1
- (a) Totipotency
- (b) ~~Micropropagation~~
- (c) Somatic Hybridisation
- (d) None of the above.
2. Citric acid is produced by : 1
- (a) *Lactobacillus*
- (b) *Acetobacter aceti*

(c) *Clostridium butylicum*

(d) *Aspergillus niger*.

3. The interaction where both the interacting species are benefited is called : 1

(a) Amensalism (b) Mutualism

(c) Commensalism (d) Competition.

4. Which enzyme helps in removal of Nucleotides from ends of DNA ? 1

(a) Ligase (b) Polymerase

(c) Endonuclease (d) Exonuclease.

5. The disease Ascariasis is caused by : 1

(a) *Wuchereria bancrofti*

(b) *Enterobius Vermicularis*

(c) *Ascaris lumbricoides*

(d) None of the above.

6. In which of the following organism XO type of Sex determination is found? 1
- (a) Human (b) Grasshopper  
(c) Drosophila (d) Honey Bee.
7. Oral pills inhibits. 1
- (a) Ovulation (b) Fertilisation  
(c) Implantation (d) Copulation.
8. In pollen grain generative cell divides and gives rise to : 1
- (a) 3 male gametes (b) 2 male gametes  
(c) 1 male gamete (d) 4 male gametes.
9. Secondary consumers are : 1
- (a) Herbivores  
(b) Producers  
(c) Carnivores  
(d) None of the above.

-10. Match the column A and Column B according to parts of the sperm and their function. choose the correct option :

Column-A	Column-B
(A) Head	(i) Enzymes
(B) Middle piece	(ii) Sperm motility
(C) Acrosome	(iii) Energy
(D) Tail	(iv) Genetic material

**Options :**

(A)	(B)	(C)	(D)
(a) (ii)	(iv)	(i)	(iii)
(b) (iv)	(iii)	(i)	(ii)
(c) (iv)	(i)	(ii)	(iii)
(d) (ii)	(i)	(iii)	(iv)

Question Nos. 11 and 12 consist of two statements Assertion (A) and Reason (R) Answer these questions selection the appropriate option given below :

- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
- (b) Both assertion and reason are true, but Reason is not the correct explanation of assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

11. Assertion (A) : The genetic code is degenerate. 9

Reason (R) : Some amino acids are coded by more than one codon. 1

12. Assertion (A) : Evolution is not occurring at present. b

Reason (R) : Evolution takes a very long time to occur. 1

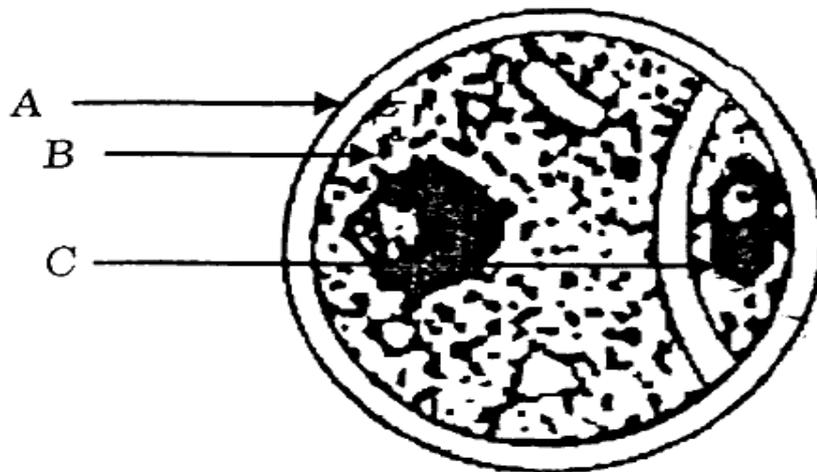
## SECTION-B

### (Very Short Answer Type Questions)

13. Identify the following disorders on the basis of either Sex linked or autosome linked : 2

- (i) Colour Blindness.
- (ii) Haemophilia.
- (iii) Sickle cell anaemia.
- (iv) Phenylketonuria.

14. Given below is the structure of Angiospermic pollen grain :



(i) Name A, B and C parts. 1

(ii) What is the function of Part C ? 1

15. Name the causative agent of the following diseases.

(i) AIDS

(ii) Elephantiasis

(iii) Typhoid

(iv) Pneumonia.

**Or**

What are Lymphoid organs? Define its types.

2

16. The figure given below is a drug plant. Based on the figure answer the following questions :

2



(i) Identify the given plant.

- (ii) What is the main property of this plant?
17. Lichens represent an intimate relationship between a fungus and a photosynthesising algae. Explain The type of interaction between fungus and algae in Lichens.

**Or**

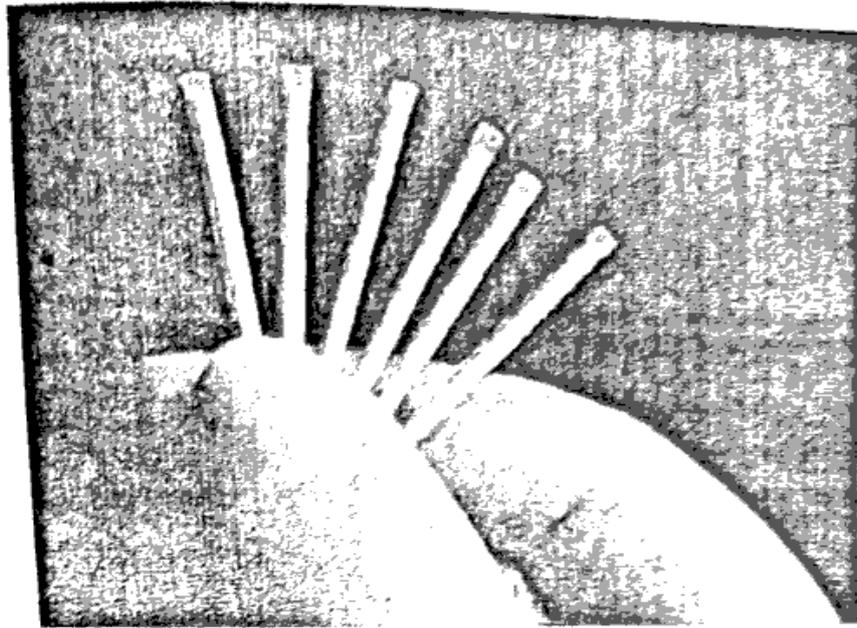
Give one example of each of these interactions:

- (i) Competition
- (ii) Parasitism
- (iii) Commensalism
- (iv) Amensalism.

18. What are Genetically modified organisms (GMO) ? What are their benefits?
19. Explain 'The Evil Quartet' responsible for the accelerated rates of species extinctions that the World is facing now due to Human activities.

20. The figure given below is a method of Birth control :

2



Observe the figure and answer the following questions :

- (i) Name the device shown in the figure.
  - (ii) How this device controls pregnancy?
21. Draw a labelled diagram of a Polynucleotide chain. Name the Sugar present in RNA. 2
22. What are Biofertilisers? What are advantages of using Biofertilisers as compared to Chemical fertilisers? 2

## SECTION-C

### (Short Answer Type Question)

23. According to the Erwin Chargaff, for a double stranded DNA, the ratios between Adenine and Thymine and Guanine and Cytosine are constant and equals one. 3

Question : Based on Erwin Chargaff's rule.

- (i) If a double stranded DNA has 25% of Adenine. Calculate the percentage of Cytosine in the DNA.
- (ii) The sequence of Nucleotides on one strand of DNA is written as follows :

5'-TATTGAACG-3'

Write down the sequence of Nucleotides in the complementary strand.

24. Explain the structure of a Transverse section (T.S) of an anther with a neat and well labelled diagram.

**Or**

What is Pollination? Explain various kinds of Pollination on the basis of source of Pollen. 3

25. What is Gene therapy? Explain it with suitable example.

**Or**

Give brief applications of Biotechnology in agriculture. 3

26. Who proposed the theory of Natural selection? Explain this theory in detail. 3

27. Decomposers breakdown complex organic matter into inorganic substances and the process is called decomposition. Explain the process of decomposition in detail. 3

28. There is a marriage between a normal man and a carrier women of Haemophilia. Their Doctor informs that there is possibility of a Hemophilic child born to them. 3

Mention :

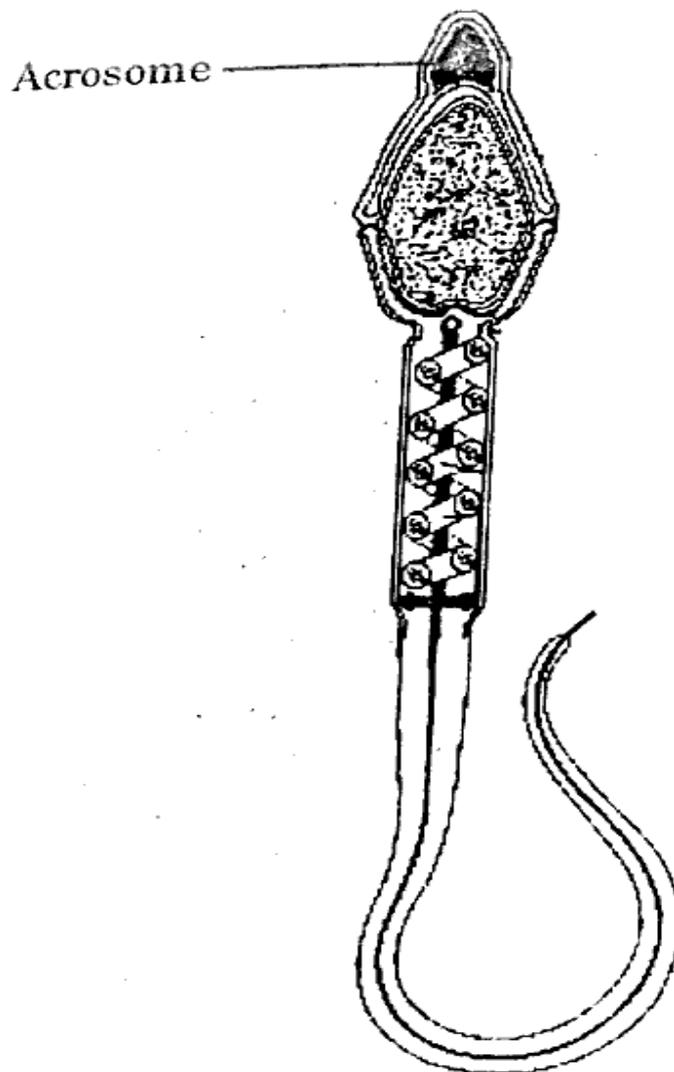
(i) The percentage of possibility of Haemophilic boys among the progeny.

- (ii) Work out the cross with the help of a Punnett square.
- (iii) What is the Percentage of possibility of normal girl child among the progeny?

### SECTION-D

#### (Long Answer Type Questions)

29. Observe the structure of a sperm of Human given below :



- (i) (a) Explain the function of Acrosome.
- (b) Name the part of sperm which possesses numerous mitochondria? 2
- (ii) Differentiate between spermiogenesis and spermatogenesis. 3

**Or**

- (i) Explain various events of menstrual cycle with diagrammatic presentation. 3
- (ii) Name the Hormone secreted by Corpus luteum. 1
- (iii) How many testicular lobules are present in each testis? 1
30. (a) Restriction enzymes are used to cut DNA at specific locations. Explain two different types of Restriction enzymes. Name the first restriction endonuclease enzyme to be discovered. 3

(b) Gel electrophoresis is a technique to separate DNA fragments. 2

(i) Name the compound used to stain the separated DNA fragments to Visualise them in UV radiation.

(ii) Name the gel used in gel electrophoresis.

**Or**

(a) What are selectable markers? Give example. 2

(b) What is Cloning vehicle? Describe characters of Cloning vector. 2

(c) Name the Enzyme used in PCR. 1