Series-C

Roll No..... .....

Total No of Questions-30] [Total No of Printed Pages-16

A-856-C-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.

(ii) While answering your Questions, you must indicate on your Answer-book the same Question No. as appears in your Question Paper.

(iii) Do not leave blank page/pages in your Answer-book.

(iv) All questions are compulsory and divided into four sections.

(v) Internal choices are given in some questions. 1

(vi) Answers should be brief and to the point.

(vii) Section–A contains 12 questions of 1 mark each (MCQ, Assertion and Reason, Match the column type).

(viii) Section–B Question Nos. 13 to 22 are of 2 marks each.

(ix) Section–C Question Nos. 23 to 28 are of 3 marks each.

(x) Section–D Question Nos. 29 and 30 are of 5 marks each.

(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. Plasmids occur in : 1

(a) Viruses (b) Chromosomes

(c) Chloroplasts (d) Bacteria.

2. The Interaction where one species is harmed and the other is unaffected is called : 1

(a) Commensalism (b) Mutualism

(c) Amensalism. (d) Predation.

3. The Genetic defect, Adenosine deaminase (ADA) deficiency may be cured permanently by : 1

(a) Administering adenosine deaminase through injection.

(b) Enzyme replacement therapy.

(c) Injecting the functional ADA cDNA into the patient.

(d) Introducing isolated gene from marrow cells producing ADA into cells at early embryonic stages.

4. The disease amoebiasis is caused by : 1

(a) *Salmonella typhimurium*

(b) *Plasmodium vivax*

(c) *Wuchereria bancrofti*

(d) *Entamoeba histolytica*.

5. Butyric acid is produced by : 1

(a) *Clostridium butylicum*

(b) *Aspergillus niger*

(c) *Acetobacter aceti*

(d) *Lactobacillus*.

6. The Cu releasing IUDs, release Cu ions which prevents : 1

(a) Ovulation (b) Sperm motility

(c) Implantation (d) Copulation.

7. In rice plants pollen grains lose viability within : 1

(a) 6 months of their release

(b) 1 month of their release

(c) 30 minutes of their release

(d) 4 weeks of their release.

8. In a typical test cross an organism showing a dominant phenotype is crossed with : 1

(a) Dominant parent

(b) Recessive parent

(c) Any of the parent

(d) None of the parent.

9. What is the percentage of Photosynthetically active radiation (PAR) in the incident solar radiation? 1

(a) 100% (b) 50%

(c) 1–5% (d) 2–10%.

10. Arrange the following terms sequence wise according to their function and choose the correct option : 1

(i) **Hypothalamus.**

(ii) **Testes.**

(iii) **Pituitary.**

(iv) **Sperms.**

Options :

(a)	(i)	(ii)	(iii)	(iv)
(b)	(i)	(iii)	(ii)	(iv)
(c)	(iv)	(ii)	(i)	(iii)
(d)	(ii)	(iii)	(i)	(iv)

Question Nos 11 and 12 consist of two statements Assertion (A) and Reason (R) Answer these questions selecting 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) : RNA was the first genetic material.

Reason (R) : DNA has evolved from RNA by chemical modification. 1

12. Assertion (A) : A single mutation may produce a new species.

Reason (R) : Mutations cause variations in chromosomes and genes and are therefore inheritable. 1

SECTION-B

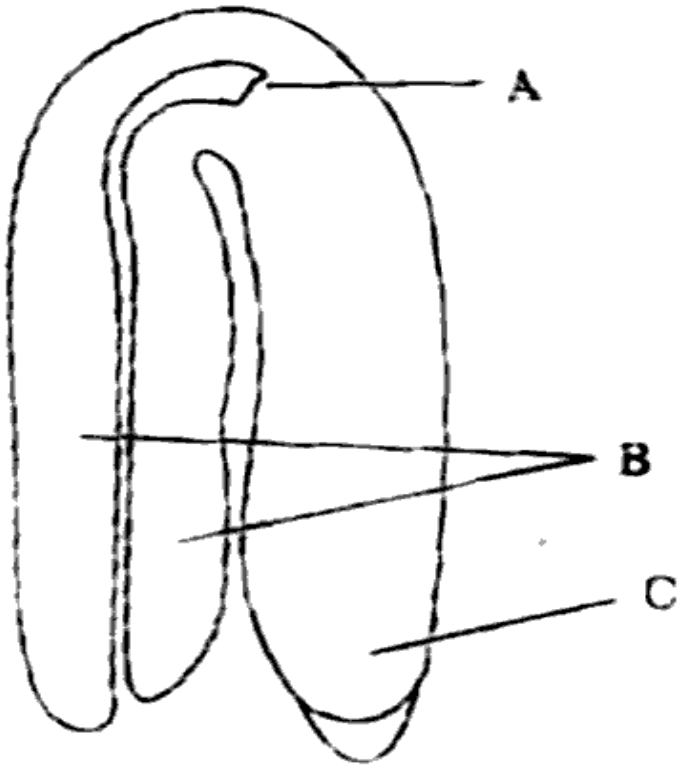
(Very Short Answer Type Questions)

13. Name the genotype of persons with following blood groups : 2

(i) A (ii) B

(iii) AB (iv) O.

14. Given below is the view of a typical dicot embryo.



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

(ii) Mention the function of Part C. 1

15. Name the causative agent of the following diseases.

(i) Malaria (ii) Typhoid

(iii) Elephantiasis (iv) Pneumonia.

Or

What are Antibodies? Mention its types. 2

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

(i) Identify the given plant. 1

(ii) Name the Drugs obtained from this plant. 1

17. The Human liver fluke (a trematode) depends on two intermediate hosts (a snail and a fish) to complete its life cycle. Explain in detail the type of interaction between Liver fluke and its hosts.

Or

Give one example of each of these interactions:

(i) Commensalism

(ii) Mutualism

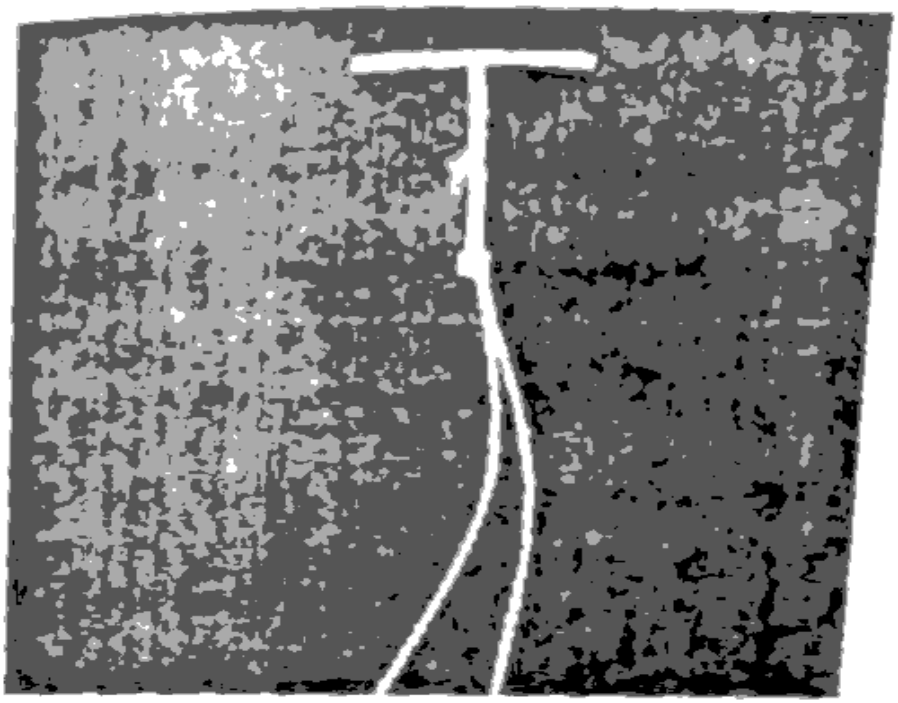
(iii) Predation

(iv) Competition. 2

18. What are Cry proteins? How this protein develop insect resistance in Bt-cotton? 2

19. We should conserve Biodiversity due to many reasons some obvious and others not so obvious but all equally important. Explain these reasons. 2

20. The figure given below is a method of Contraception : 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 Clover leaf structure of tRNA. Expand the term sRNA. 2

22. Define the Biogas. What are the benefits of using Biogas? 2

SECTION-C

(Short Answer Type Question)

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

Questions : Based on Erwin chargaff's rule.

(i) If a double stranded DNA has 20% of Thymine, Calculate the percentage of Guanine in the DNA.

(ii) The sequence of Nucleotides on one strand of DNA is written as follows :

5'–CGGAATTAG–3'

Write down the sequence of Nucleotides in the complementary strand.

24. Explain the structure of a Mature pollen grain with a neat and well labelled diagram.

Or

How Endosperm is formed? Explain various types of Endosperm (formation) in angiosperms. 3

25. How insulin can be genetically engineered? Explain.

Or

Give brief application of Biotechnology in medicine. 3

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

27. The number of trophic levels in the grazing food chain is restricted as the transfer of energy follows 10 percent law. Explain 10 percent law. Do you think there is any such limitation in a detritus food chain? 3

28. When a normal visioned man marries a colour blind woman 3

Find out :

(i) What is the Genotype of colour blind woman?

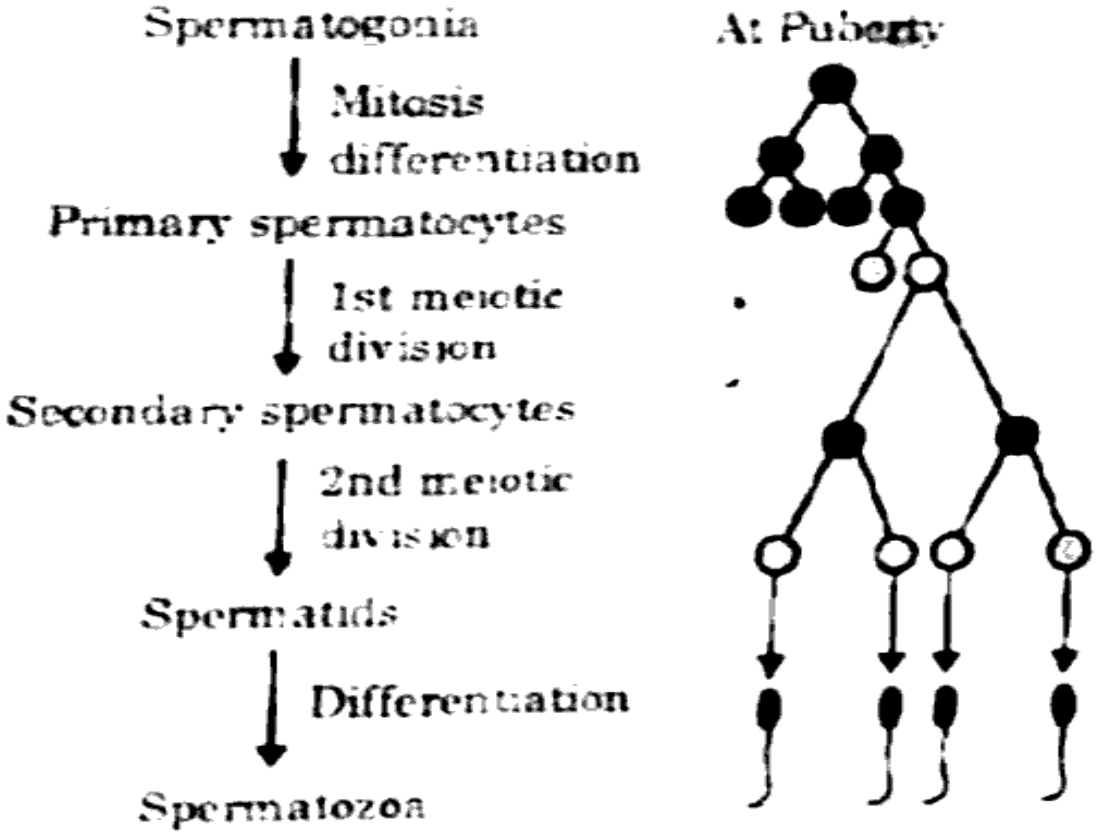
(ii) How many colour blind boys will be born to them?

(iii) Work out the cross with the help of punnett square.

SECTION–D

(Long Answer Type Questions)

29. Observe the schematic representation of spermatogenesis given below :



(i) Explain the different phases of Spermatogenesis 2

(ii) If GnRH by Hypothalamus is not secreted during puberty what will happen? Explain the role of hormones in regulation of Spermatogenesis. 3

Or

(i) Draw a well labelled diagram of Mammalian blastocyst. 3

(ii) Name the Hormone responsible for stronger uterine contractions during parturition. 1

(iii) Name two paired male accessory glands. 1

30. (a) PCR stands for Polymerase chain reaction. Explain Polymerase chain reaction with different steps involved in it. 3

(b) A recombinant DNA bearing gene for resistance to an antibiotic (e.g. ampicillin) is transferred into *E.coli* cells, the host cells become transformed into ampicillin resistant cells. 2

(i) What the ampicillin resistance gene in this case is called?

(ii) What is full form of *E. coli* ?

Or

(a) What are Plasmids? Explain the role of Plasmids in Recombinant DNA technology. 2

(b) For making recombinant DNA, a vector should have only one recognition site. Why? 2

(c) Name the Enzyme used to treat a Fungal cell to obtain DNA. 1