



Code Number:

**A**

# Aakash

**Medical | IIT-JEE | Foundations**

**Corp. Office:** Aakash Educational Services Limited, 3rd Floor, Incuspaze Campus- 2, Plot No. 13,  
Sector- 18, Udyog Vihar, Gurugram, Haryana - 122015

Time: 3 hrs.

**Mock Test Paper for Class-XII**

Max. Marks: 70

## BIOLOGY

Roll No.

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### GENERAL INSTRUCTIONS

Read the following instructions carefully and follow them:

1. There is a 'Cool-off time' of 15 minutes in addition to the writing time.
2. Use the 'Cool-off time' to get familiar with questions and to plan your answers.
3. Read questions carefully before answering.
4. Read the instructions carefully.
5. Calculations, figures and graphs should be shown in the answer sheet itself.
6. Give equations wherever necessary.
7. Electronic devices except non-programmable calculators are not allowed in the examination Hall.

## PART-A (BOTANY)

I. Answer any 3 questions from 1 to 4. Each carries 1 score.

(3 × 1 = 3)

1. Removal of anthers from flower-bud before the anthers dehisces using a pair of forceps.  
(Bagging, Hybridization, Emasculation, Re-bagging)
2.  $GPP - R = NPP$ , what does R stand for?
3. Which enzymes are known as 'molecular scissors'?
4. Name the first transgenic cow that produced human protein enriched milk.

II. Answer any 9 questions from 5 to 15. Each carries 2 scores.

(9 × 2 = 18)

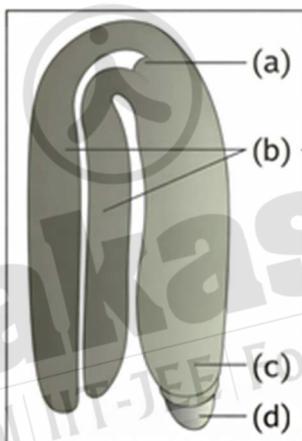
5. Identify the given figure and label the parts given below:

Plumule

Cotyledons

Radicle

Root cap



6. Self-incompatibility is an out-breeding mechanism seen in plants. Define self-incompatibility.
7. What are the climatic factors affecting decomposition?
8. (a) What is gel-electrophoresis?  
(b) Name commonly used matrix in gel-electrophoresis.
9. Write short notes on:  
(a) Micro injection  
(b) Biolistics
10. Observe the equation:

$$\frac{dN}{dt} = rN \left( \frac{K - N}{K} \right)$$

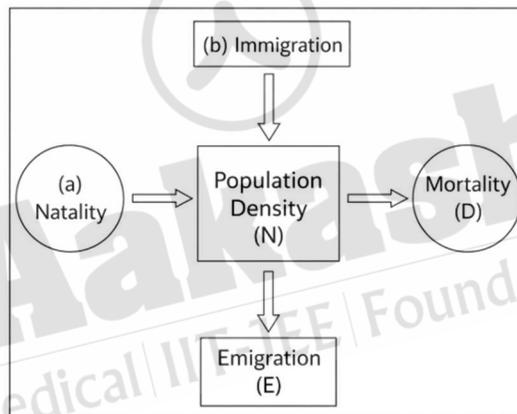
- (a) What do N, r, K stand for?
- (b) Define 'K'.

11. Define Gause's competition exclusion principle.
12. (a) What is primary productivity?  
(b) What are the factors affecting primary productivity?
13. (a) What are transgenic animals?  
(b) Mention two uses of transgenic animals.
14. A list of organisms is given below, arrange them in appropriate trophic levels:  
Lion, cow, wolf, trees  
1<sup>st</sup> Trophic level  
2<sup>nd</sup> Trophic level  
3<sup>rd</sup> Trophic level  
4<sup>th</sup> Trophic level
15. (a) Expand GEAC.  
(b) Mention its aim.

**III. Answer any 3 Questions from 16 to 19. Each carries 3 scores.**

**(3 × 3 = 9)**

16. Given below is a schematic representation which shows the factors influencing population density.



- (i) Label (a) and (b).
- (ii) Define mortality.
17. (a) Define Pollination.  
(b) Insect pollinated flowers have many peculiarities. Write down any four such peculiarities.
18. (a) Expand PCR.  
(b) What are the three steps involved in PCR?  
(c) What are primers?
19. (a) What is gene therapy?  
(b) How does ADA deficiency disorder occur?  
(c) Suggest a treatment method for ADA deficiency.

**PART - B (ZOOLOGY)**

**I. Answer any 3 questions from 1 to 5. Each carries 1 score.**

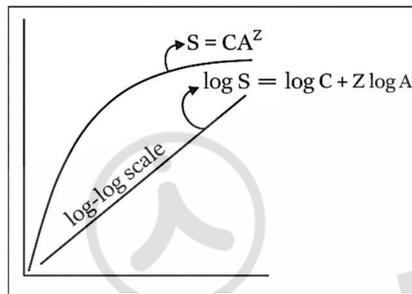
**(3 × 1 = 3)**

1. Complete the table.

(Hint: Griffith's transformation experiment)

Procedure	Result
S strain bacteria → inject into mice	Mice die
R strain bacteria → inject into mice	___ (a) ___
S strain bacteria(Heat Killed) → inject into mice	Mice live
S strain bacteria(Heat Killed) + R strain bacteria(live) → inject into	___ (b) ___

2. Observe the graph and answer the question



What does this graph represent?

3. In female, ovum is normally released on the 14<sup>th</sup> day of menstrual cycle.

- (a) Name the process of release of ovum from ovary.
- (b) Where does fertilisation occur?

4. In a particular monohybrid cross, both phenotypic and genotypic ratio was found to be 1 : 2 : 1. Identify this phenomenon.

5. Find out the odd one and justify your answer

Periodic abstinence, Coitus interruptus, IUD's, Lactational amenorrhoea

**II. Answer any 9 questions from 6 to 16. Each carries 2 scores.**

**(9 × 2 = 18)**

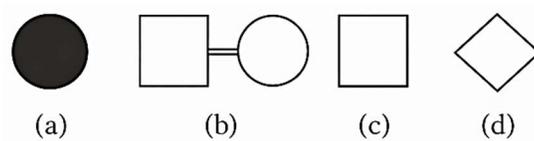
6. Infertility cases are increasing nowadays. These couples should be assisted to have children through certain special techniques which are commonly known as ART.

- (a) What is the expansion of ART?
- (b) Name any 2 methods in ART.

7. Give one example for each of the following:

- (a) Inborn error of metabolism.
- (b) Sex-linked recessive disease in which blood clotting is affected.

8. Identify the given symbols used in pedigree charts.



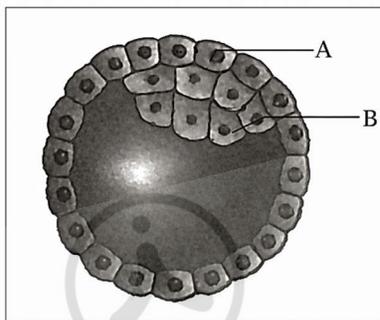
9. Note the relationship between the first two words and fill the missing word:

(a) YAC : Yeast Artificial Chromosome; BAC : \_\_\_\_\_

(b) DNA → mRNA : Transcription; mRNA → Protein : \_\_\_\_\_

10. "Prevention is better than cure." Can you suggest any 2 preventive measures for AIDS?

11. Given below is the diagrammatic representation of human blastocyst. Observe the diagram and answer the following questions:



(a) Identify A and B

(b) Write the functions of A and B.

12. Complete the table.

(a)	44A + XO	(b)
Klinefelter's Syndrome	(c)	Sterile male
(d)	Trisomy 21	Mental retardation

13. Arrange these in chronological order:

Homo habilis, Homo erectus, Australopithecines, Neanderthal man

14. Match the following:

A	B
Physical barrier	Interferon
Physiological barrier	PMNL
Cellular barrier	Skin
Cytokine barrier	Acid in stomach

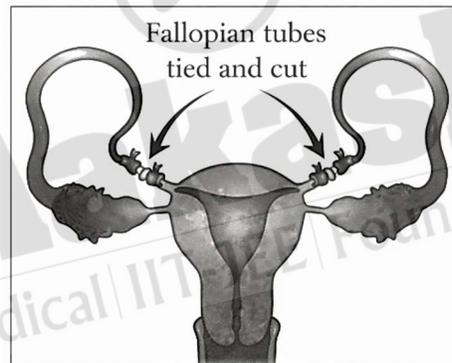
15. Sum total of all the allelic frequencies in a population is 1.
- (a) Name the principle behind this.
- (b) List any 3 factors which lead to a deviation of allelic frequencies from 1.
16. Some bioactive molecules, their source and medical importance are given in the table. Fill up the missing parts.

(a)	Streptococcus	Removes clot from blood vessels
Cyclosporin A	(b)	(c)
(d)	Monascus purpureus	Blood cholesterol lowering agent

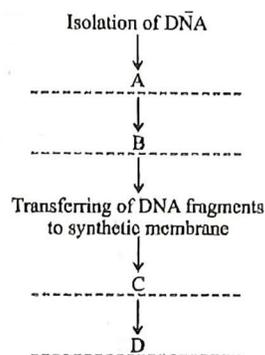
**III. Answer any 3 questions from 17 to 20. Each carries 3 scores.**

**(3 × 3 = 9)**

17. "Accelerated rates of species extinctions that the world is facing now is largely due to human activities."
- (a) Name the 'evil quartet' (4 major causes) of biodiversity loss.
- (b) Write any 2 ex-situ methods to conserve biodiversity.
18. Diagram shown below is a surgical method used for female sterilization.
- (a) Which surgical method is shown in the diagram?
- (b) What is the surgical method of male sterilization called?
- (c) Mention any 2 copper-releasing IUD's used to prevent conception.

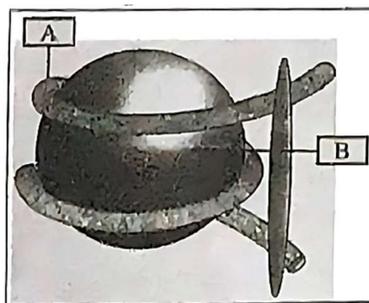


19. To solve a dispute of parentage, the court puts an order to conduct a test to prove the paternity of the child. The procedure of this test is given below.



- (a) Identify the test
- (b) Complete the missing steps.

20. Observe the diagram.



- (a) What does it represent?
- (b) Identify parts labelled as A and B.

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