

Time: 3 hours

CODE - 044 (S) A  
XII - BIOLOGY

M.M.: 70

SECTION A

(1 x 5 = 5)

- 1/ How does Microinjection differ from electroporation? (2)
- 2/ Mention one positive and one negative application of amniocentesis.
- 3/ a) Name the scientist who disproved spontaneous generation theory.  
b) Who brought forth the idea of mutation..
- 4/ Why are bottled juice clearer than the juices prepared at home?
- 5/ An anther with malfunctioning tapetum often fails to produce viable male gametophyte. Give any one reason.

SECTION B

(2 x 5 = 10)

- 6/ Name and explain the role of inner and middle walls of the human uterus.
- 7/ A moss plant produces a large number of antherozoids but relatively only a few egg cells. Why?
- 8/ What is meant by charging of t-RNA? Why is it necessary?
- 9/ Mention the causative organisms of the following:  
a) Pneumonia      b) Typhoid      c) Amoebiasis      d) Filariasis

OR

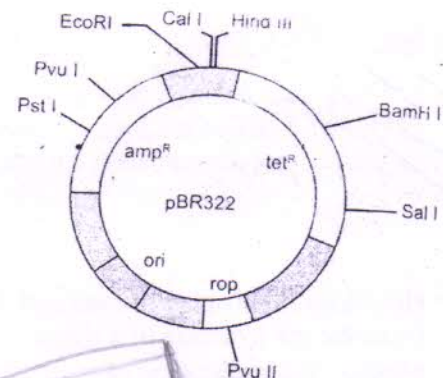
Why is a person with cuts and bruises following an accident administered tetanus antitoxin? Give reasons.

- 10/ Briefly explain how pollen-pistil interaction takes place once the pollen is deposited on the stigma of a flower.

SECTION - C

- 11/ a) Why do the mammalian / human testes descend into scrotum? What will be the consequence, if they fail to do so?  
b) How is the use of progestogens as implants more advantageous than using them as oral pills?
- 12/ (i) When and <sup>where</sup> did Neanderthal man live?  
(ii) What was his brain capacity? <sup>enlarged</sup>  
(iii) Mention the advancements he ~~could~~ over Homoeractus.
- 13/ a) How does the Hardy Weinberg's expression explain that allelic frequencies in a population are stable and constant from generation to generation.  
b) List any 3 factors that can disturb the genetic equilibrium.

- 14/ (i) Name the organism in which the vector shown is inserted to get the copies of the desired gene.  
(ii) Mention the area labelled in the vector responsible for controlling the copy number of the inserted gene.  
(iii) Name and explain the role of a selectable marker in the vector shown.



1

13 Oct  
Eco-test  
Ambika

Identify a, b, c, d, e and f in the table given below :

Organism	Bioactive molecule	Use
1. <u>Monascus purpureus</u> (yeast)	<u>a</u>	<u>b</u>
2. <u>c</u>	<u>d</u>	antibiotic
3. <u>e</u>	Cyclosporin A	<u>f</u>

16 State the conditions when 'genetic code' is said to be

- (i) degenerate  
 (ii) Unambiguous  
 (iii) Specific

17 a) Marsupials and Australian placental mammals exhibit convergent evolution. Explain how?

b) What is saltation in evolution?

18 a) How are the DNA fragments separated and isolated from DNA fingerprinting? Explain.

b) What is the importance of bacterium *thermus aquaticus* in PCR.

19 Name a disorder, give the Karyotype and write the symptoms which a human male suffers, as a result of an additional X-chromosome.

20 Explain how do the following act as contraceptives

- (a) Cu-T  
 (b) "Saheli"

21 Draw a well labeled diagram of the structure of an antibody molecule.

OR

Draw a well labeled diagram of L.S. of an embryo of grass.

22 (i) Differentiate between euchromatin and heterochromatin

(ii) How do histones acquire positive charge?

23 A child suffering from Thalassemia is born to a normal couple. But the mother is being blamed by the family for delivering a sick baby.

a) What is Thalassemia?

b) How would you counsel the family not to blame the mother for delivering a child suffering from this disease? Explain.

c) List the values your counseling can propagate in the families.

### SECTION - D

24 a) Describe the stages of oogenesis in human females.

b) Draw a labelled diagram of human Ovum released after Ovulation.

c) Why is parturition called a neuro-endocrine mechanism? Explain

OR

a) How does microspore mother cell develop into mature pollen grain in angiosperms?

b) Describe the structure of a mature pollen grain and draw a labeled diagram of its two-called stage.

c) Mention the application of pollen bank. How are pollen stored in a bank.

2  
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 exams aces



- 25 a) Who proposed the concept of Lac Operon?  
 b) Draw a labelled schematic representation of a lac operon.  
 c) Explain how this Operon gets switched 'on' and 'off'

OR

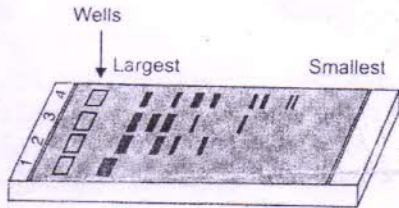
- a) Explain the process of transcription in Eukaryotes.  
 b) Why is RNA regarded as the first genetic material? Explain.

- 26 a) Explain the different steps involved in each cycle of PCR.  
 b) List the various steps to isolate DNA from a bacterium.

OR

- a) What is the advantage of sparged stirred-tank bioreactor?

b)



- (i) What does this diagram depict?  
 (ii) What is meant by largest and smallest in the picture?  
 (iii) Name the compound used to visualize them.  
 (iv) Define elution

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