GOVERNMENT OF KARNATAKA

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD

6TH CROSS, MALLESHWARAM, BENGALURU – 560 003

2025 -26 II PU MODEL QUESTION PAPER – 2

SUBJECT: BIOLOGY (36) **MAXIMUM MARKS: 70**

TIME: 03 HOURS **NUMBER OF QUESTIONS: 44**

General instructions:

1. This question paper consists of parts A, B, C, D and E.
2. Part-A consists of I & II and Part-D consists of V & VI.
3. All the parts are compulsory.
4. The answers for Part – A, written in the first two pages of the answer booklet are only considered for evaluation.
5. Part – E consists of questions for visually challenged students only.

PART – A

I. Select the correct alternative from the choices given: **15 x 1 = 15**

1. Statement I: Apomixis is the production of seeds from unfertilized ovules.
   Statement II: Embryos produced from apomictic seeds are not generally identical to the parent plant.
   a) Statement I is true, statement II is false
   b) Statement I is false, statement II is true
   c) Statement I and statement II both are true
   d) Statement I and statement II both are false
2. The cells that secrete testicular hormones (androgens) are _____.
   a) Sertoli celles b) Leydig cells
   c) Germ cells d) Spermatogonia
3. Which of the following is not a copper-releasing IUD?
   a) LNG 20 b) CuT c) Cu7 d) Multiload 375
4. What is the possible blood group of an offspring when both parents have AB blood group?

a) AB only b) A, B and AB

c) A, B, AB and O d) A and B only

5. If an mRNA 3'-AUGUUUUUUUUUUAA-5' undergoes translation, how many types of amino acids are present?

a) 4 types b) 3 types c) 2 types d) 1 type

6. Arrange the following animal groups in correct sequence of their occurrence on geological time scale.

i. Amphibians ii. Fishes iii. Reptiles iv. Mammals

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

7. Antivenom given against snake poison contains

a) Antigens b) Antigen-antibody complexes

c) Antibodies d) Enzymes

8. The substance produced by a cell in viral infection that can protect other cells from further infection is

a) Serotonin b) Colostrum

c) Interferon d) Histamine

9. Because of the presence of which of the following vitamin, curd is considered as nutritionally richer than milk?

a) Vitamin B_1 b) Vitamin B_2

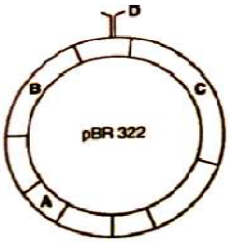
c) Vitamin B_9 d) Vitamin B_{12}

10. Mycorrhiza is involved in absorption of _____ from soil and passes it to the plant.

a) Nitrogen b) Phosphorus

c) Potassium d) Magnesium

11. In the given diagram of pBR322 vector, identify the restriction sites A, B, C and D.



a) A- tet^R, B- *Hind* III, C- Ori, D- amp^R

b) A- Ori, B- amp^R, C- tet^R, D- *Hind* III

c) A- *Hind* III, B- tet^R, C- amp^R, D- Ori

d) A- amp^R, B- tet^R, C- *Hind* III, D- Ori

12. The plants developed by the fusion of protoplasts of two different plants are called

a) Somaclones b) Somatic hybrids

c) Transgenic plants d) GM plants

13. In a pond if there were 20 lotus plants last year and through reproduction 16 are added. Calculate the birth rate.

a) 0.8 offspring per lotus per year b) 0.4 offspring per lotus per year

c) 0.8 offspring per year d) 1.25 offspring per year

14. The correct sequence of steps in the process of decomposition is

a) Fragmentation → leaching → catabolism → humification → mineralization

b) Leaching → fragmentation → catabolism → humification → mineralization

c) Humification → fragmentation → leaching → catabolism → mineralization

d) Catabolism → fragmentation → leaching → humification → mineralization

15. The following are the *in-situ* conservation approaches except

a) National parks b) Wildlife sanctuaries

c) Biosphere reserves d) Botanical gardens

II. Fill in the blanks by choosing the appropriate word/words from those given in the bracket. 5 x 1 = 5

(Morphine, Endometrium, Reserpine, Fossils, Vector, Myometrium)

16. The glandular layer of uterus that undergoes cyclic changes during menstrual cycle is _____.
17. The paleontological evidence for evolution is obtained from _____.
18. _____ is a very effective sedative and painkiller.
19. The plasmid DNA act as _____ to transfer the piece of DNA attached to it.
20. The genetic diversity shown by *Rauwolfia vomitoria* growing in Himalayan ranges produces an active chemical called_____.

PART – B

III. Answer any <u>FIVE</u> of the following questions in 3-5 sentences each, wherever applicable: 5 x 2 = 10

21. Write the significance of sporopollenin.
22. Mention the reasons for infertility in humans
23. Differentiate between linkage and recombination.
24. Draw a labelled diagram of nucleosome.
25. Comment on the similarity between the thorn of *Bougainvillea* and tendril of C*ucurbita* with reference to evolution.
26. What are flocs? Write their significance in sewage treatment.
27. Mention "The Evil Quartet" of biodiversity losses in a given habitat.

PART – C

IV. Answer any <u>FIVE</u> of the following questions in 40-80 words each, wherever applicable: 5 x 3 =15

28. Draw a labelled diagram of L.S. of an embryo of grass.
29. What is placenta? List its functions.
30. Define venereal diseases or sexually transmitted infections (STIs). Mention the modes of transmission of STIs.
31. Draw a labelled diagram of Miller's experimental set-up.
32. Mention the causative organisms for the following diseases:
    a) Ascariasis b) Typhoid c) Filariasis
33. Name the microbes that help in the production of the following bioactive agents.
    a) Cyclosporin A b) Streptokinase c) Statins
34. Schematically represent pyramid of energy with appropriate units.

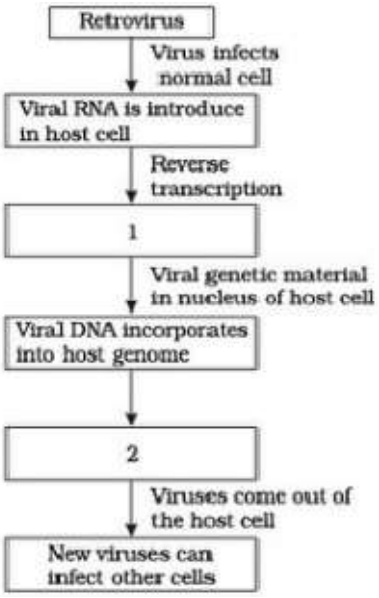
PART- D

V. Answer any <u>FOUR</u> of the following questions in 200-250 words each, wherever applicable: 4 x 5 = 20

35. Explain the different outbreeding devices developed by flowering plants.
36. Draw a neat labelled diagram of the sectional view of mammary gland.
37. Schematically represent incomplete dominance by taking inheritance of flower colour in the snapdragon as an example.
38. Explain Griffith's 'transforming principle' experiment.
39. What are the functions of
    a) *i gene* b) *lac z gene* c) *lac y gene* d) *lac a gene* e) inducer.
40. Briefly explain the uses of transgenic animals.
41. What is mutualism? Explain any four examples of mutualism.

VI. Answer any <u>ONE</u> of the following questions in 200-250 words each, wherever applicable: 1 x 5 = 5

42. Identify the genetic disorders given below:
    a) Sex-linked recessive disorder occurring in about 8% of males and only about 0.4% of females leading to defect in cone of eye. (1M)
    b) Sex-linked recessive disorder affecting a single protein involved in the clotting of blood. (1M)
    c) Inborn error of metabolism, autosomal recessive trait, accumulation of phenylalanine. (1M)
    d) Autosome linked recessive blood disease, substitution of amino acid in beta globin chain of haemoglobin. (1M)
    e) Autosome linked recessive blood disease, reduced rate of synthesis of globin chains of haemoglobin. (1M)
43. The flowchart shows replication of the retrovirus in the host. Answer the questions given below:



a) Fill in the missing data in boxes labeled 1 & 2 (2M)

b) Give an example for retrovirus. (1M)

c) Name the disease caused by this retrovirus. (1M)

d) Name the diagnostic test for this disease. (1M)

44. Give reasons for the following:

a) Restriction enzymes are called 'molecular scissors'.

b) DNA ligase is used in genetic engineering.

c) Chilled ethanol is used in DNA isolation.

d) Smaller DNA fragments move farther in a gel slab.

e) Thermostable DNA polymerase is used in polymerase chain reaction.

PART – E

(FOR VISUALLY CHALLENGED STUDENTS ONLY)

11. Restriction site of EcoRI enzyme is

a) 5'-GAATTC-3' b) 3'-GAATTC-5' c) GAATTC d) 5'-CTTAAG-3'

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