

Bhavan's Tripura Vidyamandir

1st Terminal Examination : (2024-25)

Class:- 12

Time:- 3 Hours

Subject:- Biology

Total :- 70 Marks

Name of the student :

Roll

Section

General Instructions:

- i) All questions are compulsory.
- ii) The question paper has five sections and 33 questions.
- iii) Section A has 16 questions of 1mark each: Section B has 5 questions of 2 marks each; Section C has 7 questions of 3 marks each: section D has 2 Case-Based questions of 4 marks each: Section E has 3 questions of 5 marks each .
- iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- v) Wherever necessary, neat and properly labelled diagram should be drawn.

SECTION-A

1. Megasporangium is equivalent to-
a. Embryo b. Nucellus c. Ovule d. Fruit
2. "Testis are extra-abdominal in position" appropriate reason is-
a. Narrow pelvis in male
b. Special protection for testis
c. Prostate gland and seminal vesicles occupy maximum space
d. 2.0-2.5°C lower than the normal body temperature.
3. GnRH secreted from hypothalamus mainly stimulates the release of -
a. Thyroxin from thyroid gland b. ADH from posterior Pituitary
c. FSH and LH from anterior Pituitary d. Aldosterone from Adrenals
4. IVF is a technique that involves transfer of which one of the following into the fallopian tube-
a. Embryo only, upto 8 cell stage
b. Either zygote or early embryo upto 8 cell stage
c. Embryo of 32 cell stage
d. Zygote only
5. If both the parents are carriers of autosomal recessive disorder thalassemia, what are the chances of pregnancy resulting in an affected child-
a. 100% b. 50% c. 25% d.No Chance
6. Identify the correct genotype that does not produce any oligosaccharide on the surface of RBCs-
a. I^AI^A b. I^Bi c. I^AI^B d. I^BI^B
7. DNA synthesis during replication is-
a. Discontinuous b. Continuous
c. Semi- discontinuous d. Semi-Continuous
8. AGGTATCGCAT is a sequence of coding strand of a gene. Identify the correct corresponding sequence of the transcribed mRNA-
a. AGGUAUCGCAU b. ACCUAUGCGAU
c. UGGTUTCAT d. UCCAUAAGCGUA
9. Forelimbs of cat, lizard used in walking; forelimbs of whale used in swimming and forelimbs of bats used in flying are an example of-
a. Analogous organ b. Adaptive radiation
c. Homologous organ d. Convergent evolution
10. From the following, living fossil is-
a. Coral b. Ascidia c. Octopus d. King Crab

11. Humoral Immunity is mediated by -
 a. Cytotoxic T-cell b. Plasma Cell c. Eosinophil d. Neutrophil
12. A good producer of citric acid is-
 a. *Aspergillus* b. *Pseudomonas* c. *Saccharomyces* d. *Clostridium*

Question No- 13 to 16 consists of two statements- Assertion(A) and Reason(R). Answer these questions selecting the appropriate option given below:

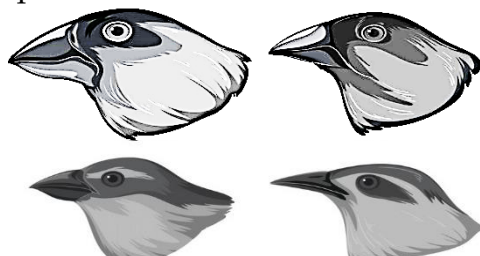
- A. Both A and R are true and R is the correct explanation of A.
 B. Both A and R are true and R is not the correct explanation of A.
 C. A is true but R is false.
 D. Both Assertion and Reason are false.
13. **Assertion(A):** In the most common type of endosperm development, the PEN undergoes successive nuclear division to give rise to free nuclei.
Reason(R): Embryo develops at the chalazal end of the embryo sac where zygote is situated.
14. **Assertion(A):** The sugar phosphate backbone of two chains in DNA double helix show anti-parallel polarity..
Reason(R): The phosphodiester bonds in one strand go from a 3' carbon of one nucleotide to a 5' carbon of adjacent nucleotide, whereas those in complementary strand go vice versa.
15. **Assertion(A):** New life comes only from the pre-existing life,
Reason(R): Spontaneous generation of life under the present environmental conditions on earth is not possible.
16. **Assertion(A):** Phagocyte cells digest microbes and debris.
Reason(R): Natural Killer Cells destroy virus infected cells and tumor cells.

Section-B

17. A mature embryo sac in a flowering plant may possess 7-cells, but 8-nuclei-Explain with the help of a diagram only.
- (18) i) Study the flow chart and name the hormones involved at each stage.
Hypothalamus → **Pituitary** → **Testis** → **Sperms.**
- ii) State the function of scrotum. (1+1)
19. Strict conditions are to be followed in MTP, mention two reasons..
20. Mention the contribution of T.H. Morgan in genetics.
- Or,
- Write a short note on Down Syndrome and Turner's Syndrome. (1+1)
21. Explain semi-conservative DNA replication process with a diagram.

Section-C

22. i) State the location and function of Sertoli cells and Leydig cells.
 ii) State the function of chorionic villi.
23. A colourblind child is born to a normal couple. Work out a cross to show how it is possible. Mention the sex of this child. (1.5+1.5)
24. Explain the significance of satellite DNA in DNA fingerprinting technique.
25. Write the characteristics of Ramapithecus, Dryopithecus and Neanderthal man. (1+1+1)
- (26) i) Write your observations on the variations seen in the Darwin's finches shown below.
 ii) How did Darwin explain the existence of different varieties of finches on Islands.



(1.5+1.5)

- (27) i) Farmers prefer biofertilizers to chemical fertilizers these days-Justify.
ii) Name any two species of fungus, which are used in the production of the antibiotics. (2+0.5+0.5)

Or,

- Describe biogas formation from activated sludge. List the components of biogas. (2+1)
28. Secondary treatment of the sewage is also called biological treatment. Justify this statement and briefly explain the process. (1+2)

Section-D

29. Mendelian disorders are mainly determined by alteration or mutation in the single gene. These disorders are transmitted to the offspring on the same lines as we have studied in the principle of inheritance. The pattern of inheritance of such Mendelian disorders can be traced in a family by the pedigree analysis. Most common and prevalent Mendelian disorders are Haemophilia, Cystic fibrosis, Sickle cell anaemia, Colour blindness, Phenylketonuria, Thalassemia, etc.

- i) State the cause of sickle cell anaemia. Mention its major two symptoms.
ii) Name the Mendelian disorder which is also known as Royal Disorder.

Or,

If the father in a family has a disease while the mother is normal, the daughters only are inherited by this disease and not the sons. Name this type of disease?

- iii) Which of the following genotypes and phenotypes in a man may be the correct result of aneuploidy in sex chromosomes? (2+1+1)

- a) 22 pairs + Y females
b) 22 pairs + XY females
c) 22 pairs + XXY females
d) 22 pairs + XXXY females

30. Transcription is the process of replicating genetic information from template strands of DNA and RNA. RNA polymerase acts as the mediator. Eukaryotic cells' nuclei are where transcription occurs. Only one strand and a portion of DNA are transcribed into RNA during transcription.

- i) State the function RNA polymerase in Transcription process.
ii) Mention the significance of promoter and terminator region.

Or,

Name the Initiation factor and termination factor present in eukaryotic Transcription process. (2+1+1)

Section-E

- (31) i) Mention the relationship between pituitary and ovarian hormones during a menstrual cycle.
ii) How is polyspermy prevented in humans. (3+2)

Or,

- i) Placenta acts as an endocrine gland-Explain.
ii) Draw a labelled diagram of female reproductive system (2+3)
(32) i) Describe the lactational Amenorrhea method of birth control.
ii) Describe two principle procedures adopted for Test-tube baby programme.
iii) Name a very common oral pill used by women and how it is helpful in birth-control. (2+2+1)

Or,

- i) Suggest and explain any three ART to an infertile couple.
ii) Give any two reasons for infertility among young couples. (3+2)
(33) i) Write the biological name of protozoan parasite that causes amoebic dysentery.
ii) Mention two diagnostic symptoms of this disease.
iii) Explain the transmission of the disease to others. (1+2+2)

Or,

- i) Show the structure of antibody, discuss it along with diagram.
ii) Write the possible causes of cancer. Write briefly on its diagnosis (2+2+1)