

# First Term Examination (23 September 2017)

Class XII (Medical)

Subject - Biology

(Set - B)

Time: 3hrs

M.M.70

General Instructions:

- i) Draw a neat and well labelled diagram wherever required.
- ii) All the questions of section A and B are compulsory. There is internal choice in one question of three marks and all the questions of five marks.

## Section - A

- Q1. "Fertilisation is not an obligatory event, for fruit production in certain plants". Explain the statement. (1)
- Q2. "Alleles of a particular gene differ from each other. What is the significance of it? (1)
- Q3. State Gause's competitive exclusion principle. (1)
- Q4. Where are T-cells formed and matured? (1)
- Q5. Mention the importance of L-H surge. (1)

## Section - B

- Q6. Why does a doctor administer tetanus antitoxin and not a tetanus vaccine to a child injured in a roadside accident with a bleeding wound? Name the microbe that cause tetanus. (2)
- Q7. Write the full form of VNTR. How is VNTR different from probe? (2)
- Q8. If a father and son are both defective in red-green colour vision, is it likely that the son inherited the trait from his father? (2)
- Q9. How do hormone releasing IUDs act as contraceptives? (2)
- Q10. A flower of brinjal plant following the process of sexual reproduction produces 360 viable seeds. (2)
- a) How many ovule are minimally involved?
  - b) How many male gametes are involved for above case?
  - c) How many microspore mother cell must have undergone reduction division prior to the dehiscence of anther in the above case?
  - d) How many megaspore mother cell are involved?

## Section - C

- Q11. Give reasons why- (3)
- a) Most zygotes in angiosperms divide only after certain amount of endosperm is formed.
  - b) Groundnut seeds are exalbuminous and castor seeds are albuminous.

- c) Integuments of an ovule harden and the water content is highly reduced as the seed matures.

**Q12.** Write the specific functions of the following cells in human males (3)

- a) Sertoli cells
- b) primary spermatocytes
- c) seminal vesicle

**Q13.** Explain the ZIFT. How is IUT differ from it? (3)

- Q14.**
- a) Discuss the genetic basis of wrinkled phenotype of pea seed. (3)
  - b) What are the characteristic features of true breeding line?

**Q15.** Name a disorder, give the Genotype and write the symptoms where a human male suffers as a result of monosomy of the sex chromosome. (3)

- Q16.**
- a) How does the Hardy-Weinberg's expression explain that genetic equilibrium is maintained in a population? (3)
  - b) List any two factors that can disturb the genetic equilibrium.

**OR**

Evolution is a change in gene frequencies in a population in response to changes in the environment in a time scale of years and not centuries. Justify this statement with reference to DDT. How does Hugo de Vries support this?

- Q17.**
- a) Draw a well labelled diagram of antibody molecule (3)
  - b) Why is it called H<sub>2</sub>L<sub>2</sub>?

- Q18.**
- a) DNA is more stable than RNA. Give reasons for it. (3)
  - b) What is the function of methylated guanosine cap?

- Q19.**
- a) Name the enzyme responsible for transcription of tRNA and the amino acid that gets linked with tRNA for initiation of transcription. (3)
  - b) Explain the role of initiator tRNA in initiation of protein synthesis.

**Q20.** A plant of *Antirrhinum majus* with red flower was crossed with another plant of same species with white flower. The plants of F<sub>1</sub> generation bore pink flowers. Explain the pattern of inheritance with the help of cross. (3)

**Q21.** How the changing level of FSH, LH and progesterone during menstrual cycle induce changes in the ovary and uterus in human female? (3)

**Q22.** Explain any three devices by which autogamy is prevented in flowering plants. (3)

**Section - D**

**Q23.** An active member of an awareness group conducts regular programme to sensitive public against alcoholism amongst youth – a serious health hazard in his locality. (4)

- a) Why is alcoholism a serious issue?
- b) How can this member sensitise the public?

- c) Identify the values this member is trying to propagate amongst the people in his locality.

**Q24.** Explain Harshey and chase experiment to show that DNA is the genetic material.

**OR**

You are given a red flower – bearing pea plant and a red flower-bearing snapdragon plant. How would you find the genotype of these two plants with respect to the colour of the flower? Explain with the help of crosses. Comment upon the pattern of inheritance seen in these two plants.

**Q25.** Describe with the help of diagram, monosporic development of female gametophyte.

**OR**

Trace the development of the zygote upto its implantation in the uterus with the help of diagram.

- Q26.**
- What is cancer? How is a cancer cell different from normal cell?
  - How do normal cells attain cancerous nature?
  - What is the causative agent for filariasis? Write its symptoms and mode of transmission

**OR**

Describe the asexual and sexual phases of the life cycle of plasmodium that causes malaria in human.