

SUBJECT : **BIOLOGY**

Candidate's Roll No.



7839

Time Allowed : 3 Hours

Maximum Marks : 150

QUESTION PAPER SPECIFIC INSTRUCTIONS

(Please read each of the following instructions carefully before attempting questions)

- 1 There are eighteen (18) questions in all.
- 2 Candidate has to attempt any fifteen (15) questions in all.
- 3 Marks assigned to each question/part are given against it.
- 4 Word limit in questions, wherever specified should be adhered to.
- 5 Attempts of questions shall be counted sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the answer booklet must be clearly struck off.
- 6 No extra/additional sheet will be provided.
- 7 Answer must be written in the authorized medium. No marks will be given for answers written in a medium other than the authorized one.

- 1 Define the term taxonomy and name the scientist who coined the term ? $2+8=10$
Explain the binomial system of nomenclature and its merits.
- 2 Explain how gene transfer occurs in bacteria when sexual reproduction is absent in them. 10
- 3 Discuss the mechanism of enzyme action and explain the Michaelis-Menten curve. $5+5=10$
- 4 Give a detail account of Meiosis. Support your description with suitable diagrams. 10
- 5 What is apoptosis ? Explain extrinsic and intrinsic pathways of apoptosis. $2+4+4=10$
- 6 Describe the process of secondary development in the stems of woody angiosperms and its importance. $6+4=10$
- 7 (a) Which endocrine gland is called executive officer of hypothalamus and why ? 4
(b) What is sensory photobiology ? Give a brief account of phytochrome mediated photomorphogenetic response in plants. $2+4=6$
- 8 (a) Write about the effects of deficiency of three macro and micronutrients each on plants. 6
(b) Xanthium is regarded as a short day plant even though the photoperiod required by it is up to 15 hours. Explain why that is so. 4

- 9 (a) Saltatory conduction of nerve impulse conserves energy of axon. 5
Give reasons to justify your answer.
- (b) What is the importance of Hatch Slack cycle ? Explain its mechanism. 2+3=5
- 10 (a) Describe why polyembryony is very significant in agriculture. 5
- (b) Explain microsporogenesis and microgametogenesis in relation to the development of pollen grains. 2+3=5
- 11 Explain menstrual cycle, its various phases and changes in concentration of anterior pituitary and ovarian hormones during menstrual cycle. 2+4+4=10
- 12 (a) What is infertility ? Describe its causes and how ARTs are used to treat it. 1+3+3=7
- (b) Explain briefly one non-invasive method of prenatal diagnosis and the role of pre-implantation diagnosis. 3
- 13 (a) What is the impact of various evolutionary changes on Hardy Weinberg equilibrium ? 8
- (b) Differentiate between endemic and exotic species. 2
- 14 (a) Differentiate between Ecads and Ecotones with one example. 4
- (b) Why is Indian government stressing upon the use of solar energy as alternative source of energy ? 4
- (c) What is a zero-population growth rate ? 2
- 15 Elucidate various issues of bioethics and biopiracy. Write about merits and demerits of GMOs. 6+4=10

16 What is genetic engineering and its applications ? Give a brief account on RNAi and dsRNA technology. **6+4=10**

17 How transgenic animals are created and are used for testing the safety of chemicals and vaccines ? **5+5=10**

18 (a) Explain the role of microbes in Sewage treatment and industries. **6**

(b) An average of 172 litres of nephric filtrate is formed everyday, but only 1.5-2 litres of urine is excreted out. What happens with the remaining amount of filtrate ? **4**



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