The figures in the margin indicate full marks for the questions

Candidates should answer Question Nos. 1 and 5 which are compulsory and any three of the remaining questions, selecting at least one from each Section

Answers must be written in ENGLISH only

Neat sketches may be drawn, wherever required

SECTION—A

1. Answer any three of the following in not more than 200 words each : 20×3=60

(a) Give an account of the physical and chemical organisation of bacterial cell wall.

(b) Explain the evolutionary significance of heterospory.

(c) Discuss various symptoms of plant diseases caused by fungus.

(d) Give an account of the production of bacterial biofertilizer.

(e) Discuss the degeneration of sexuality in Ascomycetes.

2. Distinguish between the following : 12×5=60

(a) Flagella and pili

(b) Gram-positive and gram-negative bacteria

(c) Magnetosomes and phycobilisomes

(d) Facultative parasites and facultative saprophytes

(e) Chlamydomspores and blastospores
3. Answer the following:

(a) Give an account of the post-fertilization changes leading to the formation of cystocarp in Rhodophyceae.

(b) "There is a progressive sterilization of sporogenous tissue in bryophytes." Discuss the statement.

(c) Give an illustrated account of the sexual reproduction in Voucheria and comment on its systematic position.

(d) Critically examine different views pertaining to the evolution of thallus in green algae.

4. Write critical notes on the following:

(a) Clamp connection

(b) Spore dispersal mechanism in bryophytes

(c) Rhizophore of Selaginella

(d) Sexual reproduction in diatoms

(e) Heterocyst

SECTION—B

5. Answer any three of the following in not more than 250 words each:

(a) Differentiate between the leaf anatomy of $C_3$ and $C_4$ plants.

(b) Discuss different principles that govern the distribution of mechanical tissues in the plant body.

(c) Describe the nuclear divisions and developmental pattern of Peperomia type of female gametophyte in angiosperms.

(d) Bring about the similarities and dissimilarities between the systems of plant classification of Bentham and Hooker, and Hutchinson.

(e) What are somatic hybrids? Discuss their role in plant improvement.

6. Answer the following:

(a) Compare and contrast the Bennettitalean fructification with the present-day angiospermic flower.
(b) Describe the seed structure attributed to the members of pteridosperms.

(c) Give an account of the developmental process and cellularization of different types of endosperm.

(d) Give the distinguishing characters, floral formulae and floral diagrams of the following families:
   (i) Poaceae
   (ii) Brassicaceae
   (iii) Asteraceae

7. Write explanatory notes on the following: 12\times5=60
   (a) Study of palynology in relation to taxonomy
   (b) The concept of progymnosperms
   (c) Centres of origin of cultivated plants as proposed by Vavilov
   (d) Triple fusion
   (e) Floral architecture of orchids

8. Write the correct botanical name and the family to which it belongs, and the parts used for each of the following: (2+2+2)\times10=60
   (a) Olive
   (b) Borage
   (c) Nutmeg
   (d) Vetiver
   (e) Soap nut
   (f) Ishabgul
   (g) Mint
   (h) Clove
   (i) Opium
   (j) Cane

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12RQ—100