

2008**M.Sc. Part-I Examination****BOTANY****PAPER—I***Full Marks : 100**Time : 4 Hours**The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.**Illustrate the answers wherever necessary.**Write the answer to questions of each Half in separate books.****First Half*****[Marks—50]****Answer question No. 5 and any two from the rest.**

1. (i) Write short notes on (any five) : 2×5
- (a) Lyophilization ;
 - (b) Resolving power ;
 - (c) Synchronous growth ;
 - (d) Lipopolysaccharide ;
 - (e) Oncogene ;
 - (f) Red wine.;
 - (g) B-Lymphocyte.

(Turn Over)

- (ii) Explain how interrupted mating experiments are used for determining the location of genes on a bacterial chromosome. 5
2. (i) Describe the structure of a bacterial flagella. 5
- (ii) How uv-ray affects a bacterial cell? Why moist heat is more effective than dry heat for sterilization? 2+3
- (iii) What is plaque assay? Write down the process of cultivation of plant viruses. 1+4
3. (i) Name one photosynthetic nitrogen fixing organism. Write down the structure of nitrogenase enzyme. What role is played by leg-haemoglobin during nitrogen fixation? 1+2+2
- (ii) Describe different phases of a growth curve. 5
- (iii) Mention the antibody type capable of passing via placental barrier. Write down primary characteristics of an immune response. 1+4
4. (a) What is monoclonal antibody? Describe the principle of monoclonal antibody production. Why is HAT medium required for monoclonal antibody production? Give some applications. 1+3+3+2
- (b) What are the differences between antigen and immunogen? Give the properties of antigen. What types of enzyme are used in ELISA? What are the disadvantages of whole cell vaccine? What is DNA vaccine? 1+2+1+1+1

5. Write short answer of the following (any ten) : 10×2

- (i) Mention one antifungal and one antiviral antibiotic.
- (ii) What is 'hop'? Why it is used?
- (iii) Mention the causal organism and utility of 'novel rot'.
- (iv) What is prophage? Name one lysogenic phage.
- (v) What is the full form of :
 - (a) KDPG
 - (b) ATCC
- (vi) Name the causal organisms of :
 - (a) gonorrhoea
 - (b) Q-fever
- (vii) "70% ethanol is more bactericidal than absolute alcohol"—Justify.
- (viii) Name one nitrifying and one denitrifying bacteria.
- (ix) Give example each of double stranded RNA and single stranded DNA virus.
- (x) What are the different types of T-cells found in human?
- (xi) Why humid air contains less microbe than dry air?
- (xii) What do you mean by GRAS and GM organisms?
- (xiii) What is 'BCG'?
- (xiv) How does restriction endonuclease remain inactive in the source organisms.

Second Half

[Marks—50]

Answer *all* question

6. What are the molecules used in phylogenetic study in algae? Write a brief note on the contribution of these molecules in understanding phylogenetic relationship in algae. 2+8

Or

Write short notes on any *two* of the following : 5×2

- (i) Algae in Pisciculture.
 - (ii) "Prochlorophyta — an enigmatic taxon"—illustrate in the light of its characters and phylogeny.
 - (iii) Parallelism in algae and its significance in algal classification.
 - (iv) Reclamation of soil fertility with the use of algae (mentioning the name of algae species and the way they contribute)
7. Why Fungi are chemoheterotrophs? Write briefly about types of fungi based on nutritional characters giving emphasis on degree of symbiosis. 2+8

Or

Write short notes on any *two* of the following : 2×5

- (i) Homothallism in fungi,
- (ii) Biotrophs and microtrophs
- (iii) Heterokaryosis in fungi
- (iv) Role of fungi in cheese production.

8. What are primitive and advanced characters ? Discuss about solve primitive and advanced characters of bryophytes. Write a comprehensive note on the origin of bryophytes in the light of regressive theory of evolution.

2+3+5

Or

Write short notes on any *two* of the following : 2×5

- (i) *Sphaerocicia*
 - (ii) Apogamy in bryophytes
 - (iii) Xerophilous bryophytes.
 - (iv) Spore germination in bryophytes.
9. Illustrate different types of steles found in pteridophytes. Discuss about the stelar evolution seen in pteridophytes.

5+5

Or

Write short notes on any *two* of the following : 5×2

- (i) Early vascular plants;
 - (ii) Apospory and apogamy in pteridophytes;
 - (iii) Telome concept
 - (iv) Sphenopsida.
10. What is chemical evolution ? How did it happen in primitive earth ? Briefly mention the early evolution of life forms as revealed by fossil records.

1+5+4

Or

Write short notes on any *two* of the following : 5×2

- (i) Classify of modern conifers with basis;
 - (ii) Economic importance of gymnosperms;
 - (iii) Sequence the Lower Gondwana in Damodar Valley basin and mention the flora of it.
 - (iv) Types of fossil.
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