# 2016

## 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* ]

### (*Microbiology*)

Answer *Q. No. 1* and any *three* questions from the rest.

**1.** Answer any *ten* of the following : 10×2

(a) What is the function of using Oil in Oil-immersion objective ?

(b) What are prions ? Name one disease caused by such agents.

(c) Write down utility of synchronous culture.

(d) Name each of an antibiotic which inhibit protein synthesis and nucleic acid synthesis.

(e) Name the pathogens to cause syphilis and whooping cough.

(f) What is interferon ?

(g) What is bioplastic ? Give example.

(h) Write down utility of 'hop'.

(i) What is magnetosome ?

(j) What is negative staining ?

(k) Give example of an exotoxin. Mention its source.

(l) Write down the function of teichoic acid.

(m) Distinguish between $T_4$ and *E. coli* DNA ligase.

(n) Distinguish between the meaning of the terms pure culture and strain.

(o) Give properties of nucleoid.

**2.** (a) How does transformation mechanism of Gram (+) bacteria differ from Gram (–) bacteria.

(b) Write down cultivation process of an animal virus.





(c) Write down the principle of phase contrast microscope. 4+4+2

**3.** (a) Briefly discuss the molecular mechanism of lysogeny in λ-phage.

(b) What is interrupted mating experiment ? How bacterial gene maps are prepared with this technique ? 4+(1+5)

**4.** (a) Briefly describe the process of endospore formation in bacteria.

(b) How will you develop a synchronous culture in laboratory ?

(c) What is monoclonal antibody and how is it produced ? 3+4+3

**5.** Write short notes on (any *four*) : $4\times2\frac{1}{2}$

(a) Radioactive labeling ;

(b) Frame shift mutation ;

(c) Fluid mosaic model ;

(d) Food sterilization ;

(e) Compare the structure and biological function of IgG and IgM.

## Second Half

[ *Marks : 50* ]

**(*Phycology, Mycology, Bryology, Pteridology, Gymnosperms and Paleobotany*)**

**6.** Write down the salient features of Rhodophyceae and Phaeophyceae and mention their Phylogeny. 3+3+4

*Or*

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

(a) Reserve food materials in different groups of algae ;

(b) Heterocyst ;

(c) Phycocolloids ;

(d) Industrial use of algae.

**7.** Write down the salient features of Myxomycotina. Write a brief account of heterothallism. 5+5

*Or*

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

(a) Mastigomycotina ;

(b) Industrial uses of fungi ;

(c) Spore dispersal mechanism in fungi ;

(d) Zygomycotina.





**8.** Characterize Takakiales. Mention the systematic position of the group. Discuss the phylogenetic importance of the group regarding the evolution of bryophytes of higher scale. 4+2+4

*Or*

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

(a) Bryophytes as pollution indicator ;

(b) Spore formation in bryophytes ;

(c) Economic importance of bryophytes ;

(d) Sphagnales.

**9.** Characterize Trimerophytopsida. How does this group differ from Zosterophyllopsida ? Write down the evolutionary significance of Trimerophytopsida. 3+3+4

*Or*

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

(a) Apospory in pteridophytes ;

(b) Cooksoniod group ;

(c) Stelar types in *Lycopodium* (sensu lato) ;

(d) Soral types in ferns.

**10.** Characterize Pteridospermales. Mention the families of palaeozoic pteridospermales. Describe the male and female fructifications of Pteridosperms. 3+2+5

*Or*

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

(a) Megafloristics of Talchir and Barakar Formations ;

(b) Coalified compression ;

(c) Classify Gymnosperm upto orders as proposed by Stewart & Rothwell (1993).

(d) Gymnosperm as a source of medicine and resin.

———