2007

BOTANY

PAPER -1

Full Marks : 100

Time : 4 hours

The figures in the right-hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers whenever necessary

Write the **answers of the Questions of each Half in separate books**

FIRST HALF

[Marks : 501

Answer Q. No. 5 and any *two* from the rest

1. (a) Draw and describe the structure of a IgG molecule.

(b) Describe the principle for complement fixation test.

(mm Over)

(c) Give the mode of action of tetracycline as **antibacterial agent.**

(d) Write down the procedure for agarose gel electrophoresis. 5+3+2+5

2. (a) How plant viruses can be cultivated?

(b) How will you develop a synchronous culture?

(c) During log-phase growth of a bacterial culture, a sample is taken at 8:00 a.m. and found to contain 1,000 cells per milliliter. A second sample is taken at 5:54 p.**m. and is found to contain 1,000, 000 cells per milliliter. What is the generation time in hours ?**

(d) Briefly describe the process of endospore formation in bacteria. 3+3+5+4

3. (a) How natural transformation system of *Streptococcus* sp. differs from *Haemophilus* sp.

(b) Describe the classical experiment to prove the spontaneous nature of mutation.

(c) What. are different functions of capsule in bacteria ?

(**d) Describe the process** of commercial **production of beer with a flowchart**. 4+4+3+4

4. (a) Contrast endotoxin and exotoxin.

(b) What method of sterilization would be appropriate for each of the following:

(i) Usual laboratory media.

(ii) A dry powder product.

(id) The whole **classroom.**

(iv) A heat labile antibiotic solution.

(c) What is resolving power of a microscope? How resolving power is restricted by numerical aperture and wavelength of visible light?

(d) What is the mechanism behind the retention of crystal violet stain by Gram positive bacteria.

(e) Write down the E. D. pathway for glucose catabolism. 3 + 2+ (2 + 2) + 3 + 3

5. Write short answers of any *ten* of the following : 2x10

(i) State the function of teichoic acid.

(ii) What is the role of carboxysome in bacterial nutrition ?

(id) What were the contributions of (a) Robert Koch (b) Louis Pasteur in the development of microbiology.

(iv) What is negative staining?

(v) What is abortive transduction?

(vi) What is phagemid?

(vii) What are **the causal** organisms for the following diseases :

(a) Whooping cough,

(b) Plague.

(viii) **Name one methanogenic bacteria and one** halophilic **bacteria.**

(ix) What is **phenol coefficient?**

(x) What is interferon ?

(xi) What **is active**-artificial immunity? Give **example.**

(xii) What is bactoprenol ?

(xii) **What is the raw material used** in SUFU **preparation** ? **Mention the name of the microorganism involved in the process.**

(xiv) **Give example of an exotoxin mentioning its source.**

SECOND HALF

[Marks : **50]**

Answer *all* questions

6. Give an account of a recent classification of algae mentioning the characteristics of the major groups. 10

Or

Write short notes on any *two* of the following : 5x2

(i) Range of thallus structures in algae

(ii) Phycocolloids **and their uses**

(iii) **Single cell protein from algae**

(iv) Charophyceae **and origin of** land plants.

7. **What is meant by parasexuality? Give an account of the `Parasexual** Cycle' **in. fungi with special reference to heterokaryosis.** 10

Or

Write short notes on any *two* of the following : 5x2

(i) Distinguish Mastigomycotina from that of Zygomycotina

(ii) **Industrial uses of Fungi**

(iii) **Heterothallism in Fungi**

(**iv) Salient features of Ascomycotina.**

8. **Mention the salient features of Bryales. How does it differ from Sphagnales ? Discuss relative advancement of Bryales among** bryophytes. 3 + 3 + 4

or

Write short notes on any *two* of the following : 5x2

(i) Bryophytes as pollution indicator

(ii) Phylogeny of Tanakiales

(iii) **Fossil bryophytes**

(iv) **Parthenogenesis in bryophytes.**

What is 'telome' ? Following telome concept discuss the origin of Filicopsida and Psilotopsida from rhyniaceous stock. **2+3+5**

Or

Write short notes on any *two* of the following: 5x2

(i) Arborescent lycopsids

(ii) Zosterophyllopsida

(iii) **Anatomical peculiarities of *Equisetum***

(iv) **Trimerophytopsida.**

10. Characterize Pteridospermales. Classify it into families. Briefly describe the anatomy ofMedullosan stems. **3+2+5**

Or

Write short notes on any *two* of the following: 5x2

(i) Mechanism of Continental Drift Theory in the light of 'Plate Tectonics'

(ii) **Importance** of plant **fossils in stratigraphy fossil and its significance**

(iii) What do you mean by the 'Gondwana Sequence'? Mention the floras of Middle and Upper Gondwana

(iv) Geographic distribution of modem cycads.
