M.Sc. 1st Semester Examination, 2014

BOTANY

( Microbiology )

PAPER— BOT-104

Full Marks : 40

Time : 2 hours

Answer Q. No. 1 and any two from the rest

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 wherever necessary

1. Answer any ten questions from the following: $2 \times 10$

   (a) What is Thermal Death Time (TDT) and decimal reduction time (D) for microbes ?

   (b) Give example of an exotoxin mentioning its source.
(c) Write down two important characters of an ideal chemotherapeutic agent.

(d) Explain why obligate anaerobic microorganisms cannot tolerate molecular oxygen?

(e) How does monoclonal antibody differs from polyclonal antibody?

(f) Compare T4 ligase with E. Coli ligase.

(g) Give example each of a bacteria involved in:
   
   (i) Nitrification
   (ii) Ammonification
   (iii) Denitrification and
   (iv) Nitrogen fixation.

(h) What is active artificial immunity? Give example.

(i) Write down the full form of: ATCC, BCG, LPS, PHB.
(j) Define Prion. Mention the name of disease caused by such agent.

(k) Give example each of a bacteria that grows at higher temperature and higher salt concentration.

(l) What is hop?

(m) Write down any two properties of a cancerous cell.

(n) Mention one non-medical use of antibiotics.

(o) Name one single stranded and one double stranded DNA containing plant viruses.

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

(b) Write down different functions of capsule in bacteria.

(c) Describe the process of commercial production of beer with flow chart. 4 + 2 + 4
3. (a) Draw and describe the structure of a IgG molecule.

(b) Give the mode of action of tetracycline as an antibacterial agent.

(c) Comment on application of genetic engineering in environmental stability. 4 + 2 + 4

4. Write short notes on (any four): \(2\frac{1}{2} \times 4\)

(i) Food sterilization

(ii) Blood grouping

(iii) Triple vaccine

(iv) Acid fast bacteria

(v) Contribution of Louis Pasteur in Microbiology

(vi) Antiviral drug.

5. (a) 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 milliter. A
second sample is taken at 5 : 54 p.m. and is found to contain 10,00,000 cells per milliter. What is the generation time of that bacteria in hour?

(b) What is magnetotaxis? Write down its utility in bacteria.

(c) What will be the resolution of a microscope, where half aperture angle of its oil immersion objective is 58° and green light is used as energy source? (sin 58° = 0.85, R.I immersion oil = 1.56).

$$4 + (1 + 1) + (3 + 1)$$