PG/IS/BOT-104/14

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 : 2×10

(*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 micro-organisms 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 apperture angel of its oil immersion objective is 58° and green light is used as energy source ? ($\sin 58^{\circ} = 0{\cdot}85$, R.I immersion oil = 1·56).

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