M.Sc. 1st Semester Examination, 2010

BOTANY

PAPER—BOT-104(IV)

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* of the following : 2 x 10

(*a*) What are mesosomes, and what are their most probable functions ?

(*b*) What is the function of oil when used with the oil-immersion objective ?

(*c*) Describe four unique properties of bacterial endospore.

(*d*) Describe the nutritional groupings of microorganisms based on their energy and principal carbon source.

(*e*) Explain why obligate anaerobic micro-organisms cannot tolerate molecular oxygen.

(*f*) What method of sterilization is appropriate for :

(*i*) Czepax-Dox medium ?

(*ii*) Heat sensitive solution of a vitamin ?

(*iii*) Packaged spices ?

(*iv*) Dry powder of antibiotic ?

(*v*) Glass pipette ?

(*g*) What does a phenol coefficient of 3·0 mean ?

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

(*i*) How does monoclonal antibody differ from polyclonal antibody ?

(*j*) Name two antibiotics of which one is antifungal and other inhibits protein synthesis.

(*k*) Name one non-leguminous symbiotic nitrogen fixer. What is its host ?

(*l*) What is the utility of synchronous culture ?

(*m*) Name the organisms responsible for causing plague and Q-fever.

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

(*i*) Specialized transduction

(*ii*) Phase contrast microscope

(*iii*) Vaccine

(*iv*) Blood grouping

(*v*) Sweet dessert wine.

3. (*a*) What will be the resolution of a microscope, where half apperture angle 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 = $1{\cdot}56$]

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

(*c*) What characteristics of pUC19 make it suitable as a cloning vehicle ? 3 + 3 + 4

4. (*a*) Describe the process by which steady state growth of an organism can be maintained in a laboratory.

(*b*) How transformation mechanism of gm (+) bacteria differs from gm (-) bacteria ?

(*c*) What is magnetotaxis ? What is its utility in bacteria ?

(*d*) Write down the contributions of Louis Pasteur in the field of Microbiology. 3 + 3 + (1 + 1) + 2