M.Sc. 1st Semester Examination, 2012

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* of the following : 2 × 10

(*a*) What are chemolithotrophs ? Give example.

(*b*) Give two properties of pBR322.

(*c*) Name the organisms that causes whooping cough and anthrax disease in human.

(*d*) Mention two important differences between Archaea and Eubacteria.

(*e*) Write down contributions of

(*i*) Martinus Beijerinck.

(*ii*) Sergei Winogradsky.

(*f*) What is biofilm ?

(*g*) What is 'active artificial' immunity ? Give an example.

(*h*) What is hybridoma technology ?

(*i*) What is bioplastic ? Mention its source.

(*j*) Name one antifungal and antiviral antibiotic.

(*k*) Mention the chemical nature of capsule.

(*l*) What is 'novel rot' ? Name its causal organism.

(*m*) What are 'prions' ? Name a disease caused by them.

(*n*) Name the enzyme applied in blunt end ligation. What is its source ?

(*o*) What is 'mot' protein ?

2. Write short notes on any *four* of the following : $2\frac{1}{2} \times 4$

(*a*) Classification of virus, considering structural symmetry.

(*b*) Diagnostic application of immunology.

(*c*) Phenol coefficient.

(*d*) Lipopolysaccharide.

(*e*) ED pathway.

(*f*) Lysogeny regulation.

3. (*a*) Write down primary characteristics of an immune system.

(*b*) Compare transformation mechanism of gram positive and gram negative bacteria.

(*c*) Mention raw material, microorganism involved, and additives used during beer production.

(*d*) Name one biological mutagen. $3 + 3 + 3 + 1$

4. (*a*) Mention the role of bacteria in agriculture.

(*b*) During log phase growth of a bacterial culture, a sample is taken at 9:00 a.m. and found to contain one thousand cells per milliliter. A second sample is taken at 6:54 p.m. and is found to contain one million cells per milliliter. What is the generation time in hours ?

(*c*) Compare : (*i*) agglutination and precipitin test.

(*ii*) mode of action of UV ray and X-ray.

3 + 3 + (2 + 2)