M.Sc. 1st Semester Examination, 2012

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

(*i*) Mention four contributions of R. Koch in the development of microbiology.

(*ii*) Define numerical aperture and angle.

(*iii*) Distinguish between murein and pseudomurein.

(*iv*) In the lag phage of growth the number of bacteria remains constant. Does this mean the cells are dormant and inert ? Explain.

(*v*) What is magnetosome ? Give an example of bacteria where it is found.

(*vi*) What is nitrification ? Name at least two bacteria involved in this process.

(*vii*) Give the properties of nucleoid.

(*viii*) Mention the mode of action of two antiviral drugs of your choice.

(*ix*) Distinguish between T4 and *E. coli* DNA ligase.

(*x*) Distinguish between plasmid and phagemid.

(*xi*) Define Mol % G + C.

(*xii*) What is the difference between Bergey's manual of determinative bacteriology and Bergey's manual of systematic bacteriology ?

(*xiii*) How does penecillin inhibit the transpeptidation reaction of murein biosynthesis ?

(*xiv*) Draw a bacterial endospore and label its different layers.

(*xv*) Distinguish between the meaning of the terms pure culture and strain.

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

(*i*) SUFU

(*ii*) Separation of Archaeobacteria as Archaea

(*iii*) ELISA

(*iv*) Genetic engineering for health

(*v*) Baltimore's classification of virus.

3. (*a*) Describe the five kingdom concept.

(*b*) Mention four properties of nitrogenase complex.

(*c*) Describe the Helmstetter-Cummings experiment for obtaining synchronous growth of bacteria.

(*d*) Write the properties of an ideal vector and importance of P^{BR322}. 2 + 2 + 3 + 3

4. (*a*) Why are antibodies termed as immunoglobulins ? Write the general properties of immunoglobulins. Write the biological functions of IgG.

(*b*) Write the importance of HAT medium in hybridoma technology.

(*c*) Describe the E. D. pathway. 4 + 3 + 3