

**2016**

**M.Sc. 1st Semester Examination**

**MICROBIOLOGY**

**PAPER—MCB-101**

*Full Marks : 40*

*Time : 2 Hours*

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

***Use separate Answer-scripts for Group-A & Group-B***

**Group—A**

Answer any two questions.

1. (a) What is L-form bacteria ? How does it differ from micoplasma ?  
  
(b) What is Taq polymerase and state its importance ?

*(Turn Over)*

- (c) Mention the mechanism of Acid fast staining ?
- (d) Mention the proteinaceous reserve material of cyanobacteria and state its composition.
- (e) What is type strain and state its importance.

2×5

2. (a) Briefly describe how DGGE helps in the biodiversity analysis of microbial community.
- (b) What molecular adaptation to cold temperature are seen in psychrophiles ?
- (c) Write note on chemoautotrophic bacteria.
- (d) What is phycobillisome and state its structure and function.

4+2+2+2

3. State the role of proteins present in the divisome.

Distinguish between the term specific growth rate and generation time.

If in eight hours an exponentially growing cell population increase from  $5 \times 10^6$  cells per ml to  $5 \times 10^9$  cells per ml.

Calculate g and n.

4+3+3

**Group—B**

Answer any *two* questions.

1. (a) Describe the characteristic features of "Baltimore classification" of virus with suitable examples of each group.
- (b) Elucidate the factors responsible for "Molecular attachment & entry" into host cell in human pathogenic viruses.
- (c) How is viral titer measured? How does a plaque assay work? How many viruses are needed to form plaque? Why is it important to know this information?

$$(3+2)+2+(1+1+\frac{1}{2}+\frac{1}{2})$$

2. (a) Briefly describe the pathogenesis of Influenza virus in human.
- (b) What do you mean by "Prions"? Give examples of prion diseases in human.
- (c) Mention the mode of action of the anti-viral drug oseltamivir.

$$5+2+3$$

3. (a) Explain the phenomenon of Lysogeny in brief. How M13 behaves in an *E. coli* host, elucidate with reasons.

3+2

- (b) Write short notes on (any two) :

(i) Plaque assay ;

(ii) Haemagglutination-Inhibition assay ;

(iii) Herpes simplex virus ;

(iv) Viroids.

2×2  $\frac{1}{2}$