2015

MICROBIOLOGY

[Honours]

PAPER – VI

Full Marks : 90

Time : 4 hours

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

GROUP – A

Answer any **two** questions : 15 × 2

1. (*a*) Discuss the role of *Ter* and *Tus* site in termination of replication of DNA in E. Coli. 3 + 3

(*b*) Prove that *F* factor is DNA. 2

(*c*) How autotroph can be isolated from prototroph ? 3

(*d*) Write a short note on SOS repair. 4

2. (*a*) What is molecular probe ? Discuss its applications. 2 + 2

(*b*) What do you mean by super repressor ? Why glucose is called catabolite represeor ? 2 + 3

(*c*) Discuss about the types of restriction endo-nuclease with example. 6

3. (*a*) Discuss the proof reading function by DNA pol I. What is Klenow fragment ? 3 + 2

(*b*) Who discovered transposons ? 1

(*c*) Describe photoreactivation. 4

(*d*) Write short notes on : $2\frac{1}{2}+2\frac{1}{2}$

(*i*) Interrupted mating experiment

(*ii*) Primosome.

4. (*a*) Write briefly on the properties of vector. What is shuttle vector ? 4 + 1

(*b*) Write down the basic stages of transposition. 4

(*c*) What do you mean by restriction map ? 2

(*d*) Distinguish between genomic library and cDNA liberary. 4

GROUP – B

Answer any **five** questions : 8 × 5

5. (*a*) Differentiate between lytic and lysogenic life cycle. What is prophage ? 4 + 2

(*b*) What is BAC vector ? 2

6. How attenuation occur in tryp operon ? What do you mean by Taq polymerase ? 6 + 2

7. (*a*) Compare between co-transduction and abortive transduction ? 2 + 2

(*b*) What is RF ? Mention its role in release of peptide chain during termination of translation. 4

8. What is EFTu-EFTs cycle ? Mention the role of EFTG. 6 + 2

9. Does replication fork move bidirectionally ? Mention the role of σ factor and ρ factor ? 2 + 3 + 3

10. What is histon ? How unit fibre of chromosome is formed by supercoiling ? 2 + 6

11. (*a*) Write a short note on mDNA. 4

(*b*) What is central dogma ? What is Tautomerism ? 3 + 1

12. What is *Nus* and *Nut* site ? Discuss their significance. 8

13. Differentiate and compare between western blotting and southern blotting. Mention the applications of western blotting. 6 + 2

14. Write short notes on : 4 + 4

(*i*) nif genes

(*ii*) Basic steps of isolation of a gene.

GROUP – C

Answer any **five** questions : 4 × 5

15. (*a*) What is human growth factor ? 4

(*b*) What is thymine dimer ? How is it repaired ? 2 + 2

(*c*) Mention the function of : 2 + 2

(*i*) DNA B

(*ii*) DNA G.

(*d*) Schematically describe the basic steps of protein sequencing. 4

(*e*) How can you prove that only DNA enters the bacterial cell during transduction ? 4

(*f*) What is meant by Base analogue ? Give example and state its mode of action. 1 + 3

(*g*) Discuss briefly on the application of DNA fingerprinting 4

(*h*) What is β clamp ? How does it function as a component of DNA Pol III. 1 + 3

(*i*) Distinguish between autonomous and nonautonomous transposon. 4

(*j*) What is nucleoid ? What are transition and transversion ? $1+1\frac{1}{2}+1\frac{1}{2}$
