2013

M.Sc.

2nd Semester Examination

BIOCHEMISTRY

PAPER—BIC-201

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

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

Illustrate the answers wherever necessary.

Group – A

1. Answer any five questions from the following : 2×5

   (a) What nutritional support is provided by beef extract and peptone in culture media?

   (b) Define symbiosis in microbial ecology.

   (c) What is Chlorosome? Write significance.

   (d) What is transpeptidation? Why it is important?

   (e) What might be the advantage of gas vesicle to the phototrophic bacteria?

(Turn Over)
(f) What is SASP? Write their function.

(g) What is CFU? How it is used in microbial quantification?

(h) What factors may cause difference in colony morphology in same species?

Group – B

2. Answer any two questions from the following: 5×2

(a) State the significance of heterocyst in cyanobacteria. Write few important features of cyanobacteria. 2+3

(b) What is Taq DNA Polymerase and it is used in biotechnology? 2+3

(c) Describe the reproduction strategy of QX 174. How does it differ from fd 1? 3+2

(d) Distinguish between specific growth rate and generation time.

If an 8 hr exponentially growing bacterial population reached from $5 \times 10^6$ cell/ml to $5 \times 10^8$ cell/ml, calculate its $g$ and $n$. 

(Continued)
3. (a) Briefly describe the strategy for cell-wall biosynthesis of a Gram-positive bacteria like *S. aureus*.

How one step growth experiment is carried? Write its significance.  
6+4

(b) List several animal and human disease caused by mycoplasma and Rickettsiae. What is bacterial endospore? How it is stained? What are the factors giving so resistance to endospore?  
4+1+3+2

(c) With suitable experiment show that gene transfer among bacteria may be caused by phage virus. Describe the molecular mechanism of specialized transduction.  
4+6

(d) Indicate how bacterial endospore differs from vegetative cell in structure, chemical composition and ability to resist extreme environmental condition.  
3+4+3