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(A-28) **SARDAR PATEL UNIVERSITY**

M.Sc. (IV Sem.) Examination

Tuesday, 21st April 2015

10:30 am – 01:30 pm

Biochemistry PS04EBIC01 – Microbial Physiology

Total Marks: 70

Note: Figures to the right indicate full marks.

Q.1 Select proper option from following [08]

- Which of the following protein present in outer membrane shows protease activity?
 - Tol A
 - Omp T
 - Ton A
 - Omp C
- The following is the example of siderophore produce by yeast.
 - Yeastophore
 - Saccharamycin
 - Rhodotorulic acid
 - Enterochelin
- Which of the following act as a substrate in bacterial bioluminescence?
 - FMNH₂
 - ATP
 - GTP
 - DTT
- Complex communities of microorganism attached to surface are known as
 - Biofilms
 - Both the above
 - Flagella
 - None of the above
- Techoic acid are not found in:
 - Bacillus subtilis*
 - Staphylococcus aureus*
 - Lactobacillus plantarum*
 - Escherichia coil*
- Which is the target site for binding of cholera toxin in host cell
 - 28S RNA
 - GS α
 - Elongation factor-2
 - Actin
- Which of the following is an example of neurotoxin?
 - Botulinum Toxin
 - Both a & b
 - Tetanus Toxin
 - None of above
- The following is the end product in cathodic chamber of MFC
 - Water
 - Carbon dioxide
 - Ammonia
 - ATP

Q.2 Attempt/Answer (in Short) any seven from the following [14]

- Describe the structure of gram Negative cell wall in brief.
- What is Heat Shock Protein?
- What is the mode of action of streptomycin?
- Which organisms are useful in MFC?
- How the bacterial spores get resistance to ultraviolet radiation?
- Give the role and types of cyclins in yeast cell cycle regulation.
- Explain in brief about the stages of Biofilms formation.

8. What is Osmoprotectant?
9. Give the importance of siderophore production in PGPR.
- Q.3 A. Explain the molecular mechanism of chemotaxis in *E.coli*. [6]
B. Give an account on: Peptidoglycan Biosynthesis [6]
OR
B. Discuss the structure and synthesis of bacterial flagella in detail. [6]
- Q.4 A. Write down the role and regulation of sigma factors activity during bacterial sporulation. [6]
B. Explain the various stages and events leading to cell division in *E.coli*. [6]
OR
B. Give an account on yeast cell budding with the role of septins and spindle pole body in detail.
- Q.5 A. Explain the importance and biochemical reaction of bacterial bioluminescence. [6]
B. Discuss the biochemistry and regulation of PHA synthesis. [6]
OR
B. How *E.coli* cell will respond under high osmotic stress? Give a detailed mechanism of it. [6]
- Q.6 A. What is quorum sensing? Give the mechanism and importance of quorum sensing. [6]
B. Give an account on : Application of Bacteriocins [6]
OR
B. What are AB toxins? Explain the mechanism of cholera and diphtheria toxin [6]

===== Best of Luck =====