

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. SIXTH SEMESTER EXAMINATION, MAY 2019

THIRD YEAR [BATCH 2016-19]

MICROBIOLOGY (Honours)

Paper : VII [Gr-B]

Date : 10/05/2019

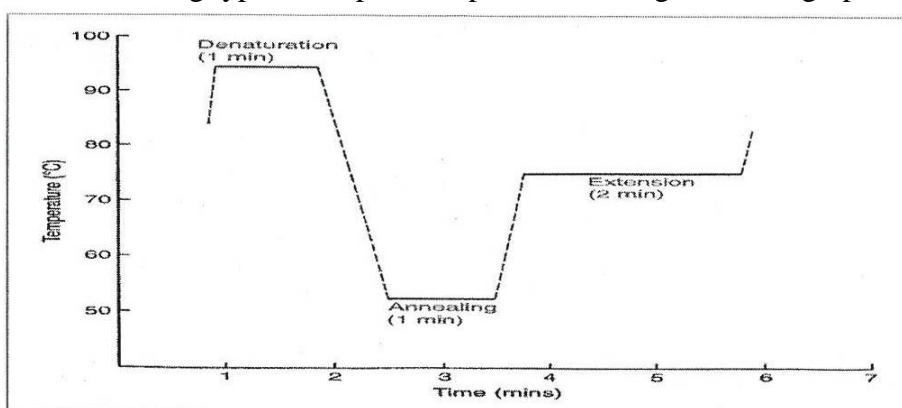
Time : 11 am – 1 pm

Full Marks : 50

(Answer any five questions)

[5×10]

11. a) Comment on the mode of action of Aminoglycosides. How bacteria develop resistance against Aminoglycosides? [2+2]
b) Define the term Selective toxicity with regard to antibacterial agents. [1]
c) How bacteria develops resistance against Penicillin? [2]
d) How do tetracycline and chloramphenicol differ functionally? [3]
12. a) Why do antiviral drugs generally exhibit host toxicity? [2]
b) How do nucleoside inhibitor drugs work? Name one such drug with its target organism. [2+2]
c) Define the fungi specific targets that allow selective toxicity of chemotherapeutic agents in fungi? [2]
d) Comment on the mode of actions of Ketoconazole. [2]
13. a) Name the causative organism of anthrax. Name the different toxins produced by the organism. [1+2]
b) How HIV is able to cause Latent infection in human beings? [3]
c) Name one granulomatous disease. Define granuloma. How it is formed. [1+1+1]
d) What is rose spot? [1]
14. a) How would you classify Polio disease based on symptoms? Why polio virus preferentially attacks central nervous system. [3+1]
b) Compare the different types of Polio vaccine. [3]
c) Name the organism responsible for causing tetanus. How it enters the human system and causes disease? [1+2]
15. a) How will you prevent amplification of non-specific products during PCR? [2]
b) Why it is important to equalize the amounts of RNA in gels run for carrying on Northern blotting? [2]
c) Restriction endonucleases are naturally found in bacteria. What purposes do they serve. [2]
d) Explain the strategy for obtaining fusion recombinant protein product. [2]
e) Explain the following typical temperature profile for the given PCR graph: [2]



16. a) In a cloning experiment how would you minimize self ligation of vector DNA that has been digested with Restriction endonuclease. [2]
 b) How can you identify the existence of a particular gene in a bacterial colony? [3]
 c) "A good bacterial host should lack restriction modification system"— Justify. [2]
 d) Describe the function of following enzymes in respect of their use in R.D.T. (Any three) [1×3]
 i) DNA polymerase I ii) Alkaline Phosphatase iii) T4- Polynucleotidekinase
 iv) DNA ligase v) Reverse Transcriptase vi) S1-nuclease
17. a) What are bifunctional vectors? Give example. [2]
 b) How does lipoplex is useful for gene transfer method? [2]
 c) Define cosmids. Why they are considered as better vectors than plasmids [2+2]
 d) How GUS gene is used as selectable marker [2]
18. a) How does helper virus is helpful for transfer of foreign gene by using viral vector? [2]
 b) Write down the chemistry of acrylamide polymerization in PAGE? [2]
 c) Triparental mating is useful for constructing co-integrate vector. Explain this process. [2]
 d) It is always preferable to treat cell with cryoprotectant before using DEAE dextran mediated gene transfer. Explain the reason. [2]
 e) How does Biotin-streptavidin system is useful for clone selection form a genomic library? [2]
19. a) What are the advantages of DNA vaccines over the traditional vaccines? [3]
 b) How does complement affect a foreign bacterial cell inside the human body? [3]
 c) What are Allergens? How is it different from antigens? [1+1]
 d) Define passive immunity. What type of vaccine confers passive immunity to humans? [1+1]
20. a) Why type IV hypersensitivity is called delayed type hypersensitivity? [3]
 b) Define autoimmunity. Mention the causes of autoimmunity. [1+2]
 c) Write a brief account on Herd Immunity. [2]
 d) What is Erythroblastosis foetalis? [2]

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