

B.E./B.TECH. Degree Examination, December 2020

Third Semester

BT18305 – Microbiology

(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. In Phase contrast microscopy, the rate at which light enters through objects is _____
 - a) Constant
 - b) Inversely proportional to their refractive indices
 - c) Directly proportional to their refractive indices
 - d) Exponentially related to their refractive indices
2. Which of the following are functions of water in the culture medium?
 - a) nutrients must be in aqueous solution
 - b) cofactor of enzymes
 - c) provides resistance to sudden transient temperature changes
 - d) it is a chemical reactant, nutrients must also be present in aqueous solution and provide resistance to sudden temperature changes
3. Polymyxins inhibits the growth of the microbes by carrying out which of the following actions?
 - a) inhibition of cell-wall synthesis
 - b) damage to cytoplasmic membrane
 - c) inhibition of nucleic acid and protein synthesis
 - d) inhibition of specific enzyme systems
4. In physical method of selection, endospore-forming bacteria can be obtained by heating the mixed culture to _____
 - a) 70 degree C for 10 minutes
 - b) 80 degree C for 10 minutes
 - c) 60 degree C for 10 minutes
 - d) 90 degree C for 10 minutes
5. What is meant by the limit of resolution in microscopy?
6. What is hexose monophosphate shunt? Why is it called so?
7. Name any two chemical sterilizing agents that kill bacterial spores.
8. How biosensors are used in the detection of pollution controls.

PART B - (4 X16 = 64 marks)

09. (a) Compare and contrast SEM and TEM in working principle, magnification, (16) resolution, image formation and appearance.
(OR)
(b) Discuss and evaluate the different types of staining techniques used in the field of (16) microbiology.

10. (a) (i) Illustrate and paraphrase the typical growth curve and explain about various phases. (8)

(ii) Is nutrient broth a universal medium? Criticize the statement in detail. (8)

(OR)

(b) Compare the advantage and disadvantages of the various techniques for the isolation of microorganisms in pure culture. (16)

11. (a) Discriminate the physical and chemical methods used for the control of microorganism by explaining their mode of action. (16)

(OR)

(b) Compare the mode of antimicrobial action of the following chemotherapeutic agent (16)

a. Penicillin b. Cephalosporins c. Tetra cycline

12. (a) Explain and summarize the different structures of viruses, its mechanism of reproduction with suitable examples. (16)

(OR)

(b) (i) Explain the commercial production of biofertilizers. Write a method to check quality of biofertilizer. (8)

(ii) Describe in detail the industrial production of Vitamin B12 using microorganisms. (8)