



**WEST BENGAL STATE UNIVERSITY**

B.Sc. Honours PART-I Examinations, 2018

**MICROBIOLOGY-HONOURS**

**PAPER-MCBA-II-A**

Time Allotted: 2 Hours

Full Marks: 50

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.*

**Group-A**

**Answer Question No. 1 and any four from the rest**

1. Answer any **five** questions from the following: 2×5 = 10
  - (a) What is Phenol Coefficient?
  - (b) Why antibiotics are called Idioliths?
  - (c) Why Archaean cell wall is insensitive to lysozyme?
  - (d) Define Periplasmic space with function.
  - (e) Why dual host is necessary for the reproduction of Plasmodium Vivax?  
What is BT malaria?
  - (f) What do you mean by generation time?
  - (g) Define decimal reduction time.
  - (h) What are Hopanoids?
  
2.
  - (a) Is it possible to differentiate between dead cell and living cell by staining? 2
  - (b) What are the differences between a dye and a stain? 2
  - (c) Explain auxochrome and chromophor with examples. 2
  - (d) What are the functions of Porin in gram negative bacteria? 2
  - (e) Why Gram staining is taxonomically so important? 2
  
3.
  - (a) Most laboratory media contain a fermentable Carbohydrate and Peptone because the majority of bacteria require carbon, nitrogen and energy sources in these forms. How are these three needs met by glucose-minimal salts medium? 2
  - (b) Describe in detail different kinds of nutritional modes in microbes. 3
  - (c) What do you mean by Fertility factor? How are they useful in microbiological research? 1+1
  - (d) Name the chief component of cell wall. How do the red algae live at depths of 100 metre or more? 1+2
  
4.
  - (a) Define Koch's Postulate. Mention the drawbacks of Koch's Postulates. 2+2
  - (b) Discuss Endosymbiotic theory. 3

- (c) Why viruses couldn't find their positions in five kingdoms classification system? 2
- (d) Name the chemical used to stain nucleic acids. 1
5. (a) Explain why Iodine is more popular as a skin antiseptic than other halogens. 2
- (b) Can we use X-ray for sterilization purpose? 2
- (c) Explain the features of an Ideal antibiotic. 2
- (d) *E. Coli* cells are grown in a medium at a culture density of 4 cells per ml one-hour lag phase and 20 minutes generation time at 37°C. How many cells will be there in 1 litre of this culture after 1 hour? After 2 hours? After 2 hours, if one of the initial four cells were dead. 4
6. (a) Write a comparative note between *Penicillium* and *Aspergillus* with proper diagram. 4
- (b) What are the characteristic features of Rhodophyta? 2
- (c) How will you detect malaria? How malaria can be treated? 2+2
7. (a) It is essential for an outcomer in African countries to take antimalarial injections. But the African blacks are resistant to malaria. Why? What is the treatment for *Giardia lamblia intestinalis* infections? 2+2
- (b) What are the characteristics of reproduction of Deuteromycetes? 2
- (c) What is O-antigen? What are the differences between capsule and slime layer? 2+2
8. (a) What are the differences in the cell wall structure between Archaeobacteria and Eubacteria? 2
- (b) Define chemotherapeutic index. 2
- (c) How can oxygen be toxic to any organism? 2
- (d) Describe the mode of action of Penicillin. How bacteria develops resistance against Penicillin. 2+2
9. (a) Differentiate between any **two** of the following: 2.5×2 = 5
- (i) Negative staining and Acid fast staining
- (ii) Dry heat sterilization and Moist heat sterilization
- (iii) Bacteriostatic and Bacteriocidal Antibiotic
- (iv) Exospores and Cysts of Bacteria.
- (b) Write short notes on any **two** of the following: 2.5×2 = 5
- (i) Membrane fluidity of Psychrophiles
- (ii) Fractional Sterilization
- (iii) Facultative anaerobes
- (iv) Oligodynamic action of metal ions.

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