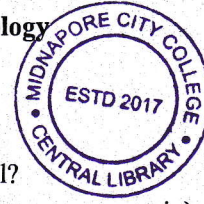


The West Bengal University of Health Sciences
1st BMLT November - December, 2022 Examination

Subject: General and Systemic Bacteriology

Time: 3 hrs

Attempt all questions



Full Marks: 100

1. Write the correct option :

20 x 1

- a) Which of the bacteria is resistant to penicillin as it lacks a cell wall?
 i) Spirochetes. ii) Cyanobacteria. iii) Mycoplasmas. iv) Bdellovibrio.
- b) The Hfr chromosome is transferred to F⁻ cell in a _____ fashion.
 i) Circular. ii) Linear. iii) Coiled. iv) Dimer.
- c) What is a cluster of polar flagella called?
 i) Petritrichous. ii) Monotrichous. iii) Amphitrichous. iv) Lophotrichous.
- d) What is the function of the Z ring in binary fission?
 i) It controls the replication of DNA
 ii) It forms a contractile ring at the septum.
 iii) It separates the newly synthesized DNA molecules.
 iv) It mediates the addition of new peptidoglycan subunits.
- e) What is the name for the transfer of genetic information from one bacterium to another bacterium by a phage?
 i) Transduction. ii) Penetration. iii) Excision. iv) Translation.
- f) Which of the following does not contain protein?
 i) Pilli. ii) Flagella. iii) Lipoteichoic acid. iv) Porin.
- g) Which of the following is used to grow bacterial culture continuously?
 i) Chemostat. ii) Hemostat. iii) Coulter-Counter. iv) Turbidostat.
- h) In which phase would you expect to observe the most endospores in a Bacillus cell culture?
 i) Death phase. ii) Lag phase. iii) Log phase.
 iv) Log, lag, and death phases would all have roughly the same number of endospores.
- i) Which of the following is not a recognised cause of diarrhoea?
 i) *Vibrio cholerae*. ii) *Escherichia coli*.
 iii) *Clostridium perfringens*. iv) *Enterococcus faecalis*.
- j) Lipopolysaccharide in cell walls is characteristic of :
 i) Gram-positive bacteria. ii) Gram-negative bacteria.
 iii) Fungi. iv) Algae.
- k) Which of the following is / are true about cell wall of Gram-positive bacteria?
 i) Cell wall comprises of many layers.
 ii) The cell wall is thicker than the associated gram-negative bacteria.
 iii) Cell wall comprises of teichoic acids.
 iv) All of the above.
- l) Which of the following is treated as a neurotoxin?
 i) Tetanolysis. ii) Tetanospasmin.
 iii) μ toxin secreted by *Clostridium* sp. iv) λ toxin secreted by *Clostridium* sp.
- m) Which of the following bacteria is a non-lactose fermenter?
 i) *Klebsiella* spp. ii) *Salmonella* spp. iii) *Enterobacter* spp. iv) *Citrobacter* spp.

P. T. O.

- n) What is the function of the Z ring in binary fission?
- It controls the replication of DNA.
 - It forms a contractile ring at the septum.
 - It separates the newly synthesized DNA molecules.
 - It mediates the addition of new peptidoglycan subunits.
- o) Which of the following infection is similar to EIEC infection?
- Bacillary dysentery.
 - Shigellosis.
 - Typhoid.
 - Hay fever.
- p) Which of the following biochemical test method demonstrates the production of tryptophan into an indole compound?
- IMViC test.
 - MRVP test.
 - TSI test.
 - Citrate test.
- q) Red heat is used for sterilization of :
- Inoculating loop.
 - Glass Syringe.
 - Glass slides.
 - Petri plates.
- r) Generation time of *E. coli* in an optimum condition is :
- 20 sec.
 - 20 min.
 - 20 hours.
 - 20 days.
- s) *Streptococcus* can be demonstrated by :
- Gram's stain.
 - Acid fast stain.
 - Albert's stain.
 - Zeihl Neelson stain.
- t) The organism which grow best at 10 °C is called :
- Psychophilic.
 - Mesophilic.
 - Thermophilic.
 - All of the above.

2. Answer the following questions :

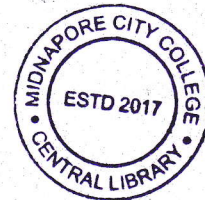
5 x 2

- Differentiate between endospore and vegetative cell of bacteria.
- Define antiseptic agents with example.
- What is pure culture?
- Define plasmid.
- What is the function of neuraminidase?

3. Answer **any six** of the following :

6 x 5

- Pathogenesis of *Nisseria*.
- Hospital waste management.
- Bacterial flagella.
- Lab diagnosis of *Corynebacterium diphtheria*.
- Autoclave.
- Nagler reaction.
- Outer membrane of Gram negative bacteria.
- Culture media.



4. Answer **any one** question :

1×10

- Briefly describe about the bacterial growth curve with diagram.
- Discuss different types of anthrax.

5. Answer **any two** questions :

- Briefly describe the transformation process with diagram. What is merozygote? Discuss cholera toxin. 8+2+5
- Briefly describe the pathophysiology and laboratory diagnosis of *Shigella* infection. 5+10
- Why is 70% ethanol more effective in killing bacteria than 100% ethanol? Differentiate between sterilization and pasteurization. State the mode of action of phenol and halogens in control of microbial cells. Describe the lab diagnosis of *Streptococcus*. 4+2+4+5