2023

MEDICAL LAB AND MOLECULAR DIAGNOSTIC TECHNOLOGY/MEDICAL LABORATORY TECHNICIAN

QP : Medical Laboratory Technician

Paper : MDT/MLT–VC–2016

(Microbiology—I)

Full Marks : 60

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Fill in the blanks of the following : 1×7=7

(a) The generation time for *E. coli* is _____.

(b) The temperature of liquid nitrogen is _____.

(c) MacConkey medium is an example of _____ medium.

(d) The process in which all living cells, spores and viruses are completely destroyed from an object is called _____.

(e) _____ is the most commonly acquired hospital infection.

(f) The cluster of polar flagella is called _____.

(g) Blackwater fever is a special manifestation of malaria caused by _____.

2. Answer the following questions : 2×4=8

(a) Name two contributions of Robert Koch in microbiology.

(b) What is the difference between aerobic and anaerobic organisms?

(c) Name two opportunistic infections associated with HIV infection.

(d) Give two examples of spore-bearing Gram-positive bacilli.

3. Answer any *three* of the following questions : 5×3=15

(a) Write a brief note on the clinical significance of the polio virus.

(b) Discuss the pathogenicity and complications of malaria caused by *Plasmodium vivax*. 2+3=5

(Continued)

(c) What are the sources of Hospital Acquired Infections (HAI)? What are the universal precautions for bloodborne pathogens? 2+3=5

(d) Define pure culture. Discuss in brief the serial dilution technique. 1+4=5

(e) What is a complex stain? In Gram stain, what reagent is used as the mordant and counterstain? How is crystal violet retained by Gram-positive cells? 1+2+2=5

4. Answer any *three* of the following : 10×3=30

(a) What is microbiology? What type of shape is bacillus? Write in detail about the size, shape and arrangement of bacteria. 1+1+8=10

(b) State Koch's postulates. Write an essay on the applications of microbiology in various fields. 4+6=10

(c) Draw a neat labelled diagram of the bacterial growth curve. Explain the four distinct phases of bacterial growth. 4+6=10

(d) Explain in detail the morphology, cultural characteristics, laboratory diagnosis and pathogenicity of *Mycobacterium tuberculosis.* 2+2+3+3=10

(e) Define disinfectant, antiseptic and sterilization. Describe different methods of sterilization in a medical laboratory. 3+7=10

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