BV (6/CBCS) MDT/MLT VE 1

2025

TRADE : MEDICAL LAB AND MOLECULAR DIAGNOSTIC TECHNOLOGY / MEDICAL LABORATORY TECHNICIAN

QP : Histotechnician

Paper : MDT/MLT-VE-6016

(Microbiology—V)

Full Marks : 60

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Fill in the blanks : 1×7=7

(a) *Nocardia* species are partially acid-fast due to the presence of _____ in their cell wall.

(b) The pigment produced by *Pseudomonas aeruginosa* is called _____.

(c) The causative organism of whooping cough is _____

(d) The causative agent of tuberculosis is _____.

(e) The technique used to amplify DNA sequences is called _____.

(f) In DNA hybridization, complementary DNA stands are joined by _____ bonding.

(g) The microscopy technique that uses UV light is called _____ microscopy.

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

(a) Write two pathogenic properties of *Bordetella pertussis.*

(b) Mention two applications of DNA hybridization.

(c) Write two uses of dark-field microscopy.

(d) Define obligate anaerobe and give one example.

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

(a) Write briefly on the morphology, cultural characteristics and diseases caused by *Pneumococcus.*

(b) Write a note on *Enterobacteriaceae* classification and give examples.

(c) Differentiate between *M. Tuberculosis* and *M. Leprae.*

(d) Explain the principle and applications of fluorescence microscopy.

(e) Write briefly on SEM and its advantages.

(f) Explain the significance of *Haemophilus influenzae* in respiratory tract infections.

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

(a) Classify bacteria based on gram staining and oxygen requirement with examples. 7+3=10

(b) Write in detail about the morphology, pathogenesis, laboratory diagnosis and prophylaxis of *Streptococcus pneumoniae.* 2+3+3+2=10

(c) Write in detail about the morphology, pathogenesis and laboratory diagnosis of *Mycobacterium tuberculosis.* 2+4+4=10

(d) Explain the principle, components, procedure and applications of PCR. 2+3+3+2=10

(e) Describe the principle, applications and procedure of DNA hybridization. 2+4+4=10

(f) Write a detailed note on electron microscopy—TEM and SEM. 5+5=10

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