

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATIONS- 2026
M.Tech.-II Semester (B.T.)

COURSE CODE (CREDITS): 20M1WBT234 (3)

MAX MARKS: 35

COURSE NAME: **Clinical Diagnostics**

COURSE INSTRUCTOR: **Dr. Jitendraa Vashistt**

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory. (b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems. (c) Use of calculator is not allowed.

Q. No.	Question	Marks
Q1.	Define the following in brief. a) Blood sample collection and its precautions b) Significance of positive and negative controls in clinical diagnosis	2.5X2=5
Q2.	An autosomal recessive disorder is caused by a deletion of three base pairs on chromosome 7 and it is generally known as disease associated with $\Delta F508$. Major disease symptoms appear in the respiratory and digestive systems in children and young adults. Name the disease and describe the phenomenon of disease progression due to mutations.	5
Q3.	a) If you want to check a specific stretch of nucleotide in a chromosome, which fluorescent based technique will be employed? Justify your answer with principle of molecular technique. b) Explain the clinical features/symptoms of malarial disease. Also describe the life cycle of the malaria parasite in two hosts.	2.5X2=5
Q4.	Explain the biochemical functions of liver and define the medical complications observed due to hepatitis 'B' and hepatitis 'C'. Discuss the mode of transmission of virus, diagnosis and treatment regime for these viral infections.	5
Q5.	a) How do you differentiate between the normal cell and a cancer cell on the basis of molecular and cellular changes? b) A protein of 53kDa is one of the most important tumor suppressors in humans and often it is called as the "guardian of the genome". Name this protein and explain its role in prevention of cancer.	2.5X2=5
Q6.	How do you differentiate between the PCR and RT-PCR on the basis of their usage? Which form of polymerase chain reaction will be required for identification of viral pathogen having RNA genetic material? Justify your answer.	5
Q7.	How do you differentiate latent tuberculosis and active tuberculosis disease? Explain the molecular method of identification of tuberculosis using DNA based as well as protein based markers.	5