

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2024

M.Sc. -II Semester (Biotechnology)

COURSE CODE (CREDITS): 20MS1BT215 (2)

MAX. MARKS: 35

COURSE NAME: Molecular Diagnostics

COURSE INSTRUCTOR: Jitendraa Vashistt

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory. (b) Marks are indicated against each question in square brackets. (c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problem.

Q1. A person consumed the food from a street vendor and after a day he suffered from diarrhea. He also complained intense thirst, vomiting, and rice watery stool.

- a) You need to identify the causative pathogen by clinical features. **(1 mark)**
- b) Identify the pathogen using microbial culture followed by microscopy and also explain the principle. **(2 marks)**
- c) How do you proceed for identification of the pathogen using molecular diagnostics? **(2 marks)**

Q2. Explain the molecular differences between a cancer cell and a normal cell. Also explain the inference of these molecular changes which convert a normal healthy cell into the cancerous growth. **(5 marks)**

Q3. Define the following in brief with relation to specific disease. **(5X2 = 10 marks)**

- a) 'Guardian of the genome' and its regulation
- b) 'Granuloma' structures and immune

Q4. You want to identify a protein which may be linked with a specific disease. How will you design this proteome based study for identification of a potential biomarker in a specific population of diseased persons with respect to healthy individuals' population. Justify your answer with suitable example. **(5 mark)**

Q5. We generally get antibiotics to get rid of bacterial pathogens using antibiotics. However, it is also observed that sometimes a bacterium does not killed by antibiotics. How do you see this problem in terms of molecular resistance? Explain this feature of bacteria using a suitable example. **(5 marks)**

Q6. How do you differentiate between 'acute hepatitis' and 'chronic hepatitis'? Classify this disease on the basis of viral pathogens and also explain the molecular typing of each pathogen causing the above mentioned disease. **(5 marks)**