# JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
## TEST -2 EXAMINATIONS-2023
### M.Sc. II Semester (Biotechnology)

COURSE CODE (CREDITS): 20MS1BT215 (2)

MAX. MARKS: 25

COURSE NAME: Molecular Diagnostics

COURSE INSTRUCTORS: Jitendraa Vashistt

MAX. TIME: 1 Hour 30 Minutes

*Note: All questions are compulsory. Marks are indicated against each question in brackets.*

Q1. You get a tissue sample from a diseased person and clinician suspected the changes of bacterial infection. However, you don't have the facility of microbial culture, and have consumables and instrumentation of molecular biology. How do you proceed for identification of this bacterial pathogen?
(3 marks)

Q2. A gene is considered as the "guardian of the genome" and usually protects the cells from uncontrolled growth.

a) Identify this gene and also explain gene product with its protective function with other associated proteins. Also explain the consequences if this protein get mutated. (3 marks)

b) Explain the molecular interactions of mdm2 protein with the above mentioned protein for the steady state of the cells.
(3 marks)

Q3. Define the following terms in brief in relation to molecular diagnosis of a disease. (3 marks)

a) Granuloma structures

b) Interferon Gamma release assay

Q5. Usually molecular diagnostic methods utilize the genetic markers; however the protein may also be used for the same. Design a molecular diagnostic strategy if you need to identify a potential protein biomarker for a specific population of diseased persons with respect to normal population.
(4 mark)

Q3. How do you differentiate between Latent TB infection (LTBI) and TB disease? Which of the above mentioned is more problematic when a person is in immuno-compromised state? Justify your answer.
(4 marks)

Q4. Cancerous cells get originated from the normal cells after several irreversible changes at molecular levels. Define the different mechanisms and their visualization by one can differentiate between normal cell and cancerous cell.
(5 mark)