JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

M.Tech-II Semester (Biotechnology)

COURSE CODE (CREDITS): 20M1WBT234 (3) MAX. MARKS: 25

COURSE NAME: Clinical Diagnostics MAX. TIME: 1 Hour 30 Min

COURSE INSTRUCTORS: Dr. Saurabh Bansal/Dr. Jitendraa Vashistt

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Note: All questions are compulsory. Marks are indicated against each question in square brackets. Kindly do both the section separately.

Section-A (Dr. Saurabh Bansal)

1. What are the different sites (at least three) for collecting the samples (specimen) recognized as sterile (Contamination free)? [2]
2. How Radio immune assay is different from a ELISA test? [2]
3. a) How a culture sample can be processed for identification through MALDO-TOF? [2]

   b) How a nanoparticle-probe technology works for the identification of the bacteria? [2]

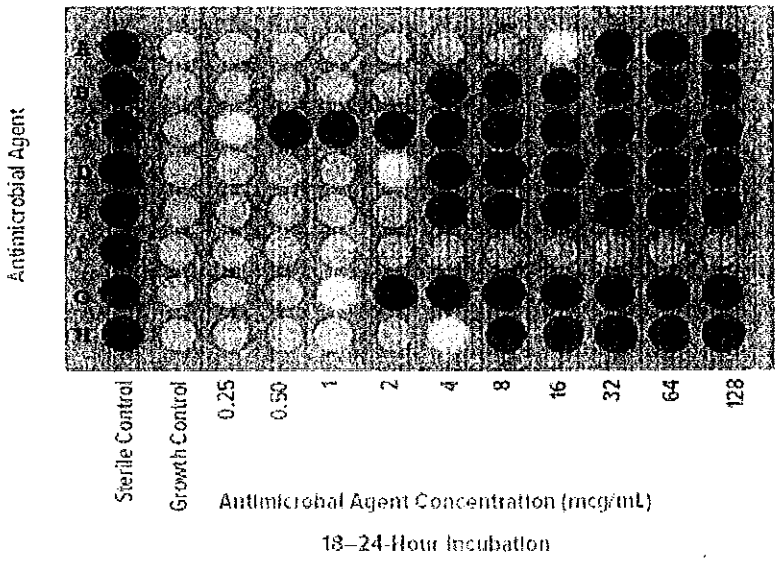
   c) List the advantages and disadvantages of PNA-FISH technology in bacterial identification. [3]
4. What is the principle of complement Fixation Test (CFT)? Whether occurrence of Hemolysis in a CFT interprets a positive test? Justify your answer. [2]
5. Suppose you have setup an experiment for determining the minimum inhibitory concentration (MIC) for a pathogen X. In Row A to H, you have added 8 different antimicrobials whereas in column from left to right have varying concentration of these antimicrobials. Column 1 represent for sterile control and column 2 is for growth control. You have obtained result as given in the attached diagram of a 96 well plate.

   Give the answer of following based on the experiment:

   a) Which of the antimicrobial is most effective against the pathogen X and why? [2]

   b) Which of the antimicrobial is least effective against the pathogen X and why? [2]

   c) What is the MIC of an antmicrobial 'D' against the pathogen X? [1]



Section-B (Dr. Jitendraa Vashistt)

6. A person was showing the visible clinical symptoms of edema, yellowing of eyes and prominent veins on abdomen region. On consulting with clinician, he was advised for the following clinical diagnostics methods a. Australian antigen detection, b. Liver function test, PCR test for infectious agent.

   a) Why person was advised for so many costly tests, as it is a clear indication of liver ailment? **[2]**

   b) If the person has negarive results for Australian antigen but positive by molecular diagnosis for a viral infectious agent, then what is the implication of molecular diagnosis? **[2]**

7. A person showed the clinical presentation of all visible characteristics of a disease, however, molecular diagnosis by a laboratory for polymerase chain reaction does not give positive results. How will you ensure the results in molecular diagnostic methods are not correct on the basis of the parameters of quality control of PCR? Justify your answer with the usage of positive and negative controls of the reaction. **[3]**