

U.G. 4th Semester Examination - 2021**Molecular Biology and Biotechnology****[HONOURS]****Skill Enhancement Course (SEC)****Course Code : MBBT-H-SEC-2-108-T****(Microbial Diagnosis in Health Clinics)**

Full Marks : 20

Time : 1 Hour

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any **five** of the following: $1 \times 5 = 5$
- a) How haemolysis during blood sample collection can interfere with biochemical tests?
 - b) What type of colonies will be formed by *E. coli* in MacConkey agar and why?
 - c) Give two examples each of strong and weak acid fast bacilli.
 - d) What type of colonies will be formed by *Neisseria gonorrhoea* and *Haemophilus influenzae* on chocolate agar?
 - e) Name two strong lactose fermenters.

- f) Write the causative agent of Kala-azar and Giardiasis.
 - g) How will you culture *Mycobacterium tuberculosis*?
 - h) What is agglutination reaction?
2. Answer any **one** of the following: $5 \times 1 = 5$
- a) How will you detect *Vibrio cholerae* infection? How malaria can be diagnosed by Giemsa staining of blood samples? $2\frac{1}{2} + 2\frac{1}{2}$
 - b) What are different types of ELISA? How can a viral infection be detected using ELISA? $2 + 3$
 - c) Explain the process of determination of minimal inhibitory concentration (MIC) of an antibiotic by serial double dilution method.
3. Answer any **one** of the following: $10 \times 1 = 10$
- a) Mention the bio-safety guidelines that must be followed during the collection of clinical samples. What kind of container will you use to collect urine for culture and for urinalysis? Highlight the different punctures done during the collection of cerebro-spinal fluid. $3 + 2 + 5$
 - b) How immunofluorescence can be used for diagnosis of infectious diseases? How do you

[Turn Over]

detect presence of pathogens within human body using RT-PCR? Why RT-PCR is a much reliable method for diagnosis of diseases compared to rapid tests? 3+5+2

- c) State the general principle and procedure for rapid detection of pathogens. Which proteins are targeted in rapid detection kits for Typhoid, Dengue, HIV and Swine flu? 6+4
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