

U.G. 6th Semester Examination - 2021
Molecular Biology & Biotechnology
[HONOURS]
Course Code : MBBT-601-P-CCR-13
[PRACTICAL]
(Bio-Analytical Tools)

Full Marks : 20

Time : 2 Hours

The figures in the right-hand margin indicate marks.

1. Attempt any **one** experiment: $10 \times 1 = 10$
- a) Write down the requirement, principle and detailed procedure for performing gel electrophoresis of proteins under native conditions OR under denaturing and reducing environment, as per your choice. Provide a pictorial representation of the stained gel assuming that you have electrophoresed a purified hetero-tetrameric protein. Interpret your observation. $2+2+3+2+1$
- b) Write down the requirement, the principle and the detailed procedure for performing a

subcellular fractionation of rat liver tissue. Two particles, A and B, with similar shape and density have sedimentation coefficients 60S and 40S respectively. During differential centrifugation, which one will sediment faster and why?

 $2+2+3+1+2$

- c) Write down the requirement, the principle and the detailed procedure for preparation of protoplasts from leaves. Mention a technique to count the protoplasts after isolation. What might happen if the isolated protoplasts are kept in hypotonic solution for too long?
- $2+2+3+1+2$
- d) Write down the requirement, the principle and the detailed procedure for identification of lipids in a given sample by Thin Layer Chromatography. After performing the experiment, the distance of solvent front from base line was found to be 8 cm, while that for a specific phospholipid and triglyceride were found to be 2 cm and 6 cm respectively. Draw the chromatogram and determine the R_f for the components. Of the two, which one is more polar?
- $2+2+3+2+1$

[Turn over]

- e) Write down the requirement, the principle and the detailed procedure for performing an experiment to verify the validity of Beer's law and determine the molar extinction coefficient of NADH. Draw the graph using data points of your choice. Interpret the result.

2+2+3+2+1

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| 2. | Viva voce/ online internal assessment. | 5 |
| 3. | Lab note book. | 5 |
