

Ph.D. IN BIOCHEMISTRY (PHDBC)**Term-End Examination**

June, 2019

**RBC-003 : BIOCHEMICAL AND MOLECULAR
BIOLOGICAL TECHNIQUES***Time : 3 hours**Maximum Marks : 100*

Note : (i) *The question paper consists of Two sections
A and B.*

(ii) *Section 'A' is compulsory.*

(iii) *Attempt any four questions from section 'B'.*

SECTION - A

1. (a) Define the following terms : 10
- (i) Cryopreservation
- (ii) Gene Knockout
- (iii) FACS
- (iv) Retention time (R_t)
- (v) Vector
- (b) Define Normality. How you will prepare a 100mL solution 0.2NH₂SO₄ ? (H₂SO₄.
M.W. = 98.0, S.G = 1.84, % purity = 96.0) 5
- (c) Write the principle of HPLC and give any two applications. 5

SECTION - B

Answer any four questions :

2. (a) Discuss the utility of buffers in biological research. Name the buffer used in protein electrophoresis. 10
- (b) Illustrate the steps involved in the isolation of sub cellular fractions from the liver tissue. 10

3. (a) Write the principle and applications of **any two** of the following : **10**
(i) Gel filtration chromatography
(ii) ELISA
(iii) Histochemical localisation
(b) Explain the calibration of autopipettes and pH meter. **10**
4. (a) Describe the principle, method and application of Ion-Exchange chromatography. **10**
(b) Explain the principle and method of SDS-PAGE. How is this technique used in determining the molecular weight of unknown proteins ? **10**
5. (a) Explain the steps involved in the PCR. **10**
(b) What is gene cloning ? Write its applications. **10**
6. (a) What is gene therapy ? Discuss its applications. **10**
(b) Give a detailed account of gel retardation assay and DNase foot printing. **10**
7. (a) What is cell culture ? Differentiate between primary cells and continuous cell lines. **10**
(b) Write short notes on **any two** of the following : **10**
(i) Immuno electrophoresis
(ii) Sterilization
(iii) Blotting techniques
-