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RBC-003

Ph. D. (BIOCHEMISTRY) (PHDBC)

Term-End Examination

December, 2024

**RBC-003 : BIOCHEMICAL AND MOLECULAR
BIOLOGY TECHNIQUES**

Time : 3 Hours

Maximum Marks : 100

Note : (i) *Attempt five questions in all.*

(ii) *Question No. 1 is compulsory.*

(iii) *All questions carry equal marks.*

1. (a) Explain briefly any six of the following :

6×2=12

(i) Molarity

(ii) Semi-conservative replication of DNA

(iii) Cross reactivity

(iv) Cryopreservation

(v) Precision

(vi) Microarray

(vii) Homogenization

(b) Differentiate between the following : $2 \times 4 = 8$

(i) PCR and RT PCR

(ii) SDS-PAGE and Native gel electrophoresis

2. (a) Name *two* methods of DNA sequencing. Explain the principle, advantages and limitation, if any, for one of these methods.

$2+6+2$

(b) Explain the principle and procedure of affinity chromatography. 10

3. Describe the general principle, procedure and applications of Agarose gel electrophoresis. 20

4. Write the applications of the following :

$2 \times 10 = 20$

(i) PCR

(ii) Gene Cloning

5. Write short notes on any *four* of the followings :

$4 \times 5 = 20$

(i) Gene silencing

(ii) Histochemical localization

- (iii) Subcellular fractionation
 - (iv) PCR primers
 - (v) pH meter
6. What is HPLC ? Explain its principle and application. 20
7. (a) What are cloning vectors ? Explain their different types and role in gene cloning. 10
- (b) Describe any *two* types of growth media used for animal and plant tissue culture each. 10

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