

U.G. 4th Semester Examination - 2020**Molecular Biology****[PROGRAMME]****Course Code : MBG401-T-CC-10****(Recombinant DNA Technology)**

Full Marks : 40

Time : $2\frac{1}{2}$ Hours*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** questions: $2 \times 5 = 10$
- a) Why plasmids are used as vectors?
 - b) How would you visualize DNA in agarose gel?
 - c) What are neoschizomers?
 - d) What is cDNA library?
 - e) What are the key components in PCR reaction?
 - f) What is shuttle vector?
 - g) What is the full form of the term RFLP?
 - h) What do you know about the chromosome walking?
2. Answer any **two** questions: $5 \times 2 = 10$

- a) Schematically represent any one suitable method of *in vitro* mutagenesis.
- b) Outline a process of cloning using a plasmid vector. What are expression vectors? $3+2$
- c) What do you understand by the terms selection marker and reporter gene? Explain with examples. $2+3$
- d) Write short notes on: $2\frac{1}{2}+2\frac{1}{2}$
 - i) BAC
 - ii) Western Blotting

3. Answer any **two** questions: $10 \times 2 = 20$
- a) What is DNA fingerprinting? Describe how RFLPs can be used in gene mapping. Compare between RFLP and RAPD. $2+5+3$
 - b) What is genomic library? What are the differences between cDNA library and genomic DNA library? Schematically show the different steps for cDNA synthesis from mRNA and mention the name of the enzymes required at each step. $2+3+5$
 - c) Draw a Ti plasmid, point out the different

regions and their role in genetic transformation.

Write a short note on Yeast artificial chromosomes (YACs), Bacterial artificial chromosomes (BACs).

$$(2+1+2)+(2\frac{1}{2}+2\frac{1}{2})$$

- d) Write an extended note on the application of Recombinant DNA Technology with special emphasis on pharmaceuticals, agricultural products and gene therapy. 4+3+3
