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E-6834

M.Sc. (IIIrd Semester) Examination, 2021

MICROBIOLOGY

(Recombinant DNA Technology)

Time Allowed : Three Hours

Maximum Marks : 70

SECTION - A

Note : Attempt any ten questions. Each question carries one mark. **10×1=10**

Q. 1. Objective type :

Fill in the blanks :

(i) Restriction enzymes are isolated from _____.

(ii) The human genome project officially began in _____.

(iii) The PCR technique was developed by _____.

(iv) The virus mediated gene transfer using genetically modified bacteriophage is called _____.

(v) In gene augmentation therapy genetic material is _____.

Multiple choice questions :

(vi) Which of the following processes require energy :

(a) Ligation

(b) Transformation

(c) Restriction digestion

(d) Hybridization

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(vii) pBR322 which is frequently used as a vector for cloning gene in E. Coli is :

(a) An original bacterial plasmid

(b) A modified bacterial plasmid

(c) A viral genome

(d) A transposon

(viii) The process of binding of primer to the denatured strand called :

(a) Annealing

(b) Renaturation

(c) Denaturation

(d) None of the above

(ix) Transgenic technology is particularly advanced in :

(a) Plants

(b) Animals

(c) Mice

(d) Bacteria

(x) The synthesis of polynucleotide chain of mRNA is catalyzed by the enzyme :

(a) RNA helicase

(b) RNA polymerase

(c) DNA polymerase

(d) DNA helicase

(xi) Which of the following is not a function of reverse transcriptase :

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(a) RNA dependent DNA polymerase

(b) DNA dependent DNA polymerase

(c) RNase H

(d) Exonuclease

(xii) Enzymes that remove nucleotides one at a time from the end of a DNA molecule are called :

(a) Ligases

(b) Exonucleases

(c) Endonucleases

(d) Polymerases

SECTION - B

Note : Attempt any five questions. Each question carries 2 marks. **5×2=10**

Q. 2. Very short answer type (25-30 words) :

(i) Write a note on RNA polymerase.

(ii) What is plasmid ?

(iii) What is the function of gene gun ?

(iv) What is RFLP ?

(v) What is taxonomy ?

(vi) Write vectors for gene delivery.

(vii) What is rDNA technology ?

SECTION - C

Note : Attempt any five questions. Each question carries 4 marks. **5×4=20**

Q. 3. Short answer type (250 words) :

(i) Explain application of rDNA technology.

(ii) Describe vector engineering.

(iii) Explain targeted gene replacement.

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(iv) Describe application of PCR in disease diagnosis.

(v) Write a brief account on gene therapy.

(vi) Describe preparation of plasmid DNA.

(vii) Comment on phagemids and cosmids.

SECTION - D

Note : Attempt any three questions. Each question carries 10 marks. **10×3=30**

Q. 4. Essay type (more than 500 words) :

(i) Explain nomenclature and types of restriction enzymes.

(ii) Explain genomic and cDNA library construction and screening.

(iii) Describe In vitro translation in detail.

(iv) Explain types and applications of polymerase chain reaction.

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