M. SC. (MEDICAL BIOTECHNOLOGY) SEM-II (CHOICE BASED CREDIT SYSTEM) : SUMMER - 2018

SUBJECT: RDNA IN MEDICINE

Day : Thursday | **Time : 10.00 AM TO 01.00 PM**

Date : 12/04/2018 | **S-2018-1167** | **Max. Marks.: 60**

N.B.:

1) **Q. No. 1** and **Q. No. 5** are **COMPULSORY**.
2) Attempt **ANY TWO** questions from the remaining questions of each Section - **I** and Section-**II**.
3) Answers to both the sections should be written in the **SEPARATE** answer books.
4) Draw neat and labeled diagrams **WHEREVER** necessary.

SECTION – I

Q.1 **1)** With the help of suitable diagram explain the use of following enzymes in genetic engineering **[04]**

a) DNA ligase
b) Klenow enzyme
c) Polynucelotide kinase
d) Alkaline phosphatase

2) Briefly explain the following with suitable examples **[06]**

a) Phagemids
b) λ insertion vectors
c) Artificial chromosome vectors

Q.2 Explain in detail (**ANY TWO**): **[10]**

1) Different methods of labeling DNA. Add a note to compare and contrast radioactive and non – radioactive probes.
2) What are special vectors? Explain in detail vectors for protein purification.
3) Different methods of cDNA cloning. Add a note on full – length cDNA cloning.

Q.3 Elaborate the following (**ANY TWO**): **[10]**

1) Different methods for insertion of foreign DNA into host cells.
2) Different techniques for restriction mapping.
3) Principles to maximize gene expression.

Q.4 Write short notes:

1) Blunt end ligation
2) Fluorescence in situ hybridization
3) Methodologies to reduce inclusion body formation
4) Yeast two hybrid system

SECTION – II

Q.5 Explain in detail: **[10]**

1) Principle of PCR. Add a note on primer design and factors affecting annealing temperature.
2) Compare and contrast chemical DNA sequencing method and enzymatic DNA sequencing techniques.

Q.6 Write short notes: **[10]**

a) SSCP
b) DGGE
b) RFLP
d) SOEing

Q.7 Explain in detail **[10]**

1) Different techniques of site directed mutagenesis. Add a note on applications.
2) Different techniques of gene therapy. Add a note on knockout mice.

Q.8 Write short notes: **[10]**

a) si RNA
b) Micro RNA
b) Differential gene expression
d) Transgenic animals.

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