M. Sc. (Biotechnology) Sem-II / M. Sc. (Medical Biotechnology) Sem- II
(CBCS 2018 Course) : SUMMER - 2019

SUBJECT:- Genetic Engineering.

Day: Tuesday
Date: 09/04/2019

S-2019-1427

Time: 02.00 PM TO 05.00 PM
Max. Marks: 60

N.B.:

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Answers to the both sections should be written in SAME answer book.
4) Draw well labelled diagrams **WHEREVER** necessary.

SECTION-I

Q.1 Do as directed **ANY FIVE** of the following: **(10)**

a) Briefly explain cloning vectors for insect cells. Draw neat labelled diagram.
b) What are cosmids and phagemids?
c) State the application of "tag vectors". Give example.
d) State the principle of "real time PCR".
e) Briefly explain "physical mapping techniques".
f) State the principle of "pyrosequencing" technique with suitable diagram.

Q.2 Attempt **ANY TWO** of the following: **(10)**

a) With the help of suitable diagrams explain different methods for blunt end ligation.
b) With the help of suitable diagrams explain different methods for DNA labelling. Add a note on non-radioactive probes.
c) Explain the reactions catalyzed by following enzymes:
i) Phosphatase iii) Klenow v) Dam and Dcm methylase
ii) Kinase iv) Exonuclease

Q.3 Attempt **ANY TWO** of the following: **(10)**

a) Compare and contrast genomic library and cDNA library.
b) Explain in detail different factors affecting PCR.
c) Compare and contrast Maxam-Gilbert method and Sanger's method of DNA sequencing.

SECTION-II

Q.4 Do as directed **ANY FIVE** of the following: **(10)**

a) State the importance of "reporter genes". Give examples.
b) Briefly explain the technique of "Hybrid arrest translation". Draw well labelled diagram.
c) Briefly explain the "yeast two hybrid system".
d) Give four limitations of *E.coli* as a host to produce recombinant proteins.
e) Briefly explain two examples of industrially important enzymes produced by site directed mutagenesis.
f) State the principle of "PTT" technique.

Q.5 With the help of suitable diagram explain **ANY TWO** of the following: **(10)**

a) i) Foot printing with DNase I
ii) Modification interference assay.
b) Two techniques of site directed mutagenesis.
c) Micro RNA and RNA silencing.

Q.6 Attempt **ANY TWO** of the following: **(10)**

a) Explain in detail the technique of ex-vivo gene therapy with suitable examples. Explain non-viral genes delivery systems.
b) With the help of suitable diagram explain the principle of SSCP and DGGE techniques.
c) What are bioreactors? Explain with the help of transgenic plants.

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