

CS/B.Sc.(H)MOLBIO/SEM-6/MMB-602/2012

2012

MEDICAL MOLECULAR BIOLOGY

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as

far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

i) Which year National Institute of Health took lead in recombinant DNA (*rDNA*) research regulation ?

a) 1970 b) 1974

c) 1980 d) 1985.

ii) In which year did Dr. Martin Cline perform first DNA transfer into bone marrow cells ?

a) 1975 b) 1980

c) 1982 d) 1987.

iii) In which year US Office of Technology Assessment stressed the difference between somatic and germ-line therapy ?

a) 1982 b) 1984

c) 1987 d) 1989.

iv) In which year did NIM perform the first approved gene therapy procedure ?

a) 1985 b) 1990

- c) 1997 d) 2003.
- v) Some cells of blastocyst (5 to 14 days) are known as
- a) Totipotent b) Pluripotent
- c) Multipotent d) None of these.
- vi) Cells differentiated, but can form a number of other tissues are known as
- a) Pluripotent b) Multipotent
- c) Totipotent d) None of these.
- vii) Which novel therapeutic molecule treats human disease ?
- a) miRNAs b) antisenseRNAs
- c) shRNAs d) siRNAs.
- viii) Genetic Locus Repetitive Behaviours of Autism are discovered on chromosome
- a) 10 b) 15
- c) 18 d) 22.
- ix) The proteins encoded by proto-oncogenes participated in various metabolic processes including
- a) Regulation of transcription
- b) Cell-to-cell signalling
- c) Intracellular signalling transduction
- d) All of these.
- x) CDK4/6-Cyclin D is the CDK-Cyclin complex of
- a) G1 Phase of cell cycle b) G2 Phase of cell cycle
- c) S Phase of cell cycle d) M Phase of cell cycle.
- xi) Jun and Fos oncogenes are
- a) G proteins b) Protein kinases
- c) Transcription factors d) Cell receptors.

- xii) Retinoblastoma is a tumor suppressor protein and is directly involved in
- Transmission of extracellular signals to the nucleus
 - Cell cycle progression
 - Cytoskeletal rearrangement
 - General inhibition of various oncoproteins.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

- Define the role of Oncogenes in cancer.
- Explain the role of polymer vectors in Gene Therapy.
- Describe the role of Dopamine pathways in Human Brain System.
- Why is adult stem cell therapy getting preference over other approaches of Gene therapy ?
- What is therapeutic cloning ? How is it used in clinical practice ?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

- Define Genetic causes of Breast Cancer. What is the inheritance pattern of Breast Cancer ? What is the Molecular Diagnostic Test ? What would be Genetic counselling to an affected family ? $3 + 3 + 5 + 4$
- What are non-viral vectors in Gene Therapy ? Describe various approaches of non-viral vectors delivery. What are the major barriers of DNA delivery ? $3 + 6 + 6$
- Describe the critical period of Human Brain development.

What are the factors essential for development of Brain ?

6 + 9

10. What is Autism ? What are the typical features observed in autistic behaviour ? Describe the evidences of genetic factors involved. 3 + 5 + 7

11. Describe the mechanism leading to loss of Hetrozygosity in Cancer. Write few names of dominantly inherited cancer syndromes and recessive inherited cancer syndrome. 8 + 7

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