No. of Printed Pages: 2

(98)

SARDAR PATEL UNIVERSITY

M. Sc. (Genetics) – Third Semester Examination (CBCS)

Thursday, 6th December 2012

2:30 p.m. to 5:30 p.m.

PS03EGEN01: Genetics of Mammalian Development

Total Marks: 70

Note: (1) Figures to the right indicate marks.
(2) Draw a neat and labeled diagram, wherever necessary.

Q. 1 Choose the most appropriate answer from the four alternatives given: **[08]**

I. Brain is a derivative of _____

(a) Ectoderm (b) Mesoderm (c) Endoderm (d) From all the germ layers

II. Which of the following genes are essential for sex determination in male ?

(a) DAX1 ,WNT4 (b) SRY, SOX9 (c) HOX ,DAX1 (d) SRY, WNT4

III. The first mitosis in fertilized ova is caused by activation of_____

(a) ETS (b) FGS (c) MPF (d) MTF

IV. Which of the following is an example of tumor suppressor gene ?

(a) P53 (b) SRY (c) SOX (d) FGF

V. Which of the following is a DNA sequence?

(a) Co-activator (b) Co-repressor (c) Enhancer (d) Trans-activator

VI. One of the major enzyme involved in gene expression is_____

(a) Ligase (b) Amino-acyl transferase

(c) RNA polymerase (d) Reverse transcriptase

VII. Trisomy of human chromosome 21 is associated with _____

(a) Down's syndrome (b) Klinefelter's syndrome

(c) Philadelphia syndrome (d) All of the above

VIII. Progeria syndrome is caused due to_____

(a) Mutation in Lamins (b) Permaturc aging

(c) Both (a) and (b) (d) None of above

Q.2 Answer any SEVEN from the following: **[14]**

i. Enlist biochemical changes occurring during sperm capacitation.

ii. Give diagrammatic representation of human epidermis.

iii. Enlist the factors responsible for aging.

iv. Name major groups of genes responsible for causing cancers with appropriate examples.

v. What is DDRT? Explain.

vi. Define the terms: Longevity and sequence-specific DNA binding factors. **P.T.O.**

vii. Write any four genetic errors of human development involving various systems.

viii. Mention techniques used to identify defective genes.

ix. Enlist transcription factors involved in axis specification of neural tube.

Q.3(a) Give an account of stem cells and their functions. [6]

(b) Describe the process of cleavage in mammalian embryo. [6]

OR

(b) Explain formation of cutaneous appendages. [6]

Q.4(a) Explain conversion of proto-oncogenes to oncogenes. [6]

(b) Write a detailed note on teratogens and teratogenesis. [6]

OR

(b) Describe different genes controlling cell cycle. [6]

Q.5(a) Enlist various techniques for RNA localization. Explain any one of them in details. [6]

(b) Write a detail note on SAGE. [6]

OR

(b) Explain subtractive hybridization technique. [6]

Q.6(a) What is infertility? Briefly discuss the causes and management of infertility. [6]

(b) Write short notes on the following: (i) Pleiotropy (ii) Mechanisms of dominance [6]

OR

(b) Explain the role of change in gene expression on disease development in human with any appropriate example. [6]

****