(A-8) Seat No: _____ No. of Printed Pages: 02

SARDAR PATEL UNIVERSITY

M. Sc. (Integrated) Biotechnology – Ninth Semester Examination

Monday, 17th October, 2016.

10:00a.m. to 1:00p.m.

PS09CIGGB1: Genetics of Mammalian Development

Note :(i) Figures to right indicate marks.
(ii) All questions are compulsory.

Total Marks: 70

Q – 1 Choose the most appropriate alternative for the followings: **(08)**

1. Sertoli cells secrete _____ hormone.
   a) Testosterone
   b) Estrogen
   c) Anti- Mullerian duct hormone
   d) None of above

2. The mammalian embryo develops from _____, population of cells?
   a) The blastocoels
   b) The inner cell mass
   c) The trophectoderm
   d) The extraembryonic membranes

3. The alcohol exposure to embryo can result into the down regulation of _____ gene.
   a) sonic hedgehog
   b) foxo
   c) dfoxo
   d) DAF-2

4. Epididymis and Vas deferens differentiate from _____.
   a) Mullerian duct
   b) Wolffian duct
   c) Mesonephric tubule
   d) sex cords

5. Which signaling molecule present on developing neuronal surface that binds to notch receptor of skin?
   a) Alfa
   b) Delta
   c) Beta
   d) Spatzle

6. Very high level of Bicoid regulatory protein is involved in the formation of _____ structure in Drosophila.
   a) Head
   b) Wing
   c) Thorax
   d) Segmented

7. Development of several effects by one gene or pair of gene in different tissues is known as_____.
   a) Pleiotropy
   b) Phenotypic heterogeneity
   c) Genetic heterogeneity
   d) Relational Pleiotropy

8. Congenital absence of vas deference in human leads to_____infertility.
   a) Male
   b) Female
   c) Primary
   d) Secondary

Q – 2 **Attempt ANY SEVEN from the following:** **(14)**

1. Write about Graffian follicle with diagram.
2. Name the brain structures developing from each primary vesicle.
3. Write the classification of stem cells based on potency.
4. Explain vitamin A as a teratogen.
5. Which chromosome is known as Philadelphia chromosome? Why?
6. Enlist major gene families involved in mammalian development.
7. What are transcription factor domains?
8. Write major differences between mosaic and relational pleiotropy.
9. What is dysmorphology?

Q – 3 **(a)** Write an explanatory note on cleavage. **(06)**

(b) Give a detailed account on mechanism of mammalian fertilization. **(06)**

OR

(b) Explain the mechanism of mammalian primary sex determination. **(06)**

Q – 4 **(a)** Explain in brief about Endocrine disruptors. **(06)**

(b) Write a note on Tumor suppressor genes. **(06)**

OR

(b) What is Aging? Explain the role of genes encoding DNA repair enzymes in aging. **(06)**

Q – 5 **(a)** Discuss developmental northern blotting technique for RNA localization. **(06)**

(b) Discuss muscle differentiation in sea squirt embryo by localized m RNA. **(06)**

OR

(b) Discuss transcription factors involved during mammalian development. **(06)**

Q – 6 **(a)** Discuss positional cloning technique for the identification of aniridia gene. **(06)**

(b) Discuss medical implications of developmental biology. **(06)**

OR

(b) Compare the developmental stages of mouse embryo and human embryo. **(06)**

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