

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI –600 086**

(For candidates admitted during the academic year 2011– 12)

**SUBJECT CODE: 11BY/PC/ST44**

**M. Sc. DEGREE EXAMINATION, APRIL 2013**

**BIOTECHNOLOGY  
FOURTH SEMESTER**

**COURSE : CORE  
PAPER : STEM CELL TECHNOLOGY  
TIME : 3 HOURS**

**MAX. MARKS: 100**

**SECTION – A**

**ANSWER ALL THE QUESTIONS**

**(10 x 2 = 20)**

**I. CHOOSE THE RIGHT ANSWER**

1. Wnt's are family of \_\_\_\_\_ rich glycoproteins
  - a. Glycine
  - b. Cysteine
  - c. Serine
  - d. Valine
2. Gap junctions channels are made of \_\_\_\_\_ proteins
  - a. connexin
  - b. annexin V
  - c. laminin
  - d. fibronectin
3. The extra cellular matrix of the mammalian egg is called \_\_\_\_\_
  - a. vitelline membrane
  - b. cortex
  - c. zona pellucid
  - d. corona radiate
4. The sperm becomes competent to fertilize the egg is called \_\_\_\_\_
  - a. competition
  - b. capacitation
  - c. fertilization
  - d. spermiation
5. In males, the Wolffian ducts differentiates to become
  - a. epididymis
  - b. vas deferens
  - c. both a & b
  - d. not all
6. Anti-Mullerian hormone is secreted from
  - a. fetal sertoli cells
  - b. leydig cells
  - c. seminiferous tubules
  - d. granulosa cells
7. Juvenile Hormone is secreted by
  - a. prothoracic gland
  - b. corpora allata
  - c. corpus collosum
  - d. hypothalamus

8. Progeria is a human premature
- a. aging syndrome
  - b. ovulation
  - c. metabolic error
  - d. sperm release
9. Which one of the following is not a property of stem cell
- a. self-renewal
  - b. clonality
  - c. aging
  - d. potency
10. Oct-3/4 acts as a pivotal role in
- a. self-renewal
  - b. differentiation
  - b. both a & b
  - d. not all
11. Amniocentesis is performed around \_\_\_\_\_ weeks of gestation
- a. 4
  - b. 8
  - c. 12
  - d. 16
12. Hematopoietic stem cells are first present in
- a. embryonic yolk
  - b. fetal liver
  - c. bone marrow
  - d. fetal spleen
13. Parachlorophenylalanine (PCPA) is a inhibitor of
- a. LH
  - b. ACTH
  - c. 5-HT
  - d. FSH
14. Chondrocyte is differentiated cell lineage of
- a. bone
  - b. marrow
  - c. muscle
  - d. cartilage
15. A colony of cultured epithelial cells thought to be produced by Keratinocyte stem cells
- a. Holoclone
  - b. Allograft
  - c. Autograft
  - d. Epidermal stem cells

## II. EXPAND

- 16. ICM
- 17. FACS
- 18. CKI
- 19. SVZ
- 20. TGF- $\beta$

**SECTION – B**

**ANSWER ANY 4 QUESTIONS IN ABOUT 600 WORDS**

**(4 x 10 = 40)**

21. Write short notes on Hedgehog pathway and its important in vertebrate development
22. Give an account on Acrosome reaction with suitable example
23. Describe the development of vertebrate eye with neat diagram
24. Explain the properties of stem cells
25. Describe about therapeutic applications of neural stem cells
26. Give an account on use of embryonic stem cells to treat neural diseases

**SECTION – C**

**ANSWER ANY TWO QUESTIONS IN ABOUT 1500 WORDS**

**(2 x 20 = 40)**

27. Write an essay about early Embryonic Development of mammals.
28. Give an detailed account on formation and differentiation of neural tubes in later embryonic development.
29. Explain detailed about molecular bases of pluripotency in stem cells.
30. Write an essay about insulin producing stem cells and their importance in diabetic treatment.

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