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0805E440

Candidate's Seat No : \_\_\_\_\_

M.Sc. (Sem.-II) Examination

409

CB Stem Cell and Regenerative Medicine

Time : 3 Hours]

May-2017

[Max. Marks : 70

**Instructions:**

All Questions are compulsory

Draw neat and labeled diagram wherever necessary

1 14

a Explain Neurulation and specialization of mesoderm

Or

a Write a brief note on organogenesis

b Explain CD antigens cite examples of CD markers for each lineage

Or

b Describe the process of immunomagnetic separation of hematopoietic stem cells from blood

2 14

a Explain: Nervous system and adult stem cells

Or

a Write a brief note on the process of Gastrulation

b Explain various types of stem cell differentiation

Or

b Describe isolation of hematopoietic stem cells from bone marrow

3 14

a Define Cancer stem cells and explain cancer stem cell hypothesis

Or

a Write note on (a) SCNT (b) iPSC

b Write a brief account on the role of ethics committee in stem cell research in India

Or

b Write a note on different types of cryoprotectants for cryopreservation

4 14

a Describe allogeneic and autologous stem cell transplantation

Or

a Write a note on regenerative medicine

b Write a note on stem cell banking

Or

b Write cryopreservation steps and a short note on factors affecting cryopreservation

5. Multiple Choice Questions 14

(Mark (✓) the correct answer of the multiple choice questions)

1 Which of the following is arranged in right order

a Zygote> Implantation>Morula>Blastocyst      b Zygote>Morula>Blastocyst>Implantation

c Implantation>Zygote>Morula>Blastocyst      d Implantation>Zygote> Blastocyst> Morula

(P.T.O)

ELN10-2

- 2 **Which type of stem cells do not adhere(stic) to plastic surface of culture flask/disc**
- a Hematopoietic SC
  - b Mesenchymal SC
  - c Epithelial SC
  - d Both b & c
- 3 **Which of the following is not true for morula**
- a It is early stage embryo with 16 cell
  - b It has zona pellucida
  - c It is formed 3-4 days post fertilization
  - d It eventually develop into a blastocyst
- 4 **Multiple CD antigens can be identified by**
- a Flowcytometry
  - b Immunohistochemistry
  - c Karyotyping
  - d Both a & b
- 5 **Which of the following transcription factor is not essential for developing iPSC**
- a OCT4
  - b EGFR
  - c KLF4
  - d SOX2
- 6 **Which of the following is not a primary germ layer**
- a Epiderm
  - b Mesoderm
  - c Endoderm
  - d Trophoctoderm
- 7 **Which type of stem cells have adherent property in-vitro**
- a Hematopoietic SC
  - b Mesenchymal SC
  - c Epithelial SC
  - d Both b & c
- 8 **Which of the following is not a part of cryoprotectant media**
- a NaCl
  - b DMSO
  - c Glycerol
  - d Albumin
- 9 **Fluorescently labeled antibody can be identified by**
- a Flowcytometry
  - b qRTPCR
  - c Immunofluorescence
  - d Both a & c
- 10 **Progenitor cells are partially specialized cells that divides and give rise to differentiated cells**
- a Non specialized
  - b Specialized
  - c Adult stem cells
  - d None
- 11 **Which CD antigen is characteristics of Mesenchymal stem cells**
- a CD34
  - b CD44
  - c CD45
  - d All the above
- 12 **Pluripotency means cells which can give rise to \_\_\_\_\_ lineage**
- a Epithelial
  - b Mesenchymal
  - c Endothelial
  - d All
- 13 **GFAP is a marker for**
- a Beta islet cells
  - b Adipocyte
  - c Neuronal cell
  - d Hepatocyte
- 14 **Removal of cryoprotectant involves**
- a Hypertonic solution
  - b Hypotonic solution
  - c both
  - d None
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