Exam.Code:0438
Sub. Code: 3486

1059

M.Sc. (Biotechnology) Fourth Semester
MBIO-401: Stem Cell and Regenerative Medicine

Time allowed: 3 Hours Max. Marks: 80

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.*

x-x-x

I. Attempt the following:-

a) What are Embryonic stem cells?

b) What are Embryoid bodies?

c) Where is the niche of Hematopoeitic stem cells?

d) Where are Cap cells and Escort cells found?

e) What is a Stem cell Niche?

f) What are Yamanaka factors?

g) Define Trans differentiation.

h) Differentiate between totipotency and pluripotency. (8x2)

UNIT – I

II. a) How are Stem cells classified on the basis of their source? Elaborate.

b) Discuss properties of Embryonic stem cells. (10,6)

III. What are the Molecular mechanisms/factors underlying Pluripotency. (16)

UNIT – II

IV. a) Discuss the organization and features of GSC niche in Drosophila.

b)Write the mechanism of Wnt signalling in stem cells. (8,8)

V. a) Elaborate on identification and Characterization of Hematopoetic stem cells.

b) Discuss application of MSC's for transplantation and its advantages. (10,6)

UNIT – III

VI. a) Deliberate on Factors/mechanisms of Trans differentiation in stem cells giving examples.

b) What are the ethical issues involved in ES cell application? (10,6)

P.T.O.

VII. How is Telomerase related to Stem cell Maintenance and Aging. (16)

UNIT – IV

VIII. a) What is Therapeutic cloning of stem cells? List advantages.

b) How is Stem cell therapy applied in treatment of Cancer? List examples. (8,8)

IX. a) Discuss application of stem cell transplantation in tissue engineering taking specific examples.

b) Differentiate between Autograft and Allograft. (10,6)

x-x-x