2016

ZOOLOGY

PAPER : ZOO 201

DEVELOPMENTAL BIOLOGY

(Old Course)

Full Mark : 80

Time : 3 Hrs

Figures in the right hand margin indicate full marks for the question

1) Answer the following multiple choice questions (any eight) 1 x 8=8

a) The kidney are formed from the germ layer

i) Mesoderm

ii) Lateral plate mesoderm

iii) Ectoderm

iv) Somites

b) Which of the following is not a teratogen

i) Antibody

ii) Alcohol

iii) Retinoic acid

iv) Water soluble vitamin

c) What is the origin of red blood cell

i) Amnion

ii) Chorion

iii) Yolk sac

iv) Fetal bone marrow

d) Which molecule play a major role in holding migrating cell together during Drosophila development

i) Collagen

ii) Elastin

iii) Fibronectin

iv) Cadherins

e) Antrum is present in

i) Primordial follicle

ii) Primary follicle

iii) Secondary follicles

iv) Graafian follicles

f) Gastrulation begins with the formation of

i) Primitive streak .

ii) Hypoblast layer

iii) Cytotrophoblast

iv) Endoderm layer

g) Differential growth beginning in the late third and fourth weeks of development results in which of the following

i) Cephalocaudal folding of the embryo

ii) Transverse folding of the embryo

iii) Transformation of the flat embryonic disc into a cy lindrical embryo

iv) All of these

h) The inductive process that transforms a flat layer of ectodermal cells into a hollow nervous system tube is called

i) Invagination

ii) Neurulation

iii) Notochord formation

iv) Gastrulation

i) Inside the female reproductive tract before fertilizing a secondary oocyte, the sperm cells undergoes

i) Capacitation

ii) Meiosis

iii) Spermiogenesis

iv) None of these

2) Answer the following short type questions (any five) 2 x 5=10

a) Define the of gap genes. 2

b) What do you mean by Inner Cell Membrane (ICM)? 2

c) Define the term totipotency? 2

d) What do you mean by environmental teratogens? 2

e) What is the role of adhesion molecules in morphogenetic development? 2

f) What do you mean bycell specification and differentiation? 2

3) Answer the following (any four) 5 x 4=20

a) Distinguish between the pronuclei and micronuclei. 5

b) Describe and draw the ultra-structural of a mamma-lian spermatozoon. 5

c) Distinguish between DET and FET. 5

d) How embryo transfer is done in IVF technique? 5

e) What is the function of co-ordinate gene and segment polarity gene during development? 5

4) Answer the following long type question (any two) 9 x 2=18

a) Describe the role of maternal parent on early development in drosophila 9

b) Describe the cell process of cell commitment and germ cell migration. (5+4)

c) Describe the formation of thymus in mammals. 9

5) Answer the following very long type question (any two) 12 x 2=24

a) What is teratogenesis? Describe the different factors that causeteratogenesis. (3+9)

b) Describe the utility of cryopreservation in assisted reproductive technology? What are the major advantages and the disadvantages of gamete cryopreservation? (5+7)

c) What do you mean by stem cell? How iPS cell are different from conventional stem cells. What are the various disorder of stem cell? Mention the role of Mesenchymal stem cells (MSC) in stem cell therapy. (2+2+5+3)

———x———