

DEPARTMENT OF ZOOLOGY



MARWARI COLLEGE, RANCHI

Question Bank- B.Sc (Hons.) Sem VI

Paper- C-13(CBCS)

(DEVELOPMENTAL BIOLOGY)

FILL IN THE BLANKS:

- 1) Maternal mRNA and proteins found in cytoplasm of egg acts as.....
- 2) Spermatogenesis takes place withinof testis.
- 3) A cap like vesicle present in the anterior part of sperm that helps penetrate egg membrane is.....
- 4) The process of formation of female gamete is called.....
- 5) The process of oogenesis occurs incell of ovary .
- 6) Primary oocyte are arrested instage of meiosis.
- 7) The vegetal pole present in the lower portion of the egg contain.....
- 8) The egg containing moderate amount of yolk are called.....
- 9) External fertilization occurs in (terrestrial/aquatic)..... organism.
- 10) The penetration of sperm in the egg is called.....
- 11) The process of fertilization takes place inregion of fallopian tube.
- 12) The process of conditioning of sperm in female reproductive track is called.....
- 13) Zygote is (haploid /diploid).....in nature.
- 14) The series of rapid mitotic division the zygote undergoes is called.....
- 15) A 16 cell stage of embryo is termed as.....
- 16) Bones and cartilages are derived from which germ layer.....
- 17) Slow block of polyspermy is caused by exocytosis of.....
- 18) When the cleavage furrow divides the entire egg completely in particular plane it is saidcleavage

- 19) The region just opposite to sperm entry site from where amphibians gastrulation begins is called.....
- 20) The initiation of gastrulation in birds takes place by migration of cells through.....
- 21) The larval stage of frog is called.....
- 22) Holometabolous insects do not havestage in their life cycle.
- 23) In holometabolous insects the juvenile from egg are called
- 24) The non feeding stage in insect (butterfly) life cycle is.....
- 25) Which hormone is known as molting hormone.....?
- 26) Regeneration in hydra is an example of.....
- 27) The ability to form head at one place and foot at another is coordinated bygradient.
- 28) The mass of undifferentiated cell formed during epimorphosis are called.....
- 29) The progressive physiological change in an organism that leads to senescence is called.....
- 30) The process in which amniotic fluid is sampled for abnormalities is called.....

TRUE OR FALSE

1. Receptors are membrane proteins that function to bind to signalling molecule .
2. The communication between cells when two cell are in direct contact is called paracrine signalling.
3. Differentiation is the process in which one cell type changes to another.
4. A single primordial germ cell gives rise to four mature egg.
5. The process of shedding off an ovum from ovary is called ovulation.
6. Acrosomal reaction occurs when sperm comes in contact with uterine tube .
7. The trophoblast layer of blastocyst provides nourishment to embryo.
8. Fast block of polyspermy is accomplished by electrical change in egg membrane.
9. Fertilization envelop functions to prevent polyspermy.
10. Calcium ion has no role in initiating cortical granule reaction.
11. Morphogenetic movement occurs during blastula stage.
12. Fate map are the chart showing the prospective fate of embryo at any stage of development.
13. The inner cell of blastocyst are known as trophoblast.
14. Discoblastula are formed as a result of discoidal cleavage ..
15. Birds undergo discoidal holoblastic cleavage.
16. The major body axis of avian embryo are determined by primitive streak.
17. Implantation occurs after 2-3 days of ovulation in human.

18. The trophoblast of blastocyst stick to the endometrium during implantation.
19. Placenta has no role in nutrition and exchange of gases between mother and embryo.
20. Placenta constitute of only maternal component.
21. During amphibian metamorphosis there degradation of certain larval structure occurs
22. Ecdysone are released from corpora allata.
23. Regeneration is the ability to regrow damaged or lost part of body.
24. In case of morphallaxis re-patterning of existing tissue occurs.
25. Environmental toxins can serve as an agent of teratogenesis.
26. Teratogens have no role in embryonic defects and malformation.
27. IVF is a treatment protocol for infertility.
28. Amniocentesis can be performed for sex determination.

a) CHOOSE THE CORRECT OPTION:

- I. The nourishment of the developing sperm is provided by
 - a. sertoli cell
 - b. follicular cell
 - c. leydig cell
 - d. epithelial cell
- II. The differentiation of spermatid into sperm is called
 - a. spermatogenesis
 - b. oogenesis
 - c. spermiogenesis
 - d. insemination
- III. Mitochondria is present in which part of sperm
 - a. head
 - b. neck
 - c. middle piece
 - d. end piece

IV. Acrosomal cap are formed from

- a. golgi body
- b. E.R
- c. Ribosome
- d. Granule

V. The process of oogenesis begins

- a. Before birth
- b. Post birth
- c. After 10 years
- d. After 18 years

VI. The portion of the cytoplasm containing the egg pronucleus is called

- a. Animal pole
- b. Distal pole
- c. Vegetal pole
- d. Ventral pole

VII. The process of formation of three germ layer is called

- a. Morulation
- b. Gastrulation
- c. Blastulation
- d. Neurulation

VIII. Superficial cleavage is prominent in

- a. Insects
- b. Fishes
- c. annelids
- d. reptiles

IX. Discoidal cleavage occurs in

- a. Birds
- b. Flatworm
- c. molluscs
- d. Insects

X. Blatocyst formation takes place in

- a. Fishes
- b. Reptiles
- c. Humans
- d. Amphibians

XI. Blastopore in amphibians are formed by

- a. Invagination
- b. Involution
- c. Ingression
- d. Delamination

XII. A local thickening of epiblast in case of avian embryo is called

- a. Kollers sickle cell
- b. Sub germinal cell
- c. Marginal cell
- d. blastoporal cell

XIII. the process in embryology when the presence of one tissue influence sthe development of other in close proximity is called

- a. induction
- b. regulation
- c. competence
- d. differentiation

XIV. A group of cell that harbours the ability to instruct fate and morphogenesis of surrounding cell is called

- a. hypoblast
- b. organizer
- c. epiboly
- d. bottle cell

XV. The embryonic membrane which is helpful in removal of waste material

- a. yolk sac
- b. amnion
- c. chorion
- d. allantois

XVI. The extramenembryonic membrane in birds that interact with outside environment

- a. allantois
- b. amnion
- c. chorion
- d. yolk sac

XVII. The process by which the embryo is embedded and fixed with endometrium of uterus is called

- a. fertilization
- b. insemination
- c. implantation
- d. spermiation

XVIII. The immunoglobulin that can cross placental barrier is

- a. Ig-E
- b. Ig-M
- c. Ig-A
- d. Ig-G

XIX. The changes in amphibian metamorphosis is initiated by

- a. Prolactin
- b) F.S.H
- c) Estrogens
- d) thyroid hormone

XX. The term molting is associated with

- a. metamorphosis
- b. fertilization
- c. gametogenesis
- d. gastrulation

XXI. The type of regeneration in which dedifferentiation of adult structure to form undifferentiated mass of cell occurs in

- a. compensatory reg.
- b. Morphallaxis
- c. Epimorphosis
- d. None

XXII. Amniocentesis is helpful in

- a. Diagnosing abnormalities
- b. Embryonic development
- c. Fertility treatment
- d. None

B. WRITE SHORT NOTES ON THE FOLLOWING:

1. Morulla stage
2. Trophoblast
3. Gametogenesis
4. Spermatogenesis
5. Ultra structure of sperm
6. Egg membrane
7. Telolecithal egg
8. External fertilization
9. Fast block of Polyspermy
10. capacitation
11. Induction
12. Organizer
13. Blastocyst
14. Types of placenta
15. Metmorphosis
16. Hemimetabolous
17. Regeneration blastema
18. Compensatory regeneration
19. Amniocentesis
20. Teratogenic agent
21. Embryo transfer
22. Stem cell
23. Role of thyroid in metamorphosis

C. ANSWER THE FOLLOWING (LONG ANSWER QUESTIONS):

- 1) What are the different phases of development ,explain?.
- 2) Give an account of cell- cell interaction? What role do they play in embryonic development?
- 3) Explain the term differentiation ?what is its significance in embryonic development?
- 4) What do you understand by gametogenesis ?explain the process of spermatogenesis?
- 5) Differentiate between spermatogenesis and oogenesis?
- 6) Explain oogenesis ,draw a well labelled diagram of mature egg?
- 7) Explain the process of fertilization ,with its major events ?
- 8) Give an account of different types of egg based on its yolk content ,provide suitable example of each?
- 9) What are the various changes occurring in gamete pre-fertilization in female reproductive track?
- 10) Explain the mechanism of slow block of polyspermy?
- 11) What do you understand by polyspermy ,explain the role of membrane potential in blocking polyspermy?
- 12) What is cleavage ,explain the pattern of cleavage with suitable example?
- 13) Explain the process of gastrulating in chicks, what is the significance of primitive streak?
- 14) What is organizer, explain the role of organizer in embryonic development?
- 15) What are the different extra embryonic membranes in birds, explain with their function?
- 16) Explain the interaction between blastocyst and endometrium during implantation?
- 17) Give an account of structure and function of placenta?
- 18) What are the morphological changes occurring during amphibian metamorphosis?
- 19) Explain the hormonal control of amphibian metamorphosis?
- 20) Give an account of hormonal control of insect metamorphosis ,explain the life cycle of a holometabolous insect with suitable example ?
- 21) Explain epimorphosis regeneration with suitable example ?
- 22) Give an account of regeneration in hydra ,with grafting experimental proof?
- 23) Explain the formation of wound epidermis in salamander?
- 24) What are teratogenic agent ,explain their effect in embryonic development?
- 25) Explain the general protocol of IVF ?