

F - 326

M.Sc. (First Semester)
EXAMINATION, Dec.-Jan., 2021-22
ZOOLOGY
(Paper Fourth)

(Gamete Biology and Reproduction Physiology in Human Beings)

Time: 3 Hours

Maximum Marks: 80

Note: Attempt all Sections as directed. Draw appropriate diagrams where necessary.

Section-A

1 each

(Objective/Multiple Choice Questions)

Note: Attempt all questions.

Choose the correct answer:

1. Hormone inhibin is secreted by-
 (a) Theca cells (b) Zona pellucida
 (c) Granulosa cells (d) Corpus luteum
2. The follicle that ruptures at the time of ovulation promptly fills with blood forming is-
 (a) Corpus albicans (b) Corpus luteum
 (c) Corpus haemorrhagium (d) Corpus callosum
3. Cessation of menstrual cycle is called-
 (a) Ovulation (b) Menopause
 (c) Parturition (d) Menarche
4. During oogenesis each diploid primary oocyte produces-
 (a) 4 functional sperms (b) 4 functional polar bodies
 (c) 2 functional eggs and 2 polar bodies (d) 1 functional egg and 3 polar bodies
5. Graafian follicle is maintained by-
 (a) FSH (b) Prolactin
 (c) Estrogen (d) Androgens
6. The lytic enzyme released by sperm is-
 (a) Hyaluronidase (b) Acrosome
 (c) Ligase (d) Androgamone
7. The cytoplasm surrounding the mitochondria found in the middle piece of sperm is-
 (a) Manchette (b) Microsome
 (c) Acrosome (d) Centrosome
8. Secondary spermatocytes are-
 (a) Diploids (b) Haploids
 (c) Tetraploids (d) Triploids

9. Acrosome of spermatozoa is formed by-
 a) Ribosome b) Mitochondria
 c) Lysosomes d) Golgi complex
10. Nebenkern is the part of-
 a) Ovary b) Sperm
 c) Fetus d) Testis
11. Middle piece of sperm contains-
 a) Mitochondria and Golgi body b) Centriole and Golgi body
 c) Mitochondria and axial filament d) Axial filament and Golgi body
12. .. Fertilization of sperm and ovum takes place in-
 a) Ampulla of oviduct b) Isthmus of oviduct
 c) Fimbriae of oviduct d) Uterus
13. The lining of uterus to which the embryo implants is called as-
 a) Coccyx b) Trophoblast
 c) Yolk plug d) Endometrium
14. Which hormone is the basis for pregnancy test?
 a) HCG b) Prolactin
 c) Estrogen d) Prostaglandins.
15. Division of human egg is-
 a) Holoblastic and unequal b) Meroblastic
 c) Holoblastic and equal d) Isoblast
16. The lytic enzyme released by sperm is-
 a) Ligase b) Acrosome
 c) Androgamone d) Hyaluronidase
17. Number of autosomes in human primary spermatocyte is-
 a) 46 b) 44
 c) 23 d) 22
18. Among the following stem cells which are found in the umbilical cord?
 a) Embryonic stem cells b) Adult stem cells
 c) Cord blood stem cells d) Blood stem cells
19. Cryptorchidism is a condition in which-
 a) Male hormones are not reactive b) Ovaries are removed
 c) Sperms are not formed d) Testes don't descend in scrotal sacs
20. Which vessel transports blood rich in oxygen and nutrients to the fetus?
 a) Ductus arteriosus b) Ductus venosus
 c) Umbilical vein d) Umbilical artery

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Section-B $1\frac{1}{2}$ each**(Very Short Answer Type Questions)****Note:** Attempt all questions. Answer the questions in two or three sentences

1. What is gonadal sex?
2. Define polycystic ovary syndrome.
3. What are the functions of corpus luteum if ovum is fertilized and implanted?
4. Write two factors involved in the stimulation and initiation of parturition.
5. What are the important stimulants of lactation?
6. What is the site of oxytocin biosynthesis?
7. Name two important hormonal changes at or around the onset of puberty?
8. Normal testicular function depends on which factors?
9. What does vitrification mean in cryopreservation?
10. When and where was the first live births following frozen- thawed embryo transfer was reported?

Section-C $2\frac{1}{2}$ each**(Short Answer Type Questions)****Note:** Attempt all questions. Answer the questions in about 75 words.

1. Which factor influences the movement of primordial germ cells to medullary region of the primitive gonad?
2. Write two metabolic functions of estrogens.
3. How does human placental lactogen (hPL) secreted by syncytiotrophoblast helps fetus?
4. The secretion of prolactin is controlled by which factors?
5. What are the consequences of antiandrogens in humans?
6. What causes gynecomastia in males?
7. What are primary and secondary amenorrhea?
8. What are the functions of ovarian androgens?
9. Citing examples, describe the features of any two cryoprotectants.
10. What are the sub-lethal injuries occurring due to freezing oocytes, ovarian tissue and testicular tissue?

Section-D

5 each

(Long Answer Type Questions)**Note:** Attempt all questions. Answer the questions in about 150 words.

1. Explain the chromosomal and gonadal basis of sex differentiation.

Or

Describe reproductive cycles in mammal, citing appropriate examples.

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2. Describe spermatogenesis, development of spermatozoa and biochemistry of semen.

Or

Give a detailed account of physiological role of androgens in males.

3. Describe the chemistry, biosynthesis and functions of estrogen and relaxin hormones.

Or

Give a detailed account of control of ovarian function and its abnormalities

4. Describe the process and biochemistry of fertilization,

Or

Give a detailed account of collection and cryopreservation of gametes and embryo.