



‘समानो मन्त्रः समितिः समानी’

**UNIVERSITY OF NORTH BENGAL**  
B.Sc. Honours 5th Semester Examination, 2021

**DSE-P1-ZOOLOGY**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.*

**The question paper contains GROUP-A and GROUP-B  
The candidates are required to answer any *one* from *two* groups.  
Candidates should mention it clearly on the Answer Book.**

**GROUP-A**

**REPRODUCTIVE BIOLOGY**

1. Answer any *five* questions from the following: 1×5 = 5
- (a) Which hormone influences the ovulation process in human?
  - (b) Name the process by which the spermatids are transformed into spermatozoa.
  - (c) Name the stage at which the cell division of secondary oocyte is halted.
  - (d) Testosterone is bound to \_\_\_\_\_, which is produced by Sertoli cell. (Fill in)
  - (e) Which part of the sperm plays an important role in penetrating the egg membrane?
  - (f) Which of the following is *NOT* a male accessory gland:
    - (i) Seminal vesicle
    - (ii) Ampulla
    - (iii) Prostate
    - (iv) Bulbo-urethral gland.(Choose the correct option)
  - (g) In later stage of pregnancy, relaxin is secreted by:
    - (i) Foetus
    - (ii) Uterus
    - (iii) Graafian follicle
    - (iv) Corpus luteum.(Choose the correct option)
  - (h) Which hormones are known as androgens?
2. Answer any *three* questions from the following: 5×3 = 15
- (a) Draw and describe the histological architecture of seminiferous tubule.
  - (b) Discuss the feedback regulation system in hypothalamo-hypophyseal-gonadal axis.
  - (c) Write a short note on the hormonal control of the secretion of the testosterone.
  - (d) Comment on the basic principle of IVF. How IUI is different from ICSI?
  - (e) Briefly describe the mechanism of action of sex-steroid hormones.

3. Answer any **two** questions from the following: 10×2 = 20
- (a) Discuss the causes, diagnosis and management of the infertility in females. 3+3+4
- (b) Discuss the development and differentiation of male gonads. 6+4
- (c) Describe the process of sperm-egg interaction during fertilization in human. Comment on the capacitation process. 7+3
- (d) Explain with diagram about the levels of sex hormones during menstrual cycle. Comment on the functions of different hormones in the reproductive cycle of females. 3+7

**GROUP-B**  
**ENDOCRINOLOGY**

1. Answer any **five** questions from the following: 1×5 = 5
- (a) What are autocrine and paracrine secretion?
- (b) What is the function of Sertoli cell?
- (c) What is the function of parafollicular cells?
- (d) Name two hormones that prepare the body for 'Fight-or Flight' response.
- (e) Mention two functions of vasopressin.
- (f) Distinguish between neurotransmitter and neurohormone.
- (g) Name the enzymes involved in the conversion of ATP to cAMP and cAMP to 5' AMP.
- (h) Expand GnRH and mention its source.
2. Answer any **three** questions from the following: 5×3 = 15
- (a) Classify hormones on the basis of chemical nature and on the basis of mechanism of action. 2½+2½
- (b) Describe the structure of pituitary. Tabulate the hormones secreted from different parts of pituitary. 2½+2½
- (c) Write a note on the structure of Graafian follicle.
- (d) Name the hormone secreted from the pineal gland. Discuss the role of pineal hormone in circadian rhythm. 1+4
- (e) Write the full form of ELISA. Describe the sandwich method of ELISA. 1+4
3. Answer any **two** questions from the following: 10×2 = 20
- (a) Describe the mode of action of a water-soluble hormone.
- (b) Describe the structure of thyroid gland. Discuss on the role of hormones in calcium homeostasis. 4+6
- (c) Elucidate the ovarian and uterine changes during different phases of menstrual cycle. Mention two differences between menstrual cycle and oestrous cycle. 8+2
- (d) Describe the histological architecture of adrenal cortex with a suitable diagram. Name the hormones secreted from adrenal cortex and state their function. 5+1+4

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