



WEST BENGAL STATE UNIVERSITY

B.Sc. Honours PART-III Examinations, 2018

ZOOLOGY-HONOURS

PAPER- ZOOA-VII

Time Allotted: 4 Hours

Full Marks: 100

The figures in the margin indicate full marks.

Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer any **six** questions from the following: 2×6 = 12
 - (a) What is chloride shift?
 - (b) What is portal triad?
 - (c) What are Weberian Ossicles? State their functions. 1+1
 - (d) What is isometric contraction of muscle?
 - (e) Explain holocrine secretion with suitable example.
 - (f) Define metachromasia.
 - (g) State the sites of biosynthesis of cortisone and glucagon. 1+1
 - (h) Differentiate between diabetes mellitus and diabetes insipidus.
 - (i) What is intercalated disc? State its function. 1+1
 - (j) Distinguish resting membrane potential and action potential.

2. Answer any **three** questions from the following: 5×3 = 15
 - (a) Describe the methods of osmoregulation in catadromous fish. 5
 - (b) What are the ways by which ATP supply is maintained in muscles during contraction and relaxation? 5
 - (c) What are the differences between bioluminescence and chemiluminescence? 2+3
State the biological importances of bioluminescence.
 - (d) Explain depolarization and repolarization of action potential generated during the conduction of impulse. 5
 - (e) Describe the accessory respiratory organ in 'jeol' fish. 5

3. Answer any **two** questions from the following: 10×2 = 20
 - (a) What is TMAO? State its role in osmoregulation. Write a note on ammonotelism. Discuss the role of chloride cells in osmoregulation of teleosts. 1+3+3+3

- (b) Write a note on Donnan membrane equilibrium. Elaborate how hypotonic glomerular filtrate changes into hypertonic urine in mammalian nephron. Name two hormones and their respective roles related to urine formation. 3+5+2
4. Answer any *three* questions from the following: 5×3 = 15
- (a) Describe the biosynthesis of T₃ and T₄. 5
- (b) Classify hormones of vertebrates with examples on the basis of chemical nature. 5
- (c) State the source and functions of oxytocin. 5
- (d) Describe a mature Graffian follicle with a labelled diagram. Mentioning their conditions. 3+2
- (e) Define neuroendocrine, autocrine and paracrine modes of hormone delivery system, with suitable example. 2+1+2
5. Answer any *two* questions from the following: 10×2 = 20
- (a) Describe biosynthesis of corticosterone with the names of enzymes involved. Describe the uterine changes occurring in menstrual cycle. 5+5
- (b) Describe the role of membrane receptors in hormone action with suitable example. Distinguish physiological function of insulin and glucagon. Differentiate IDDM and NIDDM. 4+1+2+3
- (c) Describe the steps involved in the biosynthesis on adrenal catecholamines. Describe the role of Ca²⁺ and IP₃-DAG as second messengers. 5+2.5+2.5
6. Answer any *three* questions from the following: 6×3 = 18
- (a) Mention different types of neurons. Differentiate between dye and stain. What is double staining? 2+2+2
- (b) Elucidate the histological features of thyroid gland of mammals with a neat diagram. Comment on the histological importance of colloids present in follicles of mammalian thyroid gland. 3+2+1
- (c) Compare gap junction and tight junction. State the function of glial cells. 4+2
- (d) State the location and function of parietal cells. Distinguish between holocrine and merocrine secretion. What is non-additive fixative? 2+3+1
- (e) Describe the histological structure of mammalian seminiferous tubule with suitable diagram. State the function of mast cell. 3+2+1



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1. Answer any **ten** questions from the following: 2×10 = 20
- (a) What is delamination? Give an example.
 - (b) What are extra-embryonic membranes?
 - (c) What is xenobiotics?
 - (d) What is the significance of round dance of honey bee?
 - (e) Name one each of indigenous goat and lamb breed of India.
 - (f) Which organ of human body has a major role in detoxification process?
 - (g) What is the composition of lac?
 - (h) What is Leydig cell? State its function.
 - (i) What is acrosomal reaction?
 - (j) What is voltinism in silk moth?
 - (k) Write the scientific name of one fresh water and brackish water fish.
 - (l) What is culling?
 - (m) State the role of GnRH in spermatogenesis.
 - (n) What is hypnozoite?
 - (o) What is economic threshold?
 - (p) Name two hormones released from pituitary gland used in fish breeding.
2. Answer any **five** questions from the following: 5×5 = 25
- (a) What is sperm capacitation? How polyspermy can be prevented in mammals? 3+2
 - (b) What are polar bodies? Describe the process of cleavage in telolecithal egg. 2+3
 - (c) What are Hox genes? Discuss their role in development. 1+4
 - (d) Discuss the process of gastrulation in zebra fish with suitable diagram. 5
 - (e) Describe the Genic balance theory of sex-determination in *Drosophila*. 5
 - (f) How the primitive streak is formed? Discuss the migration of cell through the primitive streak. 2+3
 - (g) Describe various events of the development of brain in chick embryo with suitable diagram. 5
 - (h) Write short notes on the following: 2.5×2
 - (i) Cell Potency
 - (ii) Vitellogenesis.

3. Answer any **three** questions from the following: 5×3 = 15
- (a) What do you mean by indicator species? Discuss effects of eutrophication in aquatic life. Write full form of GAP. 2+2+1
- (b) What is green house effect? Write the name of green house gases. State the important causes of global warming. 1+2+2
- (c) What is noise? State the adverse effects of noise pollution on human health. What is silence zone? 1+3+1
- (d) Name two common soil pollutants. State their impact on soil biodiversity. 2+3
- (e) What is the climate change convention? Narrate briefly Agenda-21. 2.5+2.5
4. Answer any **two** questions from the following: 5×2 = 10
- (a) Briefly narrate the pathogenicity of *Wuchereria bancrofti*. Comment on the periodicity of this parasite. 3+2
- (b) Define parasitism. Distinguish between infestation and infection. State the pathogenic symptoms of chikungunya. 1+2+2
- (c) Give an account on Erythrocyte Schizogony of malarial parasite. Why malarial fever appear at specific time interval? 3+2
- (d) Write short notes on the following: 2.5×2
- (i) Pathogenicity
- (ii) Scrub typhus.
5. Answer any **six** questions from the following: 5×6 = 30
- (a) Give the chemical nature of silk. State two identifying characters of male and female *Bombyx mori*. Name the causative agent of flacherie. 2+2+1
- (b) Define monoculture and polyculture. Name the carbs used for polyculture in West Bengal with their spatial niche in fresh water pond. 2+3
- (c) Name the bacterial diseases of honey bee with causative agents. Write the composition of honey. 3+2
- (d) What is estuary? Differentiate penaeid and non penaeid prawn with example. Give the scientific name of two estuarine fishes. 1+2+2
- (e) Write the uses of lac? State the name of by products produced during the processing of lac. Name the strains of lac insect. 2+2+1
- (f) Discuss the method of deep letter system in poultry farming. What is ranikhet disease? 4+1
- (g) Name two egg type and two ornamental type of Duck breed. Why duck rearing is advantageous over chicken? 2+3
- (h) State the importance of indigenous Goat breeds. Name two table breeds of poultry birds. 3+2
- (i) Write the causes of decline of wild fish stocks in nature. Write the scientific name of one fresh water and one estuarine prawn. 3+2
- (j) Write short notes on the following: 2.5×2
- (i) Natural enemy of lac
- (ii) Uses of bee venom.