Roll No. .....

B.Sc. (Hons.) SEMESTER I EXAMINATION 2016-17

ZOOLOGY

(Old Course 2009-10 Syllabus)

ZOB - 301 : Comparative Physiology, Endocrinology and Developmental Biology

Time : Three hours **Max. Marks : 70**

(WRITE YOUR ROLL NO. AT THE TOP IMMEDIATELY ON THE RECEIPT OF THIS QUESTION PAPER)

NOTE : USE SEPARATE ANSWER BOOK FOR EACH SECTION.

Section A : Comparative Physiology (Marks : 26)

Note: Answer any two questions including Q. No.1 which is compulsory.

The figures in the right hand margin indicate marks

1. (a) Define the following 1X2
   - (i) Ammonotelism
   - (ii) Resting membrane potential

   (b) State whether the following statements are true or false with proper reasons: 2X3
   - (i) Counter current flow mechanism is found only in fishes
   - (ii) Shivering is associated with protection against hot environment
   - (iii) Na^+-K^+ pump provides an additional contribution to the resting potential

2. (a) Describe the functions of various types of leukocytes found in the blood. 9

   (b) Describe the chemical digestion of proteins in animals 9

3. (a) Discuss the mechanism of branchial respiration in fishes. 6

   (b) Give an account of various kinds of proteins involved in muscle contraction. 6

   (c) Describe ornithine cycle of urea formation 6

Section B : Endocrinology (Marks : 26)

Note: Answer three questions including Q. No. 1 which is *compulsory*.

The figures in the right hand margin indicate marks.

1.(a). Write whether the following statements are True or False. Justify your answers: X4

(i) Zona glomerulosa cells of adrenal gland secrete glucocorticoids.

(ii) Testosterone is produced by Sertoli cells of the testis.

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(iii) Glucagon is a hyperglycemic hormone.

(iv) Calcitonin is produced by parafollicular cells of the parathyroid gland.

(b). Define the following: 1X4

(i) Endocrine mode of hormone delivery

(ii) Zona fasciculata

(iii) Graafian follicle

(iv) Neurohypophysis

Q2. Draw well labelled diagram of Graafian follicle. Write important biological actions of estrogen. 4+5

Q.3 Describe the structure of the parathyroid gland. Comment upon the role of paratharmone in Ca++ homeostasis. 4+5

Q.4 Describe the structure and different parts of pituitary gland and name the hormones secreted by them. 9

Section C : Developmental Biology (Marks : 18)

NOTE : ATTEMPT TWO QUESTIONS INCLUDING QUESTION NO. 01 WHICH IS COMPULSORY.

1. a) Define the following terms : 4 x 0.5 = 2
   - i) Acrosome reaction
   - ii) Invagination
   - iii) Amnion
   - iv) Differentiation

   b) State whether the following statements are **True** or **false**. Justify your answer in 2-3 sentences : 2 x 2 = 4

   i) Nieuwkoop centre is also called as primary organiser of amphibian.

   ii) The function of the Hensen's node is equivalent to the dorsal lip of the amphibian blastopore.

2. a) Define the role of organiser in amphibian embryo development. 6

   b) Define the process of regeneration and describe the limb regeneration in amphibians. 6

3. Write short notes on any three of the following : 4 x 3 = 12

   i) External fertilization

   ii) Fate map of chick

   iii) Fast block to polyspermy

   iv) Primitive streak