POST-GRADUATE COURSE

Term End Examination — June, 2017

ZOOLOGY

Paper - 7B : Endocrinology, Cell & Tissue Structure and Function

Time : 2 Hours **Full Marks : 50**

(Weightage of Marks : 80%)

Special credit will be given for accuracy and relevance in the answer. Marks will be deducted for incorrect spelling, untidy work and illegible handwriting. The weightage for each question has been indicated in the margin.

1. Answer *two* questions : $9 \times 2 = 18$

   a) Explain with diagram the feedback control of thyroid hormone secretion. Discuss the role of NIS in the formation of iodothyronine. 4 + 5

   b) What are the methods of binding of receptor protein for generation of cellular activity ? Explain those with suitable diagrams. 9

   c) Show the development and cyto-differentiation of adenohypophysis from oral ectoderm. Classify adenohypophysial cell types on the basis of their staining properties. Mention the intracellular granular size of each of the cell types. 5 + 2 + 2

   d) Write the role of epinephrine in carbohydrate metabolism. Explain the mechanism of gastrin mediated acid secretion by the parietal cells of stomach. What is the role of pancreas in digestion ? 3 + 3 + 3

2. Answer *three* questions : $6 \times 3 = 18$

   a) Mention the role of SH domain in activation of cytoplasmic protein tyrosine kinase. Discuss the role of IP_3 and DAG on peptide hormone secretion. 3 + 3

   b) Compare the chemical structures of aldosterone and cortisol. State the consequences due to loss of mineralocorticoid activity. 3 + 3

   c) What is catechol group ? Why the hormones secreted from adrenal medulla are called catecholamines ? Explain the biosynthetic pathway of catecholamines. 1 + 1 + 4

d) What do you mean by the term 'necrosis' ? How does it differ from apoptosis ? Explain the mitochondrial pathway of caspase activity with suitable diagram. (1 + 2) + 3

e) Explain the terms first, second and third messengers with a suitable diagram and enumerate their mechanism of action in a protein hormone. 3 + 3

f) Explain the roles of subcellular structures in cells that are involved in the secretion of protein hormones. 6

3. Answer *two* questions : $4 \times 2 = 8$

a) Describe with the help of a flow chart, the biosynthetic pathway of corticosterone. 4

b) What is ABP ? Mention its source and function. 1 + 3

c) Name the most important mineralocorticoid and state its functions. What factors regulate its actions ? 1 + 2 + 1

d) What are the steps involved in the expression of a protein-encoding gene ? 4

4. Answer *two* questions : $3 \times 2 = 6$

a) Write briefly about Motilin. 3

b) "Heat shock proteins regulate the activation and recycling of steroid receptor." Explain. 3

c) State the formation and function of corpus luterm. 3

d) Mention the consequences of rise in cytosolic Ca^{2+}. 3