RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

FIRST YEAR [2017-20]

B.A./B.Sc. FIRST SEMESTER (July – December) 2017

Mid-Semester Examination, September 2017

Date : 12/09/2017

ZOOLOGY (Honours)

Time : 11 am – 1 pm

Paper : I

Full Marks : 50

1. Answer **any ten** questions : [10×2]

   a) Write the scientific name of a protozoon which exhibit mixotrophic nutrition? What are Paramylon granules? [1+1]

   b) Define Karyopherins and Kinetodesma. [1+1]

   c) *Trypanosoma* & *Nosema* belong to the phyla _____ & _____ respectively. [1+1]

   d) Distinguish between Spongoceol & Spongin. [2]

   e) What are Monaxon & Triaxon spicules of sponges? [1+1]

   f) Name the types of canal systems found usually in Poriferans. [2]

   g) What are structural & *cis-trans* isomers of carbon? [1+1]

   h) Name the essential functional groups present in a polypeptide. [2]

   i) What are sno RNAs? Name the proteins involved synthesizing such RNAs. [1+1]

   j) How might having cnidocytes (stinging cells) be advantageous to a jellyfish and to a sea anemone? [1+1]

   k) Name the class in which free-living platyhelminthis are found. [2]

   l) What is a lasso cell? [2]

   m) How a phospholipid bilayer is arranged in a cell membrane? [2]

   n) Write the different types of pathogenic strains of E.Coli. [2]

   o) What is HUS syndrome? [2]

2. Answer **any two** questions : [2×5]

   a) What is the significance of actin polymerization and depolimerization during locomotion of an *Amoeba*? What are microspheres? [3+2]

   b) Name the essential components of an 'Apical Complex'. Mention three major characteristic features of the phylum Sarcomastigophora. [2·5+2·5]

   c) Differentiate between Prosobranchia and Opiosthobranchia. Despite not having a heart and circulatory system how do Poriferans survive? [2·5+2·5]

   d) What is a carrier protein? Give two examples of carrier proteins. What is a cell recognition protein? Site an example. What is receptor mediated endocytosis? [(0·5×3)+1+0·5+2]

   e) What is GPCR? Briefly describe how PKC gets activated in G protein signalling pathway. [1+4]

3. Answer **any two** questions : [2×10]

a) "Despite being a prosobranch, the nervous system of *Pila* does not reflect the characteristic torted '8' shape"- justify how it has modified its nervous system and why? Draw and label the ultrastructure of flagella axoneme. What is Chromatosome? [5+2+2+1]

b) Enumerate the functional properties of Carbonyl & Hydroxyl functional groups. State the importance of dehydration reactions during the synthesis of a polymer. Describe the structural speciality of a phospholipid. How many polypeptide chains are usually found in a Haemoglobin molecule? [3+2+3+2]

c) How PIP2 is activated? Briefly describe the DAG & IP3 pathway. Write the Signal transduction pathways of Epinephrine. [1+5+4]

d) Write three most important cell cycle check points in a mitotic cell division. In which phases do they regulate? What is the function of G2 check point? What is the role of Cyclosome in cell division? [2+2+1+5]

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