RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

FIRST YEAR [2018-21]

B.A./B.Sc. FIRST SEMESTER (July – December) 2018

Mid-Semester Examination, September 2018

Date : 24/09/2018

ZOOLOGY (Honours)

Time : 11 am – 1 pm

Paper : I

Full Marks : 50

1. Answer **any five** questions : **[5×2]**

   a) Describe the ultrastructure of a cnidoblast.

   b) Describe with suitable example to show how GFP is used to study the transport of proteins from ER to Golgi body?

   c) What is Laurer's canal?

   d) What are 'liver flukes' and 'blood flukes'? Mention their systemic positions.

   e) State three major characteristic features of radiolarians with examples.

   f) Write down four important characteristics of free-living class of Phylum Platyhelminthes.

   g) What is metachronal wave?

   h) Compare between conjugation and autogamy in *Paramoecium*

2. Answer **any four** questions : **[4×5]**

   a) Briefly explain how a cockroach excretes. Describe the structure of a Miracidium larva. [3.5+1.5]

   b) Explain 'metagenesis' with reference to the life cycle of *Obelia*. What are zooxanthellae? Justify their symbiotic relationship with cnidarians. [3+2]

   c) Mention the role of pellicle in a protozoon. What are spongiome and ampulla? [2+3]

   d) "Choanocyte and amoebocyte are important for procuring food and nourishment in sponges" – justify. Describe the role of gemmule. [3+2]

   e) Draw and describe the ultrastructure of flagellar axoneme. What is the advantage of closed spindle division? [4+1]

   f) Why the size of syconoid sponges are considerably larger than asconoid forms? Enumerate the role of microfilament dynamics during amoeboid movement. [2+3]

3. Answer **any four** questions : **[4×5]**

   a) Briefly outline steps that you would follow in case of differential centrifugation of sub-celluar organelles starting with rat liver tissue as sample. In case of density gradient centrifugation, distinguish between 'Rate Zonal' and 'Isopycnic Gradient' centrifugations. [2.5+2.5]

b) What are the factors that control membrane fluidity? What do you mean by uniport, symport and antiport membrane transport? [2+3]

c) Illustrate briefly how nascent polypeptide chain synthesized from ribosome enters the lumen of endoplasmic reticulum. What is trans golgi network? [4+1]

d) Describe how PGC 1 gets activated leading to mtTFA transcription. "Mitochondrial genome is closely related in origin to the genome of the cell" – justify. [2.5+2.5]

e) Explain the steps involved in the targeting transport vesicles to target membranes by specialized GTP-binding proteins called Rabs.

[5]

f) Describe the regulatory function of GAP and GEF in protein transport between cytosol and nucleus. Why 200 copies of rRNA genes are present per haploid genome, whereas most of the genes are present only once?

[3+2]

———— × ————