RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIRST SEMESTER EXAMINATION, DECEMBER 2016

FIRST YEAR [BATCH 2016-19]

Date : 17/12/2016 **ZOOLOGY [General]**

Time : 11 am – 1 pm **Paper : I** Full Marks : 50

[Use a separate Answer Book for each Group]

Group – A

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

   i) *Monocystis* belongs to the phylum _____ & *Nosema* belongs to the phylum _____. [1+1]

   ii) Differentiate microphagy from macrophagy. [2]

   iii) State the difference between connective and commisssure. [2]

   iv) What is green gland? Where is it found? [1+1]

   v) What is a nephridiopore? Where is it found? [1+1]

   vi) What is madreporite? State the role of haemocyanin. [1+1]

   vii) From where does green gland gets its blood supply? Give scientific name of one organism having green gland as an excretory organ. [1+1]

   viii) From where does oxygenated blood enter into the chamber of heart of a cockroach? What is haemocoel? [1+1]

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

   a) Schematically write the open circulation circuit in cockroaches. Write the characteristics of blood of cockroach. [1+1·5]

   b) Describe how the 'Sliding Tubule' model explains flagellar movement with a suitable figure. [2·5]

   c) Define Receptor Mediated Endocytosis (RME). [2·5]

   d) Which respiratory pigment is present in the blood of earthworm? Why do you think that circulatory system in earthworm is considered to be a closed circulatory system? [1+1·5]

   e) What is synkaryon? How is it formed? [1+1·5]

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

   a) Write a brief note on conjugation in *Paramoecium* with a suitable diagram. [5]

   b) Describe how tubular exchange takes place in malpighion tubules during excretion. [5]

   c) What is the function of 'book lung'? Where is book gill found? Write a short note on book lung of scorpions. [1+1+3]

   d) Enumerate the functions of different digestive glands present in the gut of a cockroach. [5]

   e) What is metagenesis? Explain how metagenesis occurs in *Obelia sp*. [1+4]

Group - B

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

   i) What are the functions of glycoproteins in Plasma Membrane?

   ii) What do you mean by holocentric chromosome?

   iii) What is a tumor suppressor gene? Cite an example.

   iv) According to IUPAC system of nomenclature write the names of Guanine and Thymine.

   v) Write down the sex of the flies having the following sex chromosome/autosome ratio
   i) 3X : 2A ii) 3X : 3A iii) 2X : 3A iv) XY : 2A

   vi) What is genetic engineering? What is meant by transgenic organisms? [1+1]

   vii) Differentiate between the chemical structure of DNA and RNA.

   viii) State the role of sigma (σ) factor in prokaryotic (*E. coli*) transcription.

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

   a) Write the difference between pericentric and paracentric inversions.

   b) What is meant by chemical scissor? Write down its types with suitable examples. [1+1·5]

   c) What is the function of G_1 phase of the cell cycle? In which phase of the cell cycle centrosome duplicates? [1·5+1]

   d) What is meant GERL system of eukaryotic cell? Which organelle of eukaryotic cell is called the "suicidal bag"? [1·5+1]

   e) Due to aberration in which chromosome Down Syndrome occurs? What is meant by point mutation? [1+1·5]

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

   a) Write down the functions of A–, P– and E– sites of ribosome. What is meant by formylation? [3+2]

   b) What is criss-cross inheritance? What do you mean by Cooley's anaemia? Write its causes? [2+1+2]

   c) What are restriction enzymes? Why are they required in gene cloning? Mention the features required to consider a vector to be good for genetic engineering. [1+1+3]

   d) What is a lethal mutation? Curly wing is dominant over normal wild type wing and homozygous for curly wing in lethal. What type of flies will be produced if two flies with curly wings are crossed? 'Bar is a tandem duplication' — Discuss. [3+2]

   e) Write down the functional roles of Topoisomerases and Gyrases in replication. What is a replication fork? Why are Okazaki fragments important in replication of DNA? [2+2+1]

———— × ————