PG/IIIS/ZOO-303/15

# M.Sc. 3rd Semester Examination, 2015

## ZOOLOGY

PAPER – ZOO - 303(Gr.-A & B)

*Full Marks* : 40

*Time* : 2 hours

Answer **all** questions

*The figures in the right-hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

*Illustrate the answers wherever necessary*

**Write the answers to Questions of each Group in separate books**

## GROUP – A

(*Techniques and Bioinstrumentation*)

1. Answer any *two* questions from the following : $2 \times 2$

   (*a*) How 'bright field microscope' differs from 'dark field microscope' ?

(*b*) Describe the method of electrostatic cell sorting in flow cytometry.

(*c*) Write the composition and function of tracking dye in agarose gel electrophoresis.

(*d*) What is fixed angle rotors ?

**2.** Answer any *two* questions from the following : $4 \times 2$

(*a*) State the principle and advantages of Fourier Transform Infrared (FT-IR) spectrometry. $2 + 2$

(*b*) What do you mean by isopyenic centrifugation ? $2 + 2$

(*c*) (*i*) What is secondary electron ? What is its utility in SEM ?

(*ii*) How resolving power of a compound microscope is calculated ? $2 + 2$

(*d*) (*i*) Compare ion-exchange and gel filtration chromatography.

(*ii*) What is native PAGE ? $3 + 1$

(*b*) Write notes on any *four* : 2 × 4

(*i*) Dysfunctional control in Parkinsonism

(*ii*) Synaptic transmission steps

(*iii*) Staining of Axom

(*iv*) Organ of Jacobson

(*v*) Chemical que transport

(*vi*) Multipolar neuron.

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3. Answer any *one* question from the following : $8 \times 1$

(*a*) Write the principle, procedure and biological application of Agarose gel Electrophoresis. $1\frac{1}{2}+5+1\frac{1}{2}$

(*b*) (*i*) Comment on different components of an HPLC.

(*ii*) Write down the essential parts of a TEM.

(*iii*) Comment on the fluorochromes used in flow cytometry. $4+2\frac{1}{2}+1\frac{1}{2}$

## GROUP– B

( *Endocrinology and Neurobiology* )

4. Answer any *two* questions of the following : $2 \times 2$

(*a*) How many basic classes of neurons are present in the human retina and state their names. $1 + 1$

(*b*) Briefly mention the role of stereocilia of the hair cell. 2

(*c*) What do you mean the neuroendocrine axis ? Site one example in vertebrate animals. $1 + 1$

(*d*) Write short note on Voltage-gated sodium channel function during Action potential. 2

5. Answer any *two* questions of the following : 4 × 2

(*a*) How Neurosecretory cells influence the endocrine structures in insect ? 4

(*b*) State the role of amyloid β(Aβ) in Alzheimer's disease. 'Clinically the Alzheimer's disease is a slowly progressive disorder' – Why ? 2 + 2

(*c*) Describe briefly the Hypothalamic regulation of PRL-secretion. 4

(*d*) State the role of parathyroid gland in humans. What are the disease conditions associated with it. 4

6. Answer *one* question of the following : 8 × 1

(*a*) Why crypt cells are important in fish ? How this cell influences neuroendocrine control of gonadotropin secretion and ovulation in teleosts ? 1 + 7