

M.Sc 3rd Semester Examination, 2009

ZOOLOGY

PAPER—Z-301

Full Marks : 40

Time : 2 hours

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

(Computer Application and Bioinformatics)

(Turn Over)

1. Answer *two* questions : 2 × 2

(a) What is the binary equivalent of the octal number '476' ?

(b) Write the unique features of the Fifth Generation Computers.

(c) How does a Hub work as communication device ?

(d) Sort out the following into either Input or Output devices :

Plotter; Mouse; Monitor; OCR; Printer; Scanner.

2. Answer any *two* questions : 4 × 2

(a) Illustrate the components of a CPU alongwith their functions. 2 + 2

(b) Define Bit and Byte. What are the disadvantages of Machine language ? 2 + 2

(c) (i) Give examples of programming language applied to mathematical problems and web application for each.

(ii) Distinguish between Compiler and Interpreter. 2 + 2

(d) Describe the functions of operating system of a modern computer. 4

3. Answer *one* of the following questions : 8 × 1

(a) (i) Write the full forms of :

GUI

BASIC

TCP

EBCDIC

(ii) Describe the various Internet connection options. 4 + 4

(b) (i) State the differences between Mainframe Computers and Network Computers.

(ii) Explain the terms :

Hardware

Software

Humanware

Data.

4 + 4

GROUP – B

(*Bio-Instrumentation*)

1. Answer any *two* questions : 2 × 2

(a) (i) What is Isotachopheresis ?

(ii) Mention the role of Ammonium per sulphate (APS) and TEMED in SDS-PAGE. 1 + 1

(b) State the functional role of flame ionisation detector (FID) and electron capture detector in GLC. 1 + 1

(c) Mention the difference between monochromatic and polychromatic beams. 2

(d) Write notes on any *one* : 2

(i) Electron Gun.

(ii) Critical point drying (CPD)

(iii) Abbe's Hypothesis.

2. Answer any *two* from the following : 4 × 2

(a) (i) State the function of a phase plate.

(ii) How resolution of a microscope is calculated ? 2 + 2

(b) Distinguish between : 2 × 2

(i) α -spin Vs β -spin in NMR

(ii) UV-spectrum Vs NMR-spectrum.

(c) Write notes on any *two* : 2 × 2

(i) Schematic of AFM

(ii) Preparation of an affinity matrix

(iii) Chemical method of cell fractionation.

(d) Write notes on any two : 2 + 2

- (i) Moving boundary Electrophoresis
- (ii) UV-Spectrophotometer
- (iii) Role of secondary electron in SEM
- (iv) Ultrathin sections for TEM.

3. Answer one question from the following : 8 × 1

(a) (i) What do you mean by equivalent dose of X-ray radiation? Give its unit with proper definition.

$$1 + \frac{1}{2} + \frac{1}{2}$$

(ii) Differentiate between soft and hard X-ray. Name the targets used in the Coolidge tube for producing soft and hard X-rays. 1 + 1

(iii) Draw the intensity vs wavelength plot for the X-ray emitted from a Coolidge tube. 2

(iv) Give the range of wavelength frequency and energy of X-ray photons. 1 + 1

(b) Write short notes on any *four* :

2 × 4

(i) Salt-gradient in ion-exchange chromatography.

(ii) Application of ESR

(iii) AFM-tip

(iv) Bragg's law of X-ray diffraction

(v) Electromagnetic radiations

(vi) Blender method

(vii) TLC.
