

M.Sc. (Final) Examination, 2001

ZOOLOGY

Third Paper (A)

(Special Paper)

CELL BIOLOGY (Techniques)

Time Three Hours
Maximum Marks: 100

*Attempt **four** questions in all, selecting
at least **two** questions from each section.
All questions carry equal marks.*

SECTION A

1. Describe the techniques used for digital image analysis and stereological procedures for quantization. 25
2. illustrate the essential components and working of electron microscope. How does it differ from phase contrast and fluorescence microscopes? 15+5+5
3. Discuss in detail the basic principles, of Gomori and Burstone techniques used in the histochemical localization of acid and alkaline phosphatases. Add a note on their merits and demerits. 10+10+5
4. Write short notes on the following:
 - (a) Why fixation is necessary? 2
 - (b) Give common properties of fixatives. 3
 - (c) Classify the fixatives. 3
 - (d) Why different fixatives are used for different histochemical demonstrations? 3
 - (e) What is dehydration? Why gradation series is used for this purpose? 3
 - (f) What is the importance of clearing agents? 3
 - (g) Which embedding media is used for cutting fresh frozen sections? 1
 - (h) What are dyes? 3
 - (i) Make a list of general and specific stains. Discuss their application in brief.. 4

SECTION B

5. With the help of suitable diagrams discuss the major lymphoid organs and tissues involved in immune system. Add a note on, innate and adaptive immune systems.

6. Write brief notes (five to seven lines answer) on the following:
- (a) Recombinant DNA. 3
 - (b) Cloning vectors. 3
 - (c) Expression vectors. 3
 - (d) Restriction enzymes. 3
 - (e) Ionized groups. 2
 - (f) Immunodiffusion. 3
 - (g) Peptide hormones. 3
 - (h) Gene amplification. 3
 - (i) Antibody. 2
7. In the light of recent knowledge discuss various steps involved in animal cell and tissue culture. Add a note on its application. 20+5
8. Discuss in detail the applications of the following techniques:
- (a) Paper chromatography. 5
 - (b) Southern, Northern, Western blotting techniques. 5
 - (c) Hybridoma technique; 5
 - (d) Tracer technique 5
 - (e) Enzyme hiked immunoassay. 5