

2022

1st Semester Examination

ZOOLOGY

Paper : ZOOOL 102

Full Marks : 40

Time : Two Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Paper : 102.1

(Histochemistry)

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

- (a) State two reasons for choosing paraffin as an embedding medium.
- (b) What do you mean by fixation artefact? Cite an example.
- (c) What are auxochrome and chromophore of a dye? Cite examples. 1+1
- (d) Name two fixatives used in electron microscopic study of tissues. Why should you not use ethyl alcohol as a fixative in electron microscopy? 1+1

P.T.O.

2. Answer any *two* of the following questions : $4 \times 2 = 8$

(a) Define and exemplify non-additive and additive fixatives. Name the cross-linkage formed by formalin between protein molecules. $3+1$

(b) State the advantage of using a fixative mixture over single fixatives. Give the composition of any fixative mixture studied by you. State one merit and one demerit of that fixative mixture. $1+1+2$

(c) Name a vital dye. Exemplify the phenomena of orthochromasia, β -metachromasia and γ -metachromasia with reference to Toluidine blue staining of tissues. $1+3$

(d) Precisely describe the principle of Gomori's reaction for alkaline phosphatase.

3. Answer any *one* of the following questions : $8 \times 1 = 8$

(a) Define a mordant and name two mordants commonly used in histological staining. Explain single-bath and double-bath methods of mordanting haematin. Mention the names of haematoxylin solutions obtained from single-bath and double-bath methods, respectively. $2+4+2$

(b) With suitable illustration, describe the working principle of indirect immunohistochemistry. What are its advantages over direct immunohistochemistry? Comment on its application. $5+2+1$

Paper : 102.2

(Animal Physiology)

4. Answer any *two* questions from the following : $2 \times 2 = 4$
- (a) What are the deleterious effects of ROS?
 - (b) What do you mean by R and T forms of haemoglobin?
 - (c) Define Proportional Controller system hypothesis.
 - (d) Classify antioxidants with examples.
5. Answer any *two* questions from the following : $4 \times 2 = 8$
- (a) What are the roles of Thyroid hormones in heat generation?
 - (b) Draw an ECG and correlate it with phases of cardiac cycle.
 - (c) Illustrate the cardiac conduction pathway.
 - (d) Compare the histological architecture of an artery with that of vein. Point out the factors responsible for vasoconstriction and vasodilation. 2+2
6. Answer any *one* question from the following : $8 \times 1 = 8$
- (a) Describe the Counter-current cooling exchange mechanism along with its significance. How is heart rate controlled by sympathetic nervous system?

4+4

P.T.O.

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

2×4=8

- (i) Polycythemia.
 - (ii) Decompression sickness
 - (iii) Regional heterothermy
 - (iv) Bohr's effect
 - (v) Shivering vs. NST
 - (vi) Erythropoietin
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