

M.Sc. 1st Semester Examination, 2023

ZOOLOGY

PAPER — ZOO-102

Full Marks : 50

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

PAPER — ZOO-102.1

(Histochemistry)

[Marks : 20]

1. Answer the following questions (any two) : 2 × 2
- (a) Mention the role of haematoxylin and mordant that are use in histochemical laboratory.

- (b) State the 'biotinylation' process with an example.
- (c) What do you mean by fixation artefact ? Give an example.
- (d) State the composition, one merit and one demerit of Bouin's fixative.

2. Answer the following questions (any *two*) :

4 × 2

- (a) Define and exemplify non-additive and additive fixatives. State the chemical action of formalin on tissue proteins. 2 + 2
- (b) State the main source of synthetic dyes in industry. How do you classify dyes on the basis of the chromophoric groups used in histology ? 1 + 3
- (c) What is mordanting ? Describe the basic principle of mordanting haematin using single-bath and double-bath methods. 1 + 3

(d) Write the following notes (any *two*): 2×2

(i) FAA-Fixative

(ii) Metachromatic staining

(iii) Double staining

(iv) Tissue preparation for histochemical methods.

3. Answer the following question (any *one*) : 8×1

(a) State the use of fluorescent labelling reagents with an suitable example. Briefly explain the role of 'ABC'-method in immunohistochemical process. $4 + 4$

(b) Write short notes on : $4 + 2 + 2$

(i) Gomori's histochemical reaction for alkaline phosphatase

(ii) Tissue fixation for immunohistochemistry

(iii) Vital staining.

PAPER – ZOO-102.2

(*Animal Physiology*)

[**Marks : 20**]

4. Answer any *two* questions from the following :
- (a) What are the problems particularly faced ^{2 × 2} by diving vertebrates ?
 - (b) Distinguish between positive and negative feedback loop of homeostosis.
 - (c) Mention the features of free radicals.
 - (d) Define Frank-Starling principle.
5. Answer any *two* questions from the following :
- (a) Illustrate the pressure changes from heart ^{4 × 2} to veins. Why is SA node called as pacemaker ? 2 + 2
 - (b) Draw an ECG with Interpretations. State the factors affecting cardiac output i.e. blood volume. 2 + 2

(c) Schematically represent the in-house management of Oxidative Stress. Name the parameters influencing Oxygen dissociation curve. $2 + 2$

(d) Describe the mechanism of blood coagulation along with the role of various ions and factors.

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

(a) (i) Describe the steps and location of Haematopoiesis. What is the fate of RBCs ? Comment on Erythropoietin.

(ii) Explain the extrinsic and intrinsic regulation of heart rate ?

$(2 + 2) + (2 + 2)$

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

(i) Decompression sickness

- (ii) Thermolytic mechanisms of the body
- (iii) Baroreceptors and Chemoreceptors
- (iv) Sinus Bradycardia
- (v) Myogenic heart
- (vi) MABP

[Internal Assessment — 10 Marks]
