

SENIOR SECONDARY EXAMINATION
Scheme of Biology Practical Examination

Duration: 3 hours

Maximum Marks: 20

Sample Question Paper

1. To perform an experiment (Any one out of the following A and B) 4
- A. To dissect and display the general viscera of Rat and to flag-label Six specified organs.
- OR
- B. To demonstrate or carry out exercises (Any two out of the following)
- (i) Osmosis in potato/carrot.
 - (ii) Plasmolysis in Rhoeo Tradescantia leaf.
 - (iii) Rate of Photosynthesis in Hydrilla (or any other aquatic plant)
 - (iv) Action of Salivary amylase on starch.
 - (v) Chemical test of abnormal constituents in urine (sugar and albumin)
 - (vi) Identification of given flower, write its flower formula and draw its floral diagram.
2. To identify and comment upon four specimens/slide A-D. 3
3. To prepare a temporary stained mount of the material provided and to identify and make a labeled sketch. 3
4. To submit a project report (Prepared during the academic session) 2
5. Practical Record book 3
6. Viva-voce 5

LIST OF EXPERIMENTS IN BIOLOGY

1. (A) Dissection of rat and flag-labelling its various organs
- (a) flag- labeling of six specified parts
Stomach, appendix, liver, pancreas, spleen, diaphragm, heart, dorsal aorta, kidney, adrenal, testis, ovary.
 - (b) Pinning, stretching, display. 6* 1/2=3
- (B) Demonstration and carrying out of any two exercises 1 4
- i) Osmosis in potato/carrot
 - ii) Plasmolyses in Rhoeo/Tradescantia leaf
 - iii) Rate of photosynthesis in Hydrilla or any other aquatic plant
 - iv) Action of salivary amylase on starch
 - v) Chemical tests of abnormal constituents in urine (sugar and albumin)
 - vi) Identification of given flower, write its flower formula and draw its floral diagram.
- (For exercise i-v)
- Setting up of the experiments and demonstration 1
 - Recording the observations and conclusions. 1
- (For exercise vi)
- Writing the flower formula 1
 - Drawing the floral diagram = 1

2 marks for each exercise
(2+2) =4

2. To identify and comment upon the four specimens/slides A-D

A. Any one prepared slide showing microscope structures of the following

- i) Dicot root
- ii) Dicot leaf
- iii) Dicot stem
- iv) Monocot root
- v). Monocot leaf
- vi). Monocot stem
- v) cartilage
- vi) Bone
- vii) Blood
- viii) Liver
- ix) Kidney
- x) Testis
- xi) Ovary
- xii) Skin

B. Any one of the following specimens :

- i) Chlamydomonas (vegetative)
- ii) Spirogyra-(vegetative or conjugation stage)
- iii) Any one stage of Mucor/Rhizopus
- iv) Moss gametophyte or sporophyte
- v) Fern (sporophyte/prothelus/Sporangium)
- vi) Pinus (male cone/female cone/long and dwarf shoot)

C. Identification and classification up to class and listing main features of any one of the following specimens:

- i) paramecium
- ii) Sponge
- iii) Hydra
- iv) Tapeworm
- v) Liver-fluke
- vi) Leech
- vii) Butterfly/moth
- viii) Scorpion
- ix) Pila
- x) Starfish
- xi) Dogfish
- xii) Rohu
- xiii) Toad
- xiv) Wall lizard
- xv) Any snake
- xvi) Bat

D. Identification and comment an any of the following:

- i) Life history stages of silk moth
- ii) Early cleavage in frog egg

- iii) Frog blastula (whole mount/T.S.)
- iv) Gastrula of frog (whole mount/T.S.)
- v) Neurula of frog (whole mount/T.S.)
- vi) Tadpole of frog (whole mount/T.S.)

Identification $\frac{1}{4}$

Comments $\frac{1}{4}$

Labeled diagram/Classification = $\frac{1}{4}$

4 items* $\frac{3}{4}$ = 3 marks

3. Preparation of a temporary stained mount of the material provided, and to make labeled sketch.

(Any one of the following)

- i) Epidermal peel of onion
- ii) Squamous epithelium of frog
- iii) Squash preparation of root tip of onion to show any one stage of mitosis
- iv) Striated muscles of cockroach
- v) T.S. of cucurbita stem to show xylem and phloem
- vi) T.S. petiole of datura or any other plant showing any one tissue (parenchyma/collenchyma/Schlerenchyma)

Slide preparation = 2

3

Labeled sketch = 1

4. Submission of a project report on any one topic of interest.

(A few topics are suggested below as samples)

- i) Enrichment information on any text related item. (clipping/s from newspapers or journals etc.)
- ii) Collection, preservation and presentation of flora (herbarium)/fauna.
- iii) Preparation of a bird diary-listing birds observed during different seasons in the neighbourhood and recording their feeding and other habits including nesting etc.
- iv) Hereditary observation-making family pedigrees showing occurrence of (i) tongue rolling (ii) PTC tasting (iii) thumb bending etc.
- v) Visit to a zoo/aquarium, natural history museum/wild life sanctuary etc.

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APPARATUS AND MATERIALS REQUIRED FOR BIOLOGY PRACTICALS

1. Dissecting microscopes
2. compound microscopes
3. Hand lens
4. Slides
5. Cover slips
6. Glass ware required for various experiments
7. Glycerin
8. Stains
9. Different chemicals required for the exercises

10. Plant or animal material required for temporary mount preparation
11. Prepared slides and specimens listed in the syllabus
12. Dissecting trays
13. Rats/cockroaches
14. Pins/ needles
15. Black paper
16. Blotting/ filter paper.

MARKING SCHEME

- 1 A (a) Flag labeling (1/2 mark for each correct flag labeling) = $6 \times \frac{1}{2}$ 4 marks
 (b) Planning / sketching, display = 1
 (For exercise i-v)
- B. (a) Setting up of the experiment and demonstration 1
 (b) Recording the observation and conclusion 1
 (For exercise vi)
 recording the observation and conclusion (flower formula and floral diagram) = $1+1 = 2$
 2 Exercise 2+2 = 4
2. Identification (1/4)
 Comments (1/4) = $\frac{3}{4}$
 Labelled diagram classification $\frac{1}{4}$ (4 items* $\frac{3}{4}$ =3 marks) 3 marks
3. Slide preparation 2
 Labelled sketch 1 3 marks
 (If material mounted is incorrect or missing no marks be awarded at all)
4. Project Report 2 marks
5. Maintenance of Record Book (proper sketching and comments) 3 marks
5. Viva-voce
 Four questions on the project prepared $4 \times \frac{1}{2} = 2$
 Four questions on the exercise performed $4 \times \frac{1}{2} = 2$ =5
 Two questions related to practical records $2 \times \frac{1}{2} = 2$ 5
 Total=20 marks