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 rest 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. 6* ½=3
   (b) Pinning, stretching, display.
   (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
vii) Cartilage
viii) Bone
ix) Blood
x) Liver
xi) Kidney
xii) Testis
xiii) Ovary
xiv) 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 ¼
Comments ¼
Labeled diagram/Classification = ¼
4 items*3/4 = 3 marks

3. Prepration 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
Labeled sketch = 1

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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

MARKING SCHEME
1 A (a) Flag labeling (1/2 mark for each correct flag labeling) = 6*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)  = ¾
   Labelled diagram classification ¼ (4 items*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*1/2=2
   Four questions on the exercise performed 4*1/2=2  =5
   Two questions related to practical records 2*1/2=2  5
   Total=20 marks