

**2014**

**LIFE SCIENCE**

**(BIFURCATED SYLLABUS)**

Time- Three Hours Fifteen Minutes

(First fifteen minutes for reading the question paper only)

Full Marks-90

(For Regular and Sightless Regular Candidates)

Full marks-100

(For External and Sightless External Candidates)

**FOR REGULAR, EXTERNAL AND SIGHTLESS**

**CANDIDATES**

*Special credit will be given for answers which are brief and to the point. Marks will be deducted for spelling mistakes, untidiness and bad handwriting.*

**[English Version]**

**(Bifurcated Syllabus)**

**(For Class X Syllabus Only)**

**Directions**

*For Regular Candidates*, the questions of Group 'A', 'B' and 'C' will have to be answered.

*For External Candidates*, the questions of Group 'D' will also have to be answered in addition to group 'A', 'B' and 'C'.

Instructions regarding the number of questions to be attempted have been indicated at the beginning of each group.

**Special Instruction for Sightless Candidates**

In Group 'C', instead of Question Nos. 12 and 13, any

one of the Question Nos. 12(A) and 13(A) will have to be answered.

**Group 'A'**

[Candidates will have to answer question Nos. 1,2,3 and 4]

1. Complete the sentences choosing the correct

answer (*any five*):

1x5=5

- (i) Name of an efferent nerve is  
(a) Auditory (b) Olfactory  
(c) Optic (d) Occulomotor
- (ii) Hormone that controls the tropic movement in plant body is  
(a) Auxin (b) Thyroxine  
(c) Gibberellin (d) Cytokinin
- (iii) The cell in a plant body which divides by meiosis is the  
(a) Spore mother cell  
(b) Cell of apical bud  
(c) Cell of a mature leafe  
(d) Cell of root
- (iv) If hybridization is made between a hybrid tall pea plant and a pure tall pea plant, the percentage of tall offsprings in F<sub>1</sub> generation  
(a) 25% (b) 50%  
(c) 75% (d) 100%
- (v) The earliest known ancestor of horse is  
(a) *Equus* (b) *Mesohippus*  
(c) *Eohippus* (d) *Merichippus*

- (vi) The adaptive feature which is not found in 'Sundari' plant is
- (a) Pneumetaphore
  - (b) Fruit with seed
  - (c) Leaves with thick cuticle
  - (d) Viviparous germination
- (vii) The disease which could be transmitted during blood transfusion is
- (a) Hepatitis      (b) Cholera
  - (c) Typhoid      (d) Polio

2. Answer in one sentence (*any ten*) : 1x10=10

- (i) Name one alkaloid that lowers high blood pressure.
- (ii) Name one inorganic substance that is reabsorbed from renal tubul.
- (iii) How ganglion is formed?
- (iv) Name the hormone secreted from corpus luteum of ovary in adult female.
- (v) State one function of kinin.
- (vi) Eukaryotic chromosome is composed of DNA, RNA and \_\_\_\_\_. (Fill up the blank)
- (vii) The name of multicellular animal that reproduces asexually by budding is \_\_\_\_\_.  
(Fill up the blank)
- (viii) Mention one dominant trait of *Drosophila*.
- (ix) Mention one organ present in another animal analogous to butterfly's wings.
- (x) 'Inheritance of acquired characters' – who proposed it?

- (xi) What is the advantage of spindle-shaped body in Rohu fish for adaptation?
- (xii) Which food purchased from a sweet shop contains '*Lactobacillus*' ?
- (xiii) What is 'Bacteriophage' ?

3. Attempt any *six* questions : 2x6=12

- (i) What is glomerulus? Where it is located?
- (ii) Mention two differences between cerebellum and cerebrum.
- (iii) Mention two practical applications of synthetic plant hormone in agriculture.
- (iv) Write two differences between plant and animal cell mitosis.
- (v) Name one vertebrate animal with external fertilization and another vertebrate animal with internal fertilization.
- (vi) Write the definition of fossil.
- (vii) Mention one adaptive feature each for the root and stem of cactus.
- (viii) Mention one viral and one protozoan disease borne by female mosquito.

4. Attempt any *ten* questions: 3x10=30

- (i) Mention one role of each 'Liver', 'Lung' and 'Skin' as 'accessory excretory organ'.  
1x3=3
- (ii) Mention three structural features of Axon in Neurone. 1x3=3
- (iii) Mention one function of each of Tongue,

- Nose and Skin as sensory organ.  $1 \times 3 = 3$
- (iv) Mention one function of each of Thyroxine,  
Insulin and Progesterone.  $1 \times 3 = 3$
- (v) Write the full name of the following three synthetic  
plant hormones – NAA, IBA and  
IPA.  $1 \times 3 = 3$
- (vi) Point out three differences between  
'Prokaryotic cell' and 'Eukaryotic cell'.  
 $1 \times 3 = 3$
- (vii) Mention three opposite events of Prophase  
and Telophase in Mitosis.  $1 \times 3 = 3$
- (viii) Mention the contrasting expression of the  
following characters : Length of stem, Shape  
of the seed and Colour of cotyledon as  
selected by Mendel for his experiments on  
Pea Plant.  $1 \times 3 = 3$
- (ix) Write short notes on any two of the  
following:  $1\frac{1}{2} + 1\frac{1}{2}$
- (a) Adventitious bud
- (b) Bulbil
- (c) Fragmentation
- (x) What are the causes of 'Struggle for  
Existence' among organisms in nature  
according to Darwin?  $1 \times 3 = 3$
- (xi) Write one adaptive feature of stem and two  
adaptive features of leaf of lotus suitable for  
survival in the aquatic environment.  $1 + 2 = 3$

- (xii) Write down the names of three diseases against which vaccination is done after birth in human babies.  $1 \times 3 = 3$
- (xiii) Name the microbes causing the following diseases – Cholera, Tuberculosis and Typhoid.

### Group 'B'

(Answer any *five* questions from Question No. 5 to Question No. 11)

5. Mention two importances of excretion in animal body. Write three means of removal of excretory products in plants with proper example.  $2 + 3 = 5$
6. Mention two functions of Nervous system. What do you mean by 'Reflex action'? Explain with one suitable example.  $2 + 2 + 1 = 5$
7. Write the name of the 'Emergency Hormone'. Write two functions of this hormone. Mention the site of secretion of Gibberellin hormone. Write one function of Gibberellin.  $1 + 2 + 1 + 1 = 5$
8. Write the definition of Chromatid and Centromere. Mention the number of chromosomes in the somatic cell of human body.
9. A pure Black (Dominant) Guinea pig is crossed with a Pure White (Recessive) Guinea pig. Explain the 'Law of Segregation' from the results of 2<sup>nd</sup> Filial Generation. Write two reasons, why Mendel

chose the Pea Plant for his experiments on

Heredity.

3+2=5

10. What do you understand by 'Homologous Organ'?

How do the features of internal structures of the forelimbs of different vertebrate animals support the idea of evolution?

2+3=5

11. Mention the adaptive significance of the following

organs:

1x5=5

(a) Caudal fin of Rohu fish.

(b) Seeds of Lotus

(c) Bones of Pigeon

(d) Leaf surface of Sundari trees

(e) Swim bladder of Rohu fish

### Group 'C'

(Answer any *one* question)

12. Draw a neat and scientific diagram of the vertical

section of 'Human Eyeball' and label the

following parts :

5+3=8

(a) Chorea (b) Sclera

(c) Choroid (d) Lens

(e) Retina (f) Blind Spot

13. Draw a neat and scientific diagram of the external

feature of a 'Rohu Fish' and label the following

adaptive features :

5+3=8

(a) Scale

(c) Pelvic Fin

(c) Dorsal Fin

- (d) Pectoral Fin
- (e) Caudal Fin
- (f) Lateral Line Sense Organ

**(For sightless Candidates Only)**

(Answer any *one* question)

(Diagram not required)

- 12(A). Describe the structure and function of any four parts of 'Human Eye'. 4+4=8
- 13(A). Discuss any four adaptive features of 'Rohu Fish' and mention their importance. 4+4=8

**Group 'D'**

(Only for External Candidates)

(Answer any *one* question)

14. Write four differences between living and non-living. Write two differences between plant and animal. Write the definition of Eukaryotic cell and give two examples. 4+2+4=10
15. Write the location and function of the Permanent tissue and Meristematic tissue in plant body. Write four differences between Xylem and Phloem tissue. Write the location and function of Centrosome. 2+2+4+2=10