

**2015**  
**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) Myelin Sheath is observed on
- (a) the axon of all neurones
  - (b) the dendrons of all neurons
  - (c) the axon and dendron of all neurons
  - (d) the axon of some neurons
- (ii) Insulin hormone secreting gland is

- (a) Adrenal (b) Pituitary  
(c) Thyroid (d) Pancreas
- (iii) The phase of mitosis in which nuclear Membrane reappears is  
(a) Prophase (b) Metaphase  
(c) Anaphase (d) Telophase
- (iv) A plant which performs vegetative reproduction with the help of sub-aerial stem is  
(a) Potato (b) Water hyacinth  
(c) Ginger (d) Onion
- (v) The organ in human body which considered a vestigial organ  
(a) Stomach (b) Colon  
(c) Appendix (d) Rectum
- (vi) The organ absent in pigeon to aid ion flight is  
(a) Left ovary (b) Gall bladder  
(c) Lung (d) Right Kidney
- (vii) The disease which is caused by viral infection, is  
(a) Influenza (b) Cholera  
(c) Malaria (d) Tuberculosis

2. Answer in one sentence (any ten) :

1x10=10

- (i) Which substance, present in the latex of papaya, helps in the digestion of protein?
- (ii) An organ in human body, where urea is synthesized, is \_\_\_\_\_. (Fill in the blank and write the complete sentence)
- (iii) What is Meninges?
- (iv) One of the sites of formation of Gibberellin hormone is \_\_\_\_\_. (Fill in the blank and write the complete sentence)
- (v) Which hormone is related to the pounding of heart when scared?
- (vi) Mention one significance of meiosis cell division.
- (vii) How many pairs of contrasting characters in pea plant were selected by Mendel for his experiments on heredity?
- (viii) What kind of reproduction the spore is the unit of?
- (ix) Write the name of an organ of an animal which is homologous to birds' wings.
- (x) Mention one important change in the evolution of horse.
- (xi) Due to presence of \_\_\_\_\_ in the eye of pigeon, the vision becomes very sharp. (Fill in the blank and write the complete sentence)
- (xii) Name one fungus that infect human lungs.
- (xiii) Why is the skin wiped with spirit (alcohol) before pushing n injection?

3. Attempt any six questions :

2x6=12

- (i) Mention the source and one economic importance of resin.
- (ii) What is inborn reflex action? Give an example.
- (iii) From which gland TSH is secreted? Write down its one main function.
- (iv) What are the sex chromosomes in the male and female human body?
- (v) What do you mean by parthenogenesis? Give an example of it.
- (vi) From which observations Darwin arrived at the conclusion – “Struggle for Existence”?
- (vii) Discuss one adaptive importance each of lateral line sense organ and swim bladder in rohu fish?
- (viii) Mention two structural characteristics of ‘virus’.

4. Attempt any ten questions: 3x10=30

- (i) Write one function each of Glomerulus, Proximal Convoluted Tubule and Henle’s loop of a nephron. 1x3=3
- (ii) Mention one function of each of Cerebrum, Cerebellum and Medulla oblongata in human brain. 1x3=3
- (iii) Mention one structural feature of each of Sclera, Choroid and Retina in a human eyeball. 1x3=3
- (iv) Mention two differences between exocrine and endocrine glands. Give an example of a mixed gland in human body. 2+1=3

- (v) Mention three roles of Auxin hormone in the growth of plants. 1x3=3
- (vi) What is cell cycle? Name any two stages of interphase. 1+2=3
- (vii) What is cytokinesis? Mention two differences in between cytokinesis of plant and animal cell. 1+3=3
- (viii) What is ‘Alternation of generation’? Name two plants groups where alternation of generation is seen distinctly. 1+2=3
- (ix) Write down Mendel’s Law of Segregation. Mention one difference in between Phenotype and Genotype. 2+1=3
- (x) Write name of three ancestors of modern horse. 1x3=3
- (xi) Name three adaptive features for flight in pigeon. 1x3=3
- (xii) Write down the modes of transmission of influenza virus, HIV and Polio virus. 1x3=3
- (xiii) Mention one beneficial role each of Saccharomysises (Yeast), Penicillium and Rhizobium. 1x3=3

### Group 'B'

(Answer any *five* questions from

Question No. 5 to Question No. 11)

- 5. Mention one economic importance each of Quinine, Reserpine and Morphine. What are the means of removal of excretory products in silk cotton(shimul) and Guava? (1x3)+2=5

6. Write down one structural and one functional difference in between Afferent and Efferent nerve. What is Synapse and what is its function? Mention one function of spinal cord.

$$2+2+1=5$$

7. Write down the names of sites of secretion and one function each of Testosterone and Oestrogen. Mention one function of GTH.

$$2+2+1=5$$

8. What is amitosis? What events take place during Prophase and Telohase stages of Mitosis?

$$1+(2+2)=5$$

9. What is Vegetative reproduction? Give two examples of natural vegetative reproduction in plants. Mention two importances of vegetative reproduction.

$$1+(2+2)=5$$

10. Explain the 'Law of Use and Disuse' and 'Law of Inheritance of acquired character' as proposed by Lamarck. What is variation?

$$(2+2)+1=2$$

11. Mention the adaptive significance of the following

organs:

$$1 \times 5 = 5$$

- (a) Breathing roots of Sundari
- (b) Gill of rohu fish
- (c) Petiole of lotus
- (d) Leaf of cactus
- (e) Tail fin of rohu fish

### Group 'C'

(Answer any *one* question)

12. Draw a scientific diagram of an ideal neurone of the human body and label the following parts in the diagram : 5+3=8

(a) Nodes of Ranvier

(b) Axon

(c) Schwann cell

13. Draw a neat and scientific diagram each of 'Second Phase' and 'Third Phase' of Karyokinesis of Mitosis in an animal cell and label the following parts:  $(2\frac{1}{2} + 2\frac{1}{2}) + (1\frac{1}{2} + 1\frac{1}{2})$

(a) Continuous fibre

(b) Centromere

(c) Chromosomal fibre

**(For sightless Candidates Only)**

(Answer any *one* question)

(Diagram not required)

- 12(A). Define neurone. Name the two types of processes of an ideal human neurone and write their respective structures in brief. What are the functions of these two types of processes respectively?

$$1+1+4+2=8$$

- 13(A). Discuss the characteristics and significance of 'Second Phase' and 'third Phase' of Karyokinesis of Mitosis in an animal cell. 4+4=8

**Group 'D'**

**(Only for External Candidates)**

(Answer any one question)

14. (a) Describe the structure and function of Mitochondria.  
(b) Point out three differences in between 'Plant cell' and 'Animal Cell'.  
(c) Discuss the Characteristics and functions of 'Skeletal Muscles'. 4+3+3=10
15. Write short notes on any four : 4x2½=10
- (a) Nucleus                      (b) Plastid  
(c) Cell wall                      (d) Ribosome  
(e) Golgi Bodies
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