2013

LIFE SCIENCE

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) The part of human eye that functions as refractive media is

(a) Cornea (b) Retina
(c) Vitreous humor (d) Choroid

(ii) Which of the following endocrine gland secretes TSH?

(a) Thyroid (b) Testes
(c) Adrenal (d) Pituitary

(iii) In a DNA molecule the complimentary base pair of guanine is

(a) Adenine (b) Cytosine

(c) Thymine (d) Uracil

(iv) The plant with distinct alternation of generation is

(a) Moss (Pogonatum)

(b) Mango tree

(c) China-rose plant

(d) Pine tree

(v) The flippers of whale and the wings of birds are

(a) Analogous organ

(b) Vestigial organ

(c) Homologous Organ

(d) Replaced Organ

(vi) The vision of pigeon is very sharp due to presence of

(a) Rhodopsin (b) Indopsin

(c) Pecten (d) Pepsin

(vii) A disease against which a newborn baby is immunised in the National Immunisation Programme is

(a) Polio (b) Typhoid

(c) AIDS (d) Hepatitis

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

(i) Name one excretory substance secreted from the sweat gland of skin.

(ii) Name one excretory substance produced by plant, which helps in protein digestion.

(iii) Write the name of short processes of a nerve cell.

(iv) Name the hormone which helps in production of sperm.

(v) Write the full name of an artificial plant hormone.

(vi) In which type of cell division 'spindle formation' does not occur?

(vii) What is the name of the process in which offspring is directly formed from unfertilized egg?

(viii) What type and in what numbers of sex chromosomes are found in normal man?

(ix) Give an example of living fossil in plant kingdom.

(x) Name a vertebrate having ventricles with incomplete separation wall.

(xi) Why are the stomata present on the upper surface of lotus leaf?

(xii) Name the disinfectant produced from plant.

(xiii) Which disease caused by protozoa can be prevented by use of sanitary latrine?

3. Attempt any six questions : 2x6=12

(i) Name one reabsorbed and one secretory substances of renal tubule.

(ii) On which other hormones does the secretion of hormones from testes and ovary depend?

(iii) Why does a perforation in eardrum hamper hearing?

(iv) Write any two differences between DNA and RNA ?

(v) What do you understand by 'pure' and 'hybrid' in heredity? State with example.

(vi) How does the structural changes of heart of amphibia and mammalia support the evolution.

(vii) Mention one adaptive feature each of leaf blade and thalamus of lotus plant.

(viii) Mention the name of the micro-organism living in the root nodule of leguminous plant and state its beneficial role.

4. Attempt any ten questions: 3x10=30

(i) "All waste materials are not excretory products". - Explain.

(ii) Mention the types of reflex action of the followings with reasons: 1+1+1=3

(a) secretion of saliva at the sight of delicious food.

(b) sucking of breast milk by baby.

(c) learn to ride bi-cycle.

(iii) Write the names of two parts connecting two cerebral hemispheres and two hemispheres of cerebellum respectively. Write two functions each of cerebrum and cerebellum. $(\frac{1}{2}+\frac{1}{2})+2=3$

(iv) Point out the differences, with examples, between 'Exocrine gland' and 'Endocrine gland'.

(v)Why the edible salt should be iodised? Where from testosterone is produced? 2+1

(vi) Write two differences between cytokinesis in plant and animal cells. What is the important feature of 'S' phase of cell-cycle? 2+1

(vii) Mention the components of your chromo-somes. What do you understand by 'gene' ?

(viii) What type of experiment Mendel performed to propound the law of independent assortment? Explain the law (details of experiment is not required? 1+2=3

(ix) Write three differences between vegetative and asexual reproduction in plants?

(x) Who is the propounder of 'Inheritance of acquired characters'? Write briefly your opinion regarding the acceptability of the law, with reasons. 1+2=3

(xi) Write one role each of the myotome muscle, lateral line sense organ and swim bladder in fish.

(xii)Name the vectors of malaria and filariasis and mention two measures to control these vectors. $(\frac{1}{2}+\frac{1}{2})+2=3$

(xiii) Which blood-transmitted disease damages liver? Write two preventive measures of this disease. 1+2=3

Group 'B'

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

5. Write four nitrogenous excretory products of human. Write whether the filtered liquid collected in Bowman's capsule of human nephron can be called as urine ? Give reasons in support of your answer. 2+3=5

6. Mention one structural and one functional differences between sensory and motor neurones. Which chemical matter transmits nerve impulse from one neurone to another? Mention the location and function of 'Organ of Corti' . 2+1+2=5

7. Write briefly the name, origin and function of a female and a male sex hormone of human. $1+1+(1\frac{1}{2}+1\frac{1}{2})=5$

8. Give an example of an organism which devides by amitosis. Mention two differences between mitosis of plant and animals cells. What are the different phases of cell cycle? 1+2+2=5

9. What are the differences between anisogamy and oogamy? What do you mean by dominant and recessive characters? Explain with example when does the recessive character express? 1+2+=5

10. What is variation? How do variations help in the origin of species in evolution? 2+3=5

11. Mention the adaptive significance of the followings : 1x5=5
(a) Scale of fish
(b) Aerenchyma tissue of lotus
(c) Air sacs of pigeon
(d) Pneumetaphore of Sundri
(e) Leaf spine of cactus

Group 'C'

(Answer any one question)

12. Draw a diagram of a typical nephron of human and label the following parts:

Bowman's capsule; Proximal convoluted tubule; Distal convoluted tubule; Henle's loop; Glomerulus and Collecting tubule. 5+3=8

13. Draw diagrams of each of metaphase and cytokinesis of mitosis in an animal cell. Label chromatid; metaphase plate; spindle fibres and centriole in the first diagram. Label a daughter nucleus and middle furrow in the second diagram. 5+3=8

(For sightless Candidates Only)

(Answer any one question)

(Diagram not required)

12(A). Write in brief the structure of a typical human nephron. What are the functions of malphigian corpuscle and proximal convoluted tubule? 6+2=8

113(A). Describe in brief the metaphase and the cytokinesis of mitosis an an animal cell. 4=4=8

Group 'D'

(Only for External Candidates)

(Answer any one question)

14. Distinguish between bacteria and bacteriophage. How is bacteriophage beneficial to us? Write briefly the mode of transmission of threde harmful viruses. 2+2+(3x2)=10

15. What is reflex action? Mention the types with example. What is the name of structural and functional unit of nervous system? Why is it so called? Describe briefly the structure of that unit. 2+3+1+1+3=10

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