Roll No. | | | | | | | Answer Sheet No._____

Sig. of Candidate._____ Sig. of Invigilator._____

BIOLOGY HSSC–II

SECTION – A (Marks 17)

Time allowed: 25 Minutes

NOTE: **Section–A is compulsory and comprises pages 1-2. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.**

Q. 1 Circle the correct option i.e. A / B / C / D. Each part carries one mark.

(i) Which of the following animals fits into the category of Digitigrade mammals?

A. Monkey B. Deer

C. Goat D. Rabbit

(ii) The annual rainfall in a temperate deciduous forest is about _____

A. 250-750 mm B. 600-750 mm

C. 750-1500 mm D. 750-1550 mm

(iii) Who proposed the term Niche?

A. Charles Eton B. Joseph Grinnell

C. Charles Lyll D. Ernst Hackel

(iv) During which phase of Interphase is the number of chromosomes doubled?

A. G_1 Phase B. G_2 Phase

C G_0 Phase D. S Phase

(v) Basking of Lizard in the sun to gain heat is an example of _____

A. Structural adaptations B. Behavioural adaptations

C. Physiological adaptations D. Ecological adaptations

(vi) The maximum speed of nerve impulse in humans is_____.

A. 100 m/s B. 110 m/s

C. 120 m/s D. 130 m/s

(vii) Which part of the brain is involved in the feelings of fear and rage?

A. Hippocampus B. Amygdala

C. Hypothalamus D. Medulla

(viii) Which meristematic tissue plays an important role in the production of leaves and flowers?

A. Apical meristems B. Intercalary meristems

C. Lateral meristems D. Intermediate meristems

(ix) Excess melanophore stimulating hormone (MSH) is produced in_____

A. Addison's disease B. Graves disease

C. Goiter D. Diabetes mellitus

(x) Diploid number of chromosome in sugar cane is_____

A. 80 B. 20

C. 26 D. 40

(xi) Which of the following is a stop codon?

A. UUG B. UGA

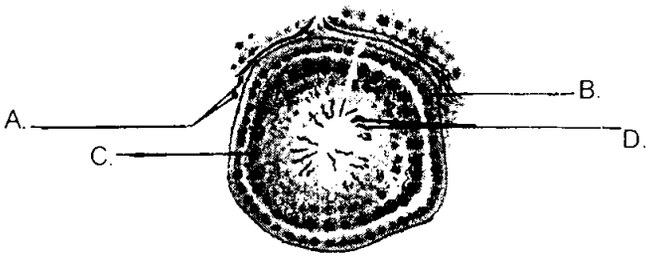
C. UCA D. UAC

(xii) Different alleles of a gene that are both expressed in heterozygous condition are called_____

A. Codominant B. Complete dominance

C. Over dominance D. Incomplete dominance

(xiii) Which labelled part of the diagram is the interstitial cells of the testis?



(xiv) Which of the following conditions is red colour blindness?

A. Protanopia B. Deuteranopia

C. Tritanopia D. Metanopia

(xv) Which of the following is **INCORRECTLY** matched?

A. Protoplast – plant cell engineering B. RFLPS – DNA finger printing

C. DNA polymerase – PCR D. DNA ligase – mapping human chromosomes

(xvi) The ozone layer extends about _____ above the earth.

A. 10 – 50 km B. 10 – 40 km

C. 10 – 30 km D. 10 – 60 km

(xvii) Hardy-Weinberg equation is used for_____

A. Establishing dominant gene in a population

B. Calculating recessive alleles in a population

C. Calculating the frequency of alleles in population

D. None of these

For Examiner's use only:

Total Marks:	17
Marks Obtained:	

BIOLOGY HSSC–II

Time allowed: 2:35 Hours **Total Marks Sections B and C: 68**

NOTE: Answer any fourteen parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet–B if required. Write your answers neatly and legibly.

SECTION – B (Marks 42)

Q. 2 Attempt any FOURTEEN parts. The answer to each part should not exceed 3 to 4 lines. (14 x 3 = 42)

(i) a. Draw a labelled diagram of a Sensory neuron.

b. What is a Reflex arc?

(ii) "Nature of excretory products is related to habitats". Justify the statement.

(iii) Secondary function of gonads is to act as an endocrine gland. Write an account of the ovary as an endocrine gland.

(iv) What is Test cross? Also write its significance.

(v) Define the following:

a. Karyotype

b. Nucleosome

c. Nucleotide

(vi) Define a Joint. Name the types of Synovial joints.

(vii) What is the function of DNA polymerase III?

(viii) a. What do you mean by Non-disjunction of chromosomes?

b. Briefly write about Turner 's syndrome.

(ix) Differentiate between Tetany and Tetanus.

(x) What is the role of comparative embryology and molecular biology as evidences of evolution?

(xi) Write briefly about the Littoral and Limnetic Zones of Lake Ecosystem.

(xii) Define Acid rain. Also write its harmful effects.

(xiii) Write down the commercial applications of **Auxins** and **Gibberellins**.

(xiv) Write briefly about Apical dominance. How is it important?

(xv) What are the causes and symptoms of **Gonorrhoa** and **Syphilis**

(xvi) a. Draw Urea Cycle

b. Give any two functions of Liver in relation to homeostasis.

(xvii) Write down the contribution of the following biologists:

a. Frederick Griffith

b. Erwin Chargaff

c. Watson and Crick

(xviii) How does Hypothalamus regulate homeostatic function by feedback mechanism?

(xix) How can we get the gene of interest?

SECTION – C (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. (2 x 13 = 26)

Q. 3 a. Explain sliding filament model of muscle contraction. How are the bridges controlled? **(5+4)**

b. Explain Rh Blood group system. **(04)**

Q. 4 a. Define Biogeochemical cycle. Also explain Nitrogen cycle. **(2+6)**

b. Write about **Symbiosis** and **Mutualism**. **(5)**

Q. 5 Explain the structure and function of a Nephron. How is concentration of excretory product maintained? **(13)**

Roll No. _____ Answer Sheet No._____

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BIOLOGY HSSC–II

SECTION – A (Marks 17)

Time allowed: 25 Minutes

NOTE: **Section–A is compulsory and comprises pages 1-2. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.**

Q. 1 Circle the correct option i.e. A / B / C / D. Each part carries one mark.

(i) Which of the following females is heterogametic?

A. Drosophila B. Protenorbug

C. Grasshopper D. Butterflies

(ii) The environment where the animals produce large volume of diluted urine is_____

A Hypotonic aquatic B Isotonic aquatic

C Hypertonic aquatic D Terrestrial aquatic

(iii) What is the number of cranial and spinal nerves in human being?

A. 12 and 31 B. 12 and 32

C. 12 and 34 D. None of these

(iv) In incubating eggs artificially, the incubators are usually regulated at temperature between _____.

A. $30-32^{0}C$ B. $32-34^{0}C$

C. $34-38^{0}C$ D. $36-38^{0}C$

(v) Primary succession starting in a pond is called _____

A. Xerosere B. Mesosere

C. Lithosere D. Hydrosere

(vi) Which enzyme attaches okazaki fragments?

A. DNA polymerase B. DNA helicase

C Primase D. DNA ligase

(vii) Annual rainfall in the desert region is_____

A. 20 – 25 cm B. 20 – 30 cm

C. 25 – 50 cm D. 25 – 60 cm

(viii) To which group do the cells shown in the following diagram belong?

A. Fibres

B Sclereids

C. Vessels

D. Collenchyma

(ix) Which of the following hormones cause ovulation?

A. FSH B. LH

C GH D LTH

(x) Which of the following is an example of autosomal non-disjunction of chromosome 18?

A. Klinefelter's syndrome B. Down's syndrome

C. Turner's syndrome D. Edward's syndrome

(xi) The ozone layer extends about_____ above the earth.

A. 10 – 50 km B. 10 – 30 km

C. 10 – 40 km D. 10 – 60 km

(xii) Gel electrophoresis _____

A. Can not be used on nucleotides

B. Measures the size of plasmids

C. Tells whether viruses are infectious

D. Measures the change and size of proteins and DNA fragment

(xiii) Which part of the brain is involved in intelligence, reasoning and judgment?

A. Cerebellum B. Medulla

C. Cerebral cortex D. Hippocampus

(xiv) Insects release their nitrogenous wastes in the form of_____

A. Ammonia B. Uric acid

C. Urea D. None of these

(xv) In human female, the fertilization of ovum takes place in proximal part of the _____

A. Uterus B. Cervix

C. Oviduct D. Vagina

(xvi) Which of the following traits passes in a zigzag manner from maternal-grandfather, through a carrier daughter, to the grandson?

A. Autosomal B. Y-linked

C. X-linked recessive D. X and Y linked

(xvii) Which of the following air pollutants cause global warming and green house effect?

A. CFCs B. Sulphur dioxide

C. Lead compounds D. Oxides of nitrogen

For Examiner's use only:

Total Marks:	17
Marks Obtained:	

BIOLOGY HSSC–II

Time allowed: 2:35 Hours **Total Marks Sections B and C: 68**

NOTE: **Answer any fourteen parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet–B if required. Write your answers neatly and legibly.**

SECTION – B (Marks 42)

Q. 2 Attempt any FOURTEEN parts. The answer to each part should not exceed 3 to 4 lines. (14 x 3 = 42)

(i) What are the causes and symptoms of the following diseases:
   a. Sciatica b. Arthritis

(ii) What is the structure of Flame cell? In which organism does excretion occur by the flame cell?

(iii) What is Cartilage? List the main types of cartilage.

(iv) a. Define Learning behaviour.
   b. Give an account of Habituation.

(v) Define the following:
   a. Parthenocarpy b. Vernalisation c. Menupause

(vi) Differentiate between Qualitative and Quantitative traits.

(vii) What is meant by Acid rain? Also write its harmful effects.

(viii) What is MODY? What is the cause of it?

(ix) Define the following:
   a. Niche b. Food web c. Succession

(x) a. Define Counter-current mechanism.
   b. What is the function of Aldosterone hormone?

(xi) a. What do you mean by the Replication process?
   b. How is the lagging strand of DNA synthesized?

(xii) Differentiate between Meissner's corpuscles and Pacinian corpuscles.

(xiii) What type of animal and plant life is present in a desert ecosystem? Also give examples.

(xiv) Write down the functions of the following hormones:
   a. Glucagon b. Adrenaline c. Gastrin

(xv) Explain by a cross when a heterozygous red eyed female drosophila fly is mated with white eyed male fly, what is the percentage of red and white eye colour.

(xvi) Define Evolution. Write an account of Endosymbiont Hypothesis.

(xvii) What is PCR? How can we make copies of a gene?

(xviii) What are the properties of cancer cells? Differentiate between Benign and Malignant tumors?

(xix) Differentiate between Osmoconformers and Osmoregulators.

SECTION – C (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. (2 x 13 = 26)

Q. 3 **a.** Define Nerve Impulse. What are the major factors involved in resting membrane potential? **(2+5)**

b. Write an account of Posterior Lobe of pituitary gland. **(04)**

c. Describe Alzheimer's disease. **(02)**

Q. 4 **a.** Define the Second law of Inheritance and explain it with the help of a checkerboard. **(2+6)**

b. Define and explain Pleiotropy. **(05)**

Q. 5 **a.** What do you mean by Meiosis? Explain various steps of first meiotic division. **(2+8)**

b. Define Dialysis. Explain Hemodialysis. **(03)**