Std. : **XII (Sci.)** **First Preliminary Exam - 2022** Sub. : **Biology** Time : **3.00** Hrs. Marks : **70**

General Instructions :

(1) **Section A :** Q No. 1 contain Ten multiple choice type of questions carrying one mark each.

(i) For each multiple choice type of questions, it is mandatory to write the correct answer along with its alphabet, eg. (a) ..... / (b) ..... / (c) ..... / (d) ..... etc. No mark shall be given if ONLY the correct answer or alphabet of the correct answer is written.

(ii) In case of MCQ evaluation will be done for the first attempt only.

Q No. 2 contain Eight very short answer type of questions carrying one mark each.

(2) **Section B :** Q No. 3 to Q No. 14 are short answer type of questions carrying two mark each.

(3) **Section C :** Q No. 15 to Q No. 26 are short answer type of questions carrying three mark each.

(4) **Section D :** Q No. 27 to Q No. 31 are long answer type of questions carrying four marks each.

(5) Write the answers of each section on a new page.

Section - A

Q.1 Select and write the correct answer for the following multiple choice type of questions. **(10)**

(i) A particular species of plant produces light weight non-sticky pollen grains in large numbers and has long feathery stigmas. These modifications facilitate pollination by ..... .

(a) Bird (b) Insect (c) Water (d) Wind

(ii) In a cell, primary basic number of chromosome is determined by X. Identify the type of an euploidy where X = (2n – 2)

(a) Monosomy (b) Nullisomy

(c) Tetrasomy (d) Triosomy

(1) .....

(iii) Industrial melanism is an example of ..... .
(a) Adaptive radiation (b) Geographical isolation
(c) Natural selection (d) Reproductive isolation

(iv) Transportation of plant hormones take place through ..... tissue.
(a) Xylem Parenchyma (b) Phloem Parenchyma
(c) Phloem fibre (d) Xylem fibre

(v) (Co) = SV × HR is the formula used to calculate the volume of blood pumped out per minute, which of the following is the value of (Co) in a normal adult.
(a) 5400 ml/min (b) 5080 ml/min
(c) 4500 ml/min (d) 5040 ml/min

(vi) Vijay is diagnosed with reduced blood pressure, increased sodium excretion by kidney. Which one of the following hormone is responsible for it ?
(a) Gonadotropin (b) Calcitonin
(c) Atrial natriuretic (d) Adreno corticotropic

(vii) Identify the correct the pairing among the following:

Name of enzyme	Microbial Source
(a) Invertase	Sclerotinia libertin
(b) Pectinase	Candida lipolytica
(c) Lipase	Saccharomyces cerevisiae
(d) Cellulose	Trichoderma Konigii

(viii) The clinical report of a patient shows that he is suffering from slow heart rate, low BP, always feeling cold, low body temperature and retard sexual development. Which of the following disorder are we talking about ?
(a) Myxoedema (b) Critinism
(c) Exopthalmic goitre (d) Gigantism

(ix) The pioneer organism in hydrarch are ..... .
(a) phytoplanktons (b) Zooplanktons
(c) Floating hydrophytes (d) Rooted hydrophytes

(x) The 'Evil Quarter' causing loss of biodiversity are (i) habitat loss (ii) over exploitation (iii) alien invation and (iv) .....

(a) endangered (b) critically endangered
(c) nearly threatened (d) co-extinctions

Q.2 Answer the following question. (8)

(i) Name the process of formation of RBCs in human.
(ii) Name the hormone involved in parturition.
(iii) Identify label A of X chromosome.

A

(iv) Name the stress hormone in plants.
(v) ..... fish control mosquito larvae.
(vi) Name the type of lichen responsible for weathering of rock and soil formation.
(vii) Kanha forest, a tiger reserve is an example of ..... type of conservation.
(viii) Name the stretches of forest set aside and protected in the name of Almighty in India.

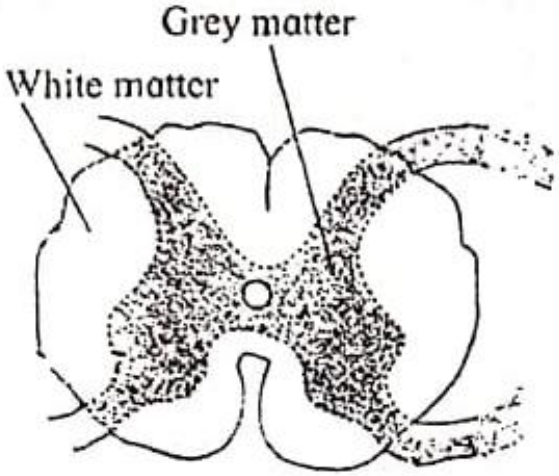
Section - B (16 marks)

Attempt any EIGHT of the following questions.

Q. 3 Write a note on human placenta.
Q. 4 State the major changes that took place in the evolution of man.
Q. 5 Draw well labell diagram of structure of root hair.
Q. 6 Write a note on capillary water and hygroscopic water.
Q. 7 Give any four physiological effect and application of Auxine.
Q. 8 Distinguish between artery and vein.
Q. 9 A person was cutting vegetable, accidently one of his superficial blood vessel was cut. Name the type of blood vessels and draw a neat labelled diagram of it.

Q. 10 · Differentiate between cerebrum and cerebellum.

Q. 11 · Complete the given figure for formation of spinal nerve and redraw with proper labelled.



Q. 12 · 12 mol CH_3COOH $\rightarrow$ 12 CH_4 + 12 CO_3
acetic acid methane

The above equation is related to methanogenesis, a stage of biogas production. Explain the other two stages.

Q. 13 · State the different types of adaptation seen in animals from colder climatic regions.

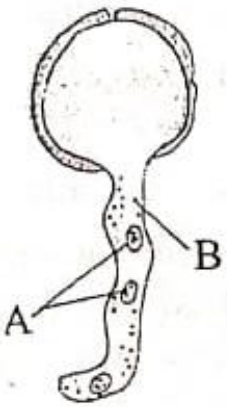
Q. 14 · Match the following pairs and rewrite:

A	B
(1) Mutualism	Plasmodium Vivax
(2) Ectoparasite	Lichen
(3) Endoparasite	Orchid
(4) Commensalism	Ticks on dogs

Section - C (24 marks)

Attempt any EIGHT of the following questions.

Q. 15 Name the figure given below. Identify label A and B. Explain its development.



Q. 16 Name the germinal layer from which the following organs develop.
Tongue, Heart, Sweat gland, Vagina, Mammary gland, Kidney

Q. 17 Give the functions of following structures.
(a) Corpus luteum (b) Endometrium
(c) Acrosome

Q. 18 Draw and label a suitable diagram for transcription and processing of nRNA to mRNA in eukaryotes. Explain the terms splicing capping and tailing.

Q. 19 During DNA replication one of the strand is synthesized continuously and other discontinuously. Name these two strands and mention two feature of each strand.

Q. 20 Explain the following terms:
(a) Gene mutation (b) Genetic recombination
(c) Gene flow

Q. 21 A typical dihybrid cross is carried out between true breeding plant with yellow round seeds and true breeding plant with green wrinkled seeds. With appropriate symbol write the genotypes of -
(a) Homozygous dominant and recessive traits
(b) Gamete produce by both the parents
(c) Gamete produce by the F1 hybrid

Q. 22 Pick up the right option and complete the chart given below and rewrite:

Sr.No.	Hormones	Example	Function
1.		IAA	Cell elongation
2.	Auxin	IBA	
3.	Stress hormone		delay cell division
4.		Zeatin	Cell division
5.	Abscissic acid	ABA	
6.	Auxin		Flowering in pineapple

Options : Antitranspirant, Ethylene, Auxin, ABA, Apical dominance, Cytokinin, Gibberellin, NAA.

(5) .....

Q. 23 Fill in the blanks and redraw the chart.

Sr. No.	Blood group	Genetype	Antigen on surface of RBC	Antibody in serum
1.	-------	-------	A	Antibody b
2	-------	I^BI^B or I^BI^O	-------	Antibody a
3	AB	I^AI^B	-------	Nil
4	O	I^OI^O	Nil	-------

Q. 24 Explain the role of Rhizobium, Azatobacter and Anabaena as a biofertilizers.

Q. 25 Match the column.

Column I	Column II
(i) AIDS	Immunoglobulin
(ii) Lysozymes	Antibody production
(iii) Helper T cell	Tear
(iv) B Lymphocyte	Antigenic determinant
(v) Antibody	Activation of B-Lymphocyte
(vi) Epitope	Immunodeficiency

Q. 26 Select and write one suitable example for each of the following :

Seral stages	Xerarch	Hydrarch
Pioneers		
Intermediate stage		
Climax community		

(Forest, Trees Lichens Hydrilla, Phytoplanktons, Grasses)

Section - D (12 marks)

Attempt any THREE question of the following.

Q. 27 (a) Give the term to describe the entry of pollen tube into the ovule through the following parts:

(i) Micropyle (ii) Chalaza

(iii) integument

(b) State any four significance of double fertilization in angiospermic plant.

Q. 28 Suresh is colour blind married to Sangeeta who is having normal vision (Homozygous). They have a son and a daughter, determine the type of vision in their children with the help of suitable chart.

Q. 29 Explain the internal structure of human heart with the help of diagram.

Q. 30 Sketch and label the T.S. of thyroid gland. Add a note on secretions (thyroxine) of thyroid gland.

Q. 31 (a) Draw schematic representation of r-DNA technology.

(b) What are melt in the mouth vaccines ?

(c) Give the benefits of oral vaccines.

★ ★ ★