KARNATAKA ICSE SCHOOLS ASSOCIATION

PREPARATORY EXAMINATION - JANUARY 2020

Class: X **Subject: Science- Biology (Paper 3)** **Max. Marks: 80**
Duration: 2hrs

Date : ___.___. 2020

Instructions:

Answers to this Paper must be written on the paper provided separately
You will not be allowed to write during the first 15 minutes. This time is to be spent in reading the Question Paper.
The time given at the head of this paper is the time allowed for writing the answers

Attempt all questions from Section I and any four from Section II.
The intended marks for questions or parts of questions, are given in brackets [ ].

Section I (40 Marks)

Attempt all questions from this section

Question 1

(a) Complete the following paragraph by filling in the blanks (i) to (v) with appropriate words/phrases: **[5]**

Charles Darwin proposed the theory of ____ (i) ____. According to this theory, the organisms produce more offspring than that can survive. This is called ____ (ii) ___. This creates competition among them and there is struggle for ____ (iii) ___. This struggle eliminates the unfit individuals. The fit organisms posses some ____ (iv) ___ survive and reproduce. These (iv mentioned alongside) accumulate over a long period of time lead to the ___ (v) ___.

(b)Name the following: **[5]**

(i) The pressure exerted by a concentrated cell sap on a solvent to prevent its movement from a solution of lower concentration to a solution of higher concentration through a semi permeable membrane.
(ii) The part of the brain that controls heart beat and breathing.
(iii) The main nitrogenous waste eliminated through kidneys in humans.
(iv) The statistical study of human population.
(v) A tough structure that serves as a blood vascular connection between foetus and uterine wall.

(c) Choose the correct answer from each of the four options given below: **[5]**

(i) In Hyperopia the light is
(A) Focussed behind retina (B) Focussed in front of retina
(C) Focussed on retina (D) Scattered in the vitreous humour

(ii) A plant kept in the dark room ensures that the
(A) plant is free from starch (B) leaves of the plant are free from chlorophyll
(C) leaves of the plant are free from starch (D) plant is free from chlorophyll

(iii) The number of homologous pairs of chromosomes present in a diploid cell of human male cell
(A) 46 pairs (B) 22 Pairs (C) 23 pairs (D) one pair
(iv) In trees most of the transpiration occurs through

(A) Cuticle (B) Lenticels (C) Hydathodes (D) Stomata

(v) The fluid that transports Anti Diuretic Hormone from posterior pituitary to kidneys.
(A) Only blood (B) Blood and Lymph (C) Urine (D) serum

(d) In each set of terms given below, there is an odd one and cannot be grouped in the same category to which the other three belong. Identify the odd term in each set and name the category to which the remaining three belong: [5]

(i) urea, ammonia, creatinine, uric acid
(ii) Thymine, phosphate, RNA, sugar
(iii) Syringe, needles, fly ash, soiled dressings
(iv) general growth of the body, increases blood glucose concentration, ossification of bones, mental development
(v) Perilymph, tympanum, endolymph, organ of corti

(e) Match the items given in column A with the most appropriate ones in Column B and REWITE the correct matching pairs: [5]

Column A	**Column B**
(i) Transpiration pull	- Insulin
(ii) Exosmosis	- Skin burns
(iii) Iodine 131	- Glucagon
(iv) Alpha cell	- Alkaline secretion
(v) Prostate gland	- Ascent of sap
	- Plasmolysis
	- Thyroid cancer

(f) Given below are five groups of five terms each. Arrange and rewrite the terms in each group in the correct order so as to be in logical sequence: [5]

(i) Puberty, menopause, Menstruation, Ovulation, menarche
(ii) Ozone hole, chemical decomposition of Ozone, CFC's from air conditioners, UV rays directly reach the earth, stratosphere
(iii) secretion of thyroxine, anterior pituitary, regulation of body metabolism, stimulation of thyroid, secretion of thyroid stimulating hormone
(iv)Axon, cyton, synapse, dendrites, axon terminals
(v) substomatal space, mesophyll cells, stoma, atmosphere, inter cellular space

(g) The statements given below are incorrect. Rewrite the correct statement by changing underlined words of the statements: [5]

(i) Fertilization in humans occurs in <u>Uterus</u>.
(ii) A sudden change in the amount, arrangement or structure of the DNA or chromosomes of an organism is called <u>heredity</u>.
(iii) Chlorophyll absorbs <u>protons</u>, the unit of sunlight during light reaction.
(iv) Blood group AB contains no <u>antigens</u> in blood plasma.
(v) <u>Cerebrospinal fluid</u> is neurotransmitter

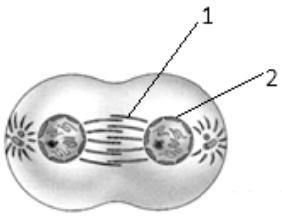
(h)Expand the following abbreviations: [5]

(i) NADP (ii) ACTH (iii) IAA (iv) CNG (v) SAN

Section II (40Marks)
(Attempt any four questions from this main)

Question 2

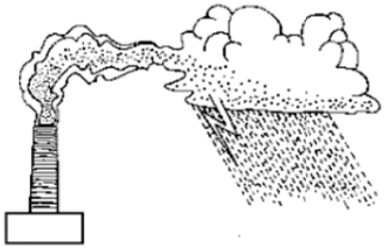
(a) The diagram given below represents a stage during mitotic cell division. Observe the diagram and answer the questions that follow: [5]



i. Identify the stage given alongside.
ii. Name the parts numbered 1 and 2.
iii. What is the technical term for the (1) Division of nucleus and
(2) Division of cytoplasm?
iv. Mention the stage that comes before the stage shown in the diagram. Draw a neat labelled diagram of the stage mentioned.
v. Name the type of cell division that occurs during:
1. Growth of a shoot 2. Formation of ovule.

(b) Answer the following with respect to the picture given: [5]

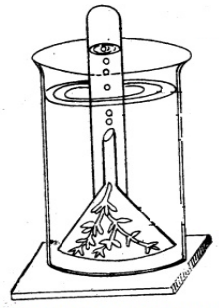
(i)Mention two points for the statements given below about pollution given alongside:
(1) Pollutants responsible.
(2) Effect on water bodies.
(3) Measures to control.
(ii) Two Objectives of Swachh Barat Abhiyan
(iii) The air quality of Delhi has reached to seriously dangerous levels. Suggest two measures to improve the air quality of Metro cities like Delhi.



Question 3

(a)The following questions are based on the diagram of an experimental set up of photosynthesis. Observe carefully and answer the questions: [5]

(i) Mention the aim of the experiment.
(ii) Why is a hydrophyte used in the experiment and not a mesophyte?
(iii) Write your observations in the following conditions:
1. A pinch of sodium bicarbonate is added to water in the beaker.
2. The experiment is conducted in the green light.
(iv) The plant used in the experiment is not destarched. Give reason.
(v)Write the chemical equation for photosynthesis.

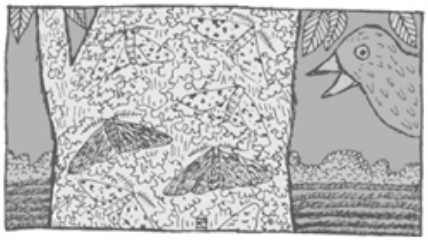


(b) Give scientific terms for the following: [5]

(i) The hormone that stimulates the sympathetic nervous system.
(ii) The collection of nerve cell bodies from which nerves emerge.
(iii) Reduced sugar levels in the blood.
(iv) The oldest human ancestor.
(v) The enzyme with antiseptic property in tears.
(vi) The mineral component of chlorophyll.
(vii) The exudation of excess water by the herbaceous plants.
(viii) The process by which the neutrophils engulf bacteria that invades the body.
(ix) The process by which sodium and potassium are absorbed by the roots.

Question 4

(a) Observe the diagram given below and answer the questions that follow: **[5]**



White moths blended with tree bark

A

Black moths blended with the tree bark

B

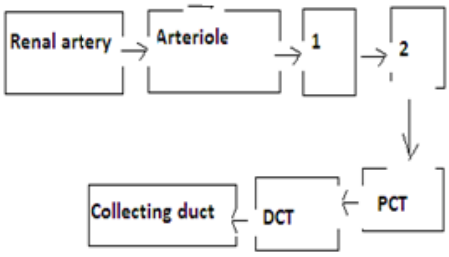
(i) Identify the phenomenon. Which theory is explained by this phenomenon?
(ii) Name the Scientific name of (1) Peppered Moth
(2) Modern Humans
(iii)Explain what has caused the change from A to B?
(iv) Write two characteristics of:
(1) Neanderthal man.
(2) Cro-Magnon man

(b) Mention the exact location of the following: **[5]**

(i) Eustachian tube (ii) Sunken stomata
(iii) Epididymis (iv) Myelin sheath (v) Hepatic portal vein

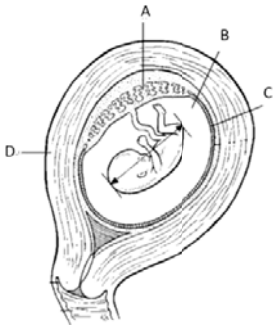
Question 5

(a) Given below is the flow of fluids in Nephron. Study the diagram carefully and answer the questions: **[5]**



(i) Identify the parts labelled 1and 2. Name the collective term used for 1 and 2.
(ii) Explain the process occurring in part 1.
(iii) The filtrate collected in part 2 contains glucose, vitamins like Vitamin B and vitamin C. Yet they are not excreted in a normal healthy individual.
(iv) Mention the effect of sympathetic nervous system on urinary bladder.
(v) Name any two metabolic disorders which can be diagnosed by urine analysis.

(b) The following diagram depicts the foetus in the uterus. Study the diagram and answer the questions that follow: **[5]**



(i) Label the parts B and C
(ii) How many days does the human foetus take to get fully developed?
(iii) Name the hormonal part in the above picture. Also mention the hormones produced by it.
(iv) Give suitable explanation for the following:
(1) Maternal blood does not enter the foetus directly.
(2) Menstrual cycle stops temporarily during pregnancy.

Question6

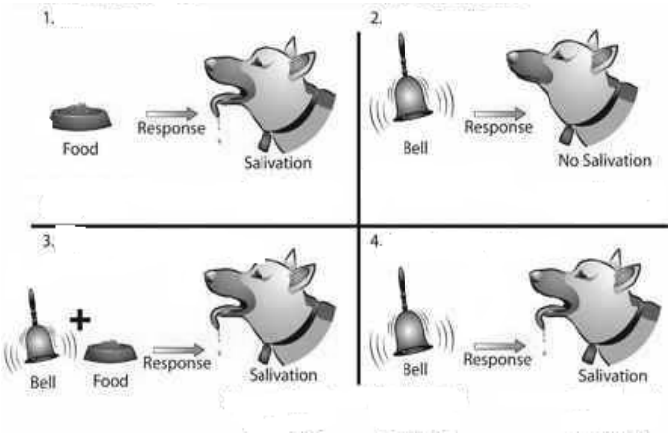
(a) Mention the exact function of the following: **[5]**

(i) Gili

(ii) Corpus callosum
(iii) Gibberellins
(iv) Amniotic fluid
(v) Synapse

(b) Observe the pictures depicting an experiment conducted by Pavlov to study a phenomenon. Observe the picture and answer the following questions: **[5]**

(i) What is the aim of the experiment?
(ii) In this experiment labelled (1) in the picture what is the: (A) Stimulus and
(B) Reflex action?
(iii) Differentiate between the phenomenon occurring in 1 and 4.
(iv) All reflex actions are involuntary actions but all involuntary actions are not reflex actions. Give reason.
(v) Schematically arrange the following to represent the path of reflex arc:
Salivary gland, Brain or Spinal cord, Salivation, Motor neuron, Sound of the ringing bell, Sensory neuron, Receptors of the ear.



Question 7

(a) In rabbits, assume that the dominant allele (B) produces black fur. The allele (b) for white fur is recessive to B. [5]

(i) What colour fur will each of the following rabbits have?

Rabbit:	**1**	**2**	**3**	**4**
Genotype:	**BB**	**Bb**	**bB**	**bb**

(ii)Which of the above two rabbits when crossed can also produce pure breeds as well as hybrids?
(iii) Which rabbits are homozygous for coat colour?
(iv) Rabbits 2 and 3 (mentioned above) are crossed. State whether it is a monohybrid cross or dihybrid cross. Explain with a reason.
(v) State the law of segregation of gametes.

(b) Draw a neat diagram of internal structure of eye and label the following parts: **[5]**
(i) The outermost transparent layer of the eye.
(ii) The layer of the eye that provides nourishment to the eye.
(iii) The area of no vision
(iv) The larger cavity of the eye ball.
(v) The spot containing the maximum number of sensory cells**.**

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