



SECOND PRELIMINARY EXAMINATION 2019 – 2020

Paper : Biology

Grade: 10
Date : 10/01/2020

Marks: 80
Time : 2 hrs

Answer 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 A** and attempt any four questions from **section B**.*

The intended marks for questions or parts of a question are given in the brackets []

SECTION – A

(All the questions from this Section are compulsory)

Question 1

a) Name the following:

[5] 3

- i) The DNA wound around eight histone molecules.
- ii) Artificially arranging the chromosomes according to their shape and size.
- iii) The muscles in the human eye which are concerned with the focusing of objects at different distances.
- iv) The enzyme secreted by acrosome of sperm.
- v) The surgical technique for the human female that can be used to prevent pregnancy.

b) State the main function of the following:

[5] 5

- i) Aortic semilunar valves
- ii) Eustachian tube
- iii) Suspensory ligament of the eye
- iv) Placenta
- v) Intra – Uterine Devices

This paper consists of 7 printed pages.

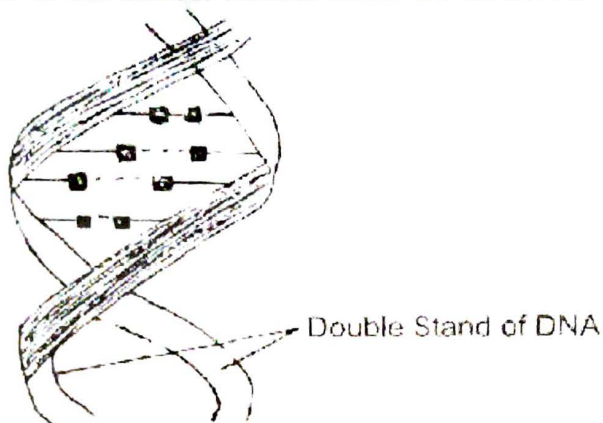
✓ e) Explain the following terms:

[5] 5

- ✓ i) Demography
- ✓ ii) Pollution
- ✓ iii) Blood transfusion
- ✓ iv) Myocardial infarction
- ✓ v) Micturition

✓ d) Given below is a diagram of the double helical structure of DNA.

[5] 5



- ✓ i) Name the four nitrogenous bases which form a DNA molecule.
- ✓ ii) Give the full form of DNA.
- ✓ iii) Name the unit of heredity.
- ✓ iv) Mention two points of differences between mitosis and meiosis

e) Choose the correct answer from the four options given below:

[5] 4

- ✓ i) The cell component visible only during cell division is
A) Mitochondria B) Chloroplast C) Chromosome D) Chromatin
- ✓ ii) Pulse wave is mainly caused by the
A) Systole of atria B) Diastole of atria
C) Systole of the left ventricle D) Systole of the right ventricle.
- ✓ iii) The recessive gene is one which expresses itself in
A) Heterozygous condition B) Homozygous condition
C) F₂ generation D) Y-linked inheritance.
- ✓ iv) A bundle of muscle fibres which begins from AVN and extends to the interventricular septum.
A) SAN B) HIS C) AVN Node D) Myocardial
- ✓ v) The ventral root ganglion of the spinal cord contains cell bodies of the
A) Motor neuron B) Sensory neuron
C) Intermediate neuron D) Association neuron

f) Given below are sets of five terms. Rewrite each term in the logical sequence. One example is done for you. [5] 4

Example: Anaphase, Telophase, Prophase, Metaphase, Interphase (Sequential order of karyokinesis) Answer: Interphase, Prophase, Metaphase, Anaphase, Telophase

- 4) Pupil, Yellow spot, Cornea, Lens, Aqueous humour
(Path of entry of light into the eye from an object)
- ✓ ii) Dorsal root ganglion, Receptor, Effector, Ventral root ganglion, Associated neuron
(path of reflex action)
- ✓ iii) Oval window, Tympanum, Cochlea, Auditory canal, Ear ossicles
(path through which vibration of sound is transferred in the human ear)
- ✓ iv) Karyokinesis, S phase, Cytokinesis, G1 phase, G2 phase (cell cycle).
- ✓ v) Aorta, Hepatic vein, Hepatic portal vein, Small Intestine, Liver.
(Flow of blood- Hepatic portal system)
- g) Give biological reasons for the following: [5]
- ✓ i) The wall of the ventricle is thicker than the auricle.
- ✓ ii) Crossing over leads to variation in species.
- ✓ iii) We cannot distinguish between coloured flowers on a moon lit night.
- ✓ iv) When an ovum gets fertilized, menstrual cycle stops temporarily in a woman.
- ✓ v) Some women have facial hair like beard and moustache.
- h) State the exact location of the following: [5]
- ✓ i) Amnion
- ✓ ii) Umbilical cord
- ✓ iii) Mitral valve
- ✓ iv) Pinna
- ✓ v) Hydathode

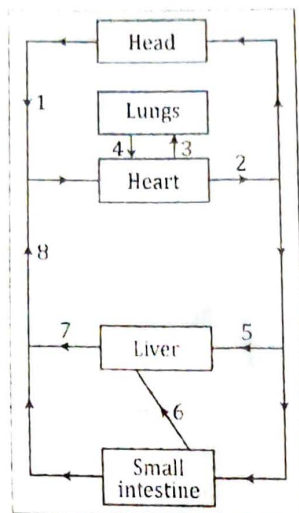
Section B

(Attempt **Any Four** of the following questions)

Question 2

- ✓ a) Differentiate between the following pairs on the basis of what is mentioned within brackets: [5]
- ✓ i) Spinal nerves and Cranial nerves (number of nerves)
- ✓ ii) Prostate gland and Cowper's gland. (Function)
- ✓ iii) Rods and Cones (type of pigment present)
- ✓ iv) Aqueous humour and Vitreous humour (location)
- ✓ v) Genotype and Phenotype (definition)

b) The diagram below represents the simplified pathway of the circulation of blood. Study the same and answer the questions which follow:

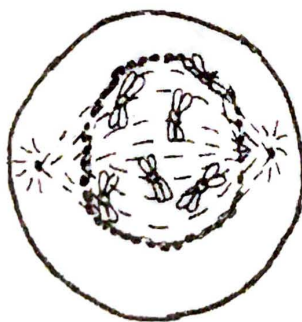


- i) Name the blood vessels labelled 1 and 2.
- ii) State the function of blood vessels labelled 5 and 8.
- iii) What is the importance of the blood vessel labelled 6?
- iv) Which blood vessel will contain a high amount of glucose and amino acids after a meal? [5]

Question 3

a) The given diagram shows a stage during mitotic division in an animal cell:

[5]



- i) Identify the stage. Give a reason to support your answer.
- ii) Draw a neat labelled diagram of the cell as it would appear in the next stage. Name the stage.
- iii) In what two ways is mitotic division in an animal cell different from the mitotic division in a plant cell?
- iv) Name the type of cell division that occurs during :
 - 1) Growth of a shoot
 - 2) Formation of pollen grains.

a) Given below is a diagrammatic representation of a defect of the human eye.

[5]



- i) Identify the defect.
- ii) Mention two reasons for the above defect.
- iii) State how the defect can be rectified.
- iv) Name the part of the eye responsible for maintaining the shape of the eye ball.

Question 4

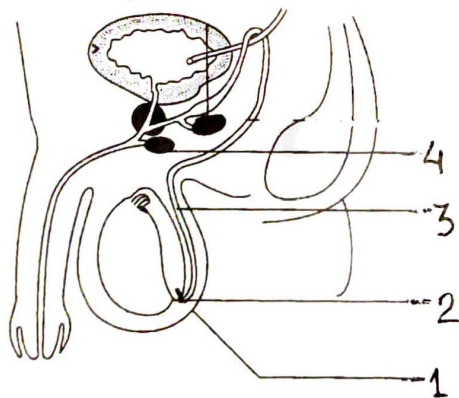
a) A homozygous plant having round (R) and yellow (Y) seeds is crossed with a homozygous plant having wrinkled (r) and green (y) seeds.

[5]

- i) Give the scientific name of the plant on which Mendel conducted his hybridisation experiments.
- ii) Give the genotype of the F_1 generation.
- iii) Give the dihybrid phenotypic ratio and the phenotype of the offspring of F_2 generation when two plants of the F_1 generation are crossed.
- iv) Name and state the law which explains dihybrid ratio.
- v) Give the possible combinations of gametes which can be obtained from F_1 hybrid.

b) Given below is the outline of the cross section of the male reproductive system. Study the same and answer the questions that follow.

[5]



- i) Label the marked parts.
- ii) Name the hormone produced by the testis.
- iii) Why are sperms produced in large numbers?
- iv) State the function of seminal vesicle.
- v) Draw a neat labeled diagram of a sperm.

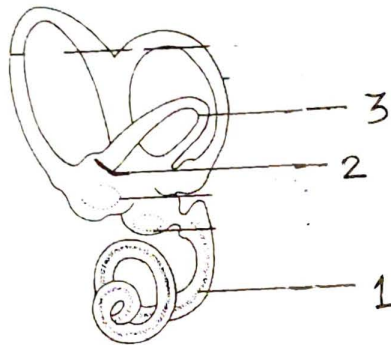
[5]

Question 5

- a) i) What is the main element of Lamarck's theory? [1]
ii) Mention any two characteristics: Cromagnon Man. [2]
iii) List any two functions of Gibberellins. [2]
b) i) List the events taking place in the photochemical phase of photosynthesis. [3]
ii) If you are planning an experiment to show the effect of light on photosynthesis:
1) Will you select white light or green light? Justify your answer. [1]
2) Why would you select a destarched plant? [1]

Question 6

- a) Draw a neat diagram of a single Malpighian corpuscle and label the following parts: [3]
Glomerulus, Bowman's capsule, Afferent arteriole, Efferent arteriole
b) Name and define the process that occurs in glomerulus. [2]
c) The diagram below represents the structure found in the inner ear. [5]

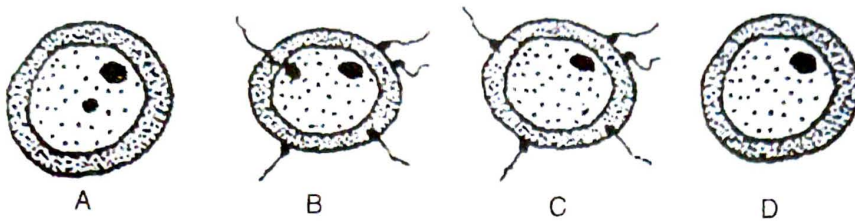


- i) Name the marked parts.
ii) Name the part of the ear responsible for transmitting impulses to the brain.
iii) Name the part which is responsible for :
1) Static equilibrium
2) Dynamic equilibrium
3) Hearing
iv) Name the fluid present in the inner ear.

Question 7

- a) Name the hormone which lead to the following condition. [4]
i) Diabetes mellitus
ii) Myxoedema
iii) Exophthalmic goitre
iv) Gigantism

b) Given below are diagrams showing different stages in the process of fertilization of an egg in the female reproductive tract. [3] 3



- (i) Use the alphabets given below each diagram to show the correct sequence in the process of fertilization.
- (ii) Where in the female reproductive system does this process normally takes place?
- (iii) What is the biological term for the product of fusion?
- (iv) What is the chromosome number of:
- (v) the egg (vi) the fused product
- (c) Draw a neat labeled diagram of a fully grown root hair. [3] 2
