

BIOLOGY
SCIENCE Paper – 3

(Two hours)

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 questions 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

Q. Name the following

[5]

- ~~i) The part of the eye responsible for eye colour.~~
- ~~ii) A vestigial organ.~~
- ~~iii) The compound formed when haemoglobin combines with carbon di oxide in blood.~~
- ~~iv) An instrument used to nullify the effect geotropism.~~
- ~~v) The pressure exerted by the cell wall on the cell contents.~~

b) Choose the correct answer from each of the four alternatives given below

[5]

- i) The gaseous hormone in plants
a) auxin b) gibberellins c) ethylene d) cytokinin
- ii) The longest phase in the cell cycle is
a) anaphase b) telophase c) metaphase d) interphase
- iii) Lamarck's theory of evolution is also called as
Theory of natural selection b) Inheritance of acquired character
c) Survival of the fittest d) Theory of special creation
- iv) The hormones of adrenal glands are
Glucocorticoids b) mineralocorticoids c) adrenalin d) all of them
- ~~v) One of the examples of radiation pollution is~~
a) sulphur dioxide b) ozone c) Iodine -131 d) discarded fused electric bulbs.

c) Choose the odd one out and write the category of the other three.

[5]

- ~~i) Seminiferous tubule, sperm duct, uriniferous tubule, epididymis~~
- ii) Pulmonary artery, hepatic vein, coronary artery, venacava
- iii) Wind energy, tidal energy, petroleum, solar energy.
- iv) Ovary, fallopian tube, ureter, uterus
- v) Vassopressin, oxytosin, cytokinin, somatotropin

d) Fill in the blanks

[5]

- ~~i) The immediate ancestor of modern man is _____.~~
- ~~ii) Haemophilia is a _____ disease.~~
- ~~iii) The oxygen evolved during photosynthesis comes from _____.~~
- ~~iv) The statistical study of human population is called _____.~~

v) The insulating sheath covering the axon is called _____.

e) Rewrite correct statements by changing the underlined words.

[5]

i) Every cell in human body has 23 chromosomes.

ii) There are 31 pairs of cranial nerves.

iii) Deafness is caused due to rupturing of ear pinna.

iv) Urea is produced in kidneys.

v) The adsorption of water by living or dead cells by surface attraction is called osmosis.

f) Given below are five sets of items. In each case, arrange and rewrite each set so as to be in logical sequence. 1mb

[5]

i) Conjunctiva, retina, cornea, optic nerve, lens.

ii) Implantation, ovulation, child birth, gestation, fertilization.

iii) Renal vein, renal artery, glomerulus, efferent arteriole, afferent arteriole.

iv) Telophase, prophase, anaphase, metaphase.

v) Diencephalon, cerebellum, medulla oblongata, pons, cerebrum, mid brain.

g) Match the following

[5]

A	B
i) Abscissic acid	a. yellow coloured pigment ✓
ii) Squint	b. 0.8 seconds ✓✓
iii) Xanthophyll	c. DNA strand wound around 8 histone protein ✓
iv) Cardiac cycle	d. growth inhibitor ✓
v) Nucleosome	e. Double vision ✓

h) Give technical terms for the following

[5]

i) Alternative form of a gene on a pair of homologous chromosome.

ii) The junction between two nerve cell.

iii) The monthly bleeding in females.

iv) The movement of pollen tube towards sugar and peptones secreted by the style.

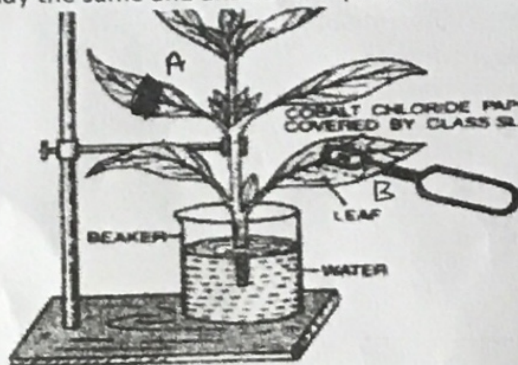
v) The free movement of molecules of a substance from its higher concentration to its lower concentration.

SECTION II (40 MARKS)

Answer any four questions from this section

QUESTION 2

a. Given below is the diagram of experimental set up to study a couple of processes in plants. Study the same and answer the questions that follow. [6]



i) Name the two processes being studied in the figure.

ii) Write the aim of each experiment.

iii) What is the colour of dry cobalt chloride paper?

iv) Where are more stomata located in a leaf?

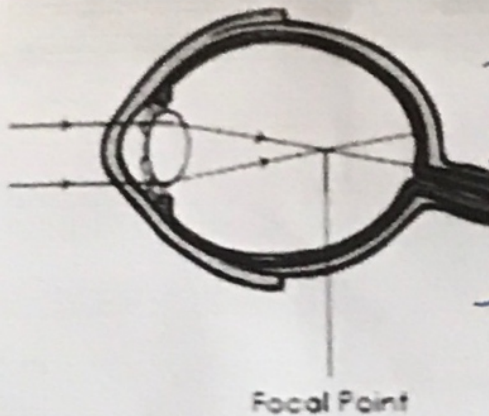
v) What will you observe in the leaves A and B at the end of the experiment?

b) i) Write two objectives of Swachh Bharath Abhiyan. [2]

ii) Explain Industrial Melanism as an example of natural selection. [2]

QUESTION 3

- a. Given below is a diagram depicting a defect of the human eye. Study the same and answer the questions that follow [6]



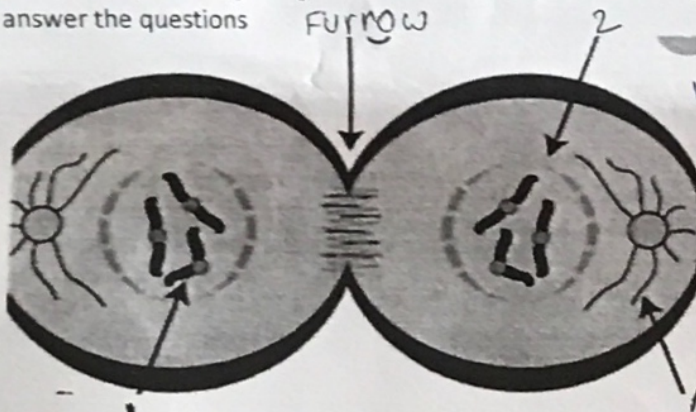
- Name the defect shown in the figure.
 - Give two possible reasons for this defect.
 - Name the type of lens used to correct this defect.
 - Draw a labeled diagram to show how the abovementioned defect is rectified using the lens named above.
- b) Differentiate between the following [4]
- Vasectomy and tubectomy (definition)
 - Transpiration and Guttation. (form of water)
 - Myxodema and acromegaly (number) Cause
 - Menarch and menopause (definition)

QUESTION 4

- a) A garden pea plant bearing axial (A) violet (V) flowers were crossed with another pea plant bearing terminal (a) white (v) flowers. [5]

- Draw a cross and write the phenotype and genotype of F₁.
- Write the gametes produced by the F₁ when they are self pollinated.
- What is the phenotype and phenotypic ratio of this cross? (F₂)
- Name and state the law that can be derived from this cross.

- (b) Study the diagram given below which represents a stage during the mitotic cell division and answer the questions [5]



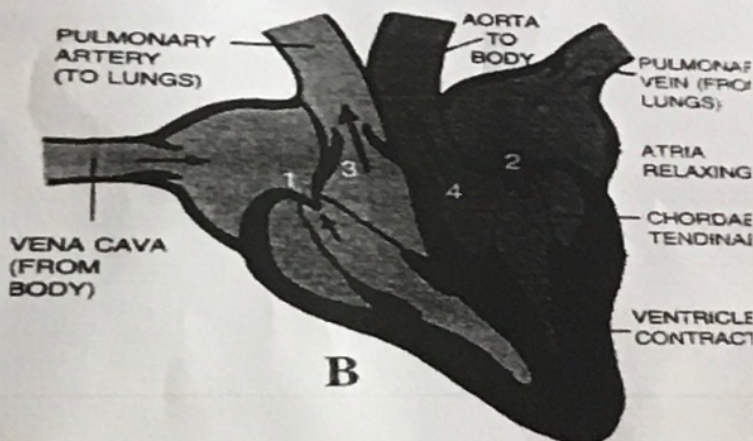
- Identify the stage by giving suitable reasons.
- Label the parts 1 and 2.
- Mention the stage that comes before the stage shown in the figure.
- Draw a neat and labeled diagram of the stage mentioned.

before

ASTER

Question 5

- a) Given below is the diagram of heart showing a particular phase of cardiac cycle. [6]



- Which chambers are in a systolic phase? Give reason.
- Which heart sound is produced at the end of this phase?
- What is double circulation?
- Name the structures that keep the valves in position.
- Where is heart beat initiated?

[4]

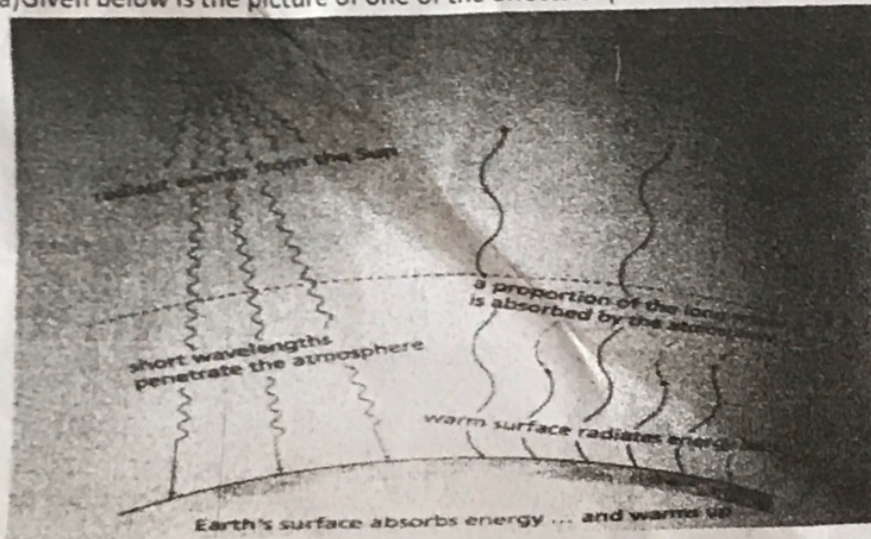
b) Give a reason for the following.

- i) Some women have facial hair like moustache and beard.
- ii) The ear ossicles play an important role in hearing.
- iii) Crossing over is an important step in meiosis.
- iv) We gargle with salt water when we have throat infection.

QUESTION 6

[5]

a) Given below is the picture of one of the effects of pollution.



i) Identify the effect and define it.

ii) Name two gases that are responsible for this effect.

iii) How can afforestation help in overcoming this effect.

iv) What is the impact of this effect on earth?

[5]

b) Answer the following with reference to the human excretory system

i) What is micturition?

ii) Draw a neat and labelled diagram of L.S of kidney showing cortex, medulla, Renal pyramid, pelvis and ureter.

iii) Explain the role of ADH in urine formation.

QUESTION 7

a) With regard to gestation and foetal development answer the following questions [5]

i) what is the difference between a foetus and an embryo?

ii) Name the structure that connects the foetus to the uterus.

iii) Name the fluid that surrounds the foetus and give its function.

iv) Give two functions of placenta

v) How long is the gestation period in humans?

b) i). Describe an experiment to demonstrate endosmosis using a potato osmoscope. [5]

ii) Give two main significances of osmosis to plants

@@@@@@@@