

STD: 10

MARKS: 80

DATE: 16.01.15

DURATION: 2 hrs

SCIENCE

Paper 3 (Biology)

(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 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 the bracket [].***Section - I (40 marks)**

All questions are compulsory.

Question 1**A. Name the following**

[5]

1. Hormone that controls the secretion of thyroid hormones
2. Nerves that arise from different parts of the brain
3. Example of plant showing guttation.
4. Neuron that brings about response in the effector
5. A substance produced by microorganisms to inhibit growth of other microorganisms.

B. State whether the following statements are true or false. If false, rewrite the correct form of the statement by changing the first word only:

[5]

1. Sex linked inheritance shows criss-cross pattern.
2. *Nasturtium* shows sunken stomata.
3. Photometer shows the rate of uptake of water.
4. Stroma of the chloroplast contains chlorophyll.
5. Clotting is the clumping of cells due to antigen-antibody reaction.

C. Given technical terms for

[5]

1. A statistical study of human population of a region.
2. The condition of blood with high sugar in diabetics.
3. A vein with capillary on both ends.
4. The molecule that fixes carbon in photosynthesis.
5. Aggregation of cytons.

D. Given below are five sets with four terms each. In each set one term is odd. Choose the odd one out of the following terms given and name the category to which the others belong:

[5]

1. Mitral valve, Sino atrial node, aorta, pulmonary vein
2. Afferent arteriole, renal vein, efferent arteriole, glomerulus
3. Cerebrum, corpus callosum, cranium, cerebellum
4. Amnion, chorion placenta, allantois
5. Epidermis, stomata, mesophyll, endodermis

E. Given below are five sets of terms. In each case, arrange and rewrite each set so as to be in logical sequence, without changing the first word.

[5]

1. **Pathogen**, active immunity, produces antibodies, lymphocyte, antigen.
2. **Destarched plant**, iodine added, washed in water, a leaf boiled in alcohol, placed in sunlight.
3. **Superior and inferior vena cava**, right auricle, lung, pulmonary artery, pulmonary vein, left auricle, right ventricle.

4. **Seminiferous tubule**, penis, urethra, epididymis, vas deferens

5. **Ovulation**, implantation, child birth, fertilization, gestation

F. Complete the table by filling in 1 to 10

[5]

Types of pollutant	Cause	Control
.....1.....	Discharging sewage and industrial effluents into water bodies.	.....2.....
Air pollution	.....3.....	.....4.....
.....5.....	Automobiles/ loudspeakers	.....6.....
Radioactive pollution	.....7.....	.....8.....
.....9.....	Dumping of industrial and medical waste	.....10.....

G. Choose the correct alternative from the choices given below each statement so as to complete its meaning. Rewrite the correct answer.

[5]

- Which one of these reactions occurs during photosynthesis?
 - Carbon dioxide is reduced and water is oxidized
 - Water is reduced and carbon di oxide is oxidized
 - Carbon dioxide and water are both oxidized
 - Carbon dioxide and water are both reduced.
- Transpirational pull will be maximum under which of the following conditions
 - Open stomata, dry atmosphere and moist soil
 - Open stomata, high humid atmosphere and well irrigated soil
 - Open stomata, high humid atmosphere and dry soil
 - Closed stomata, dry atmosphere and dry soil
- Which one of the following is NOT a function of WHO?
 - Maintaining statistical health records for most countries
 - Preparation and marketing of new medicines
 - Regulating international quarantine work
 - Playing an important role in the eradication of epidemic and endemic disease.
- The space between the cell wall and plasma membrane in a plasmolysed cell is filled with
 - Isotonic solution
 - Hypotonic solution
 - Hypertonic solution
 - Water
- Excretion commonly involves
 - Removal of by-products during catabolism
 - Removal of nitrogenous wastes
 - Removal of by-products during anabolism
 - All of the above

H. Given below are incomplete explanations of certain biological processes/terms where a key word/words is missing. Rewrite the complete sentence by inserting a word/words and underlining the same. (Do not delete any word/words):

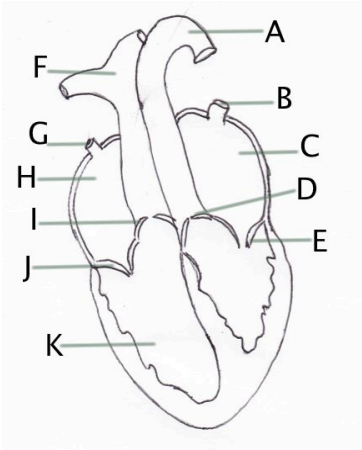
[5]

- Birth rate is the number of births per thousand of the population per year.
- Photolysis is the splitting of water molecules into Hydrogen ions and Hydroxyl ions.
- Vaccine is a preparation consisting of microbes which help to build immunity in the human body.
- Osmosis is the movement of water molecules from its region of high concentration to its region of low concentration.
- Destarching a plant means removing starch from the plant.

Part II
(Attempt any four questions)

Question 2

A. Given below is a schematic representation of the human heart. Observe the diagram and answer the questions [5]



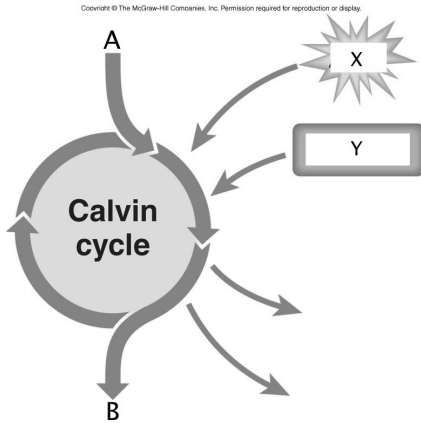
- i. Name the structure and mention the alphabet on the diagram for the following-
 1. The structure that guards the flow of blood to the body parts.
 2. The structure that carries blood for oxygenation.
 3. The part that receives oxygenated blood.
 4. The part that pumps deoxygenated blood from the heart.
- ii. The walls of the ventricle are not similar in thickness. Which has more thicker wall? Why?
- iv. Give one structural and one physiological difference between F and A.

B. Answer the following- [5]

1. Draw a neat labelled diagram to show the metaphase stage of mitosis in an animal cell having '6' chromosomes.
2. Differentiate between
 - a. B cell and T cell
 - b. Natural and acquired immunity

Question 3

A. The diagram below is a schematic representation of the Calvin cycle. [5]



1. Identify A and B.
2. What is X? Name the process by which it is produced.
3. Name the chemical that accepts A in this process.
4. How is B transported and stored after production?
5. Give two other names for this cycle.

B. Differentiate between the following (one difference)

1. Synapse and Synapsis
2. Ureter and Uterus
3. Centromere and Centrosome
4. Haploid and Diploid cell
5. Vasectomy and tubectomy

Question 4

A. Potato cubes 1 cm³ were placed in two containers, one containing water, the other containing concentrated sugsr solution. After about 24 hrs when the cubes were examined, those placed in water were found to be firm and had increased in size by a few millimeters. Those placed in concentrated sugar solution were found to be soft and had decreased in size. Use the information to answer the following questions- [5]

1. Account for the firmness and the increase in size of the potato cubes that were placed in water.
2. Account for the softness and the decrease in size of the potato cubes in hypertonic solution.
3. Name and define the physical process being investigated in this experiment.
4. Mention one significance of this process in plants.
5. What difference will it show if the potato cubes were boiled and then kept in hypertonic solution.

B. Answer the following-

i. Given figure X is a part of human eye.

1. In the fig. X, label A and C
2. What happens to structure B when structure C contracts?

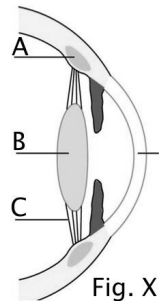


Fig. X

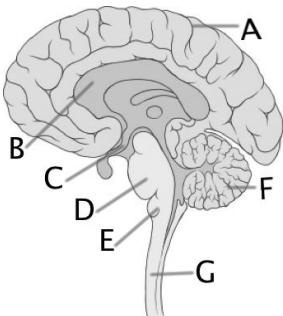
ii. State whether the following are simple reflexes, conditioned reflexes or neither of the two.

1. Sneezing
2. Blushing
3. Contraction of pupil
4. Lifting a book
5. Knitting without looking
6. Sudden application of brake without thinking.

Question 5

A. Given below is the internal section of human brain

[5]



1. Name the regions of part A.
2. What is function of part B?
3. Identify the part associated with the endocrine system and name it.
4. What is part F? Give its function.

B. i. Give biological reasons for the following.

[5]

1. Plant cell division is called anastral division.
2. Water deficiency on sunny afternoon leads to slow rate of photosynthesis.
3. The right kidney is placed at a slightly lower level than the left.

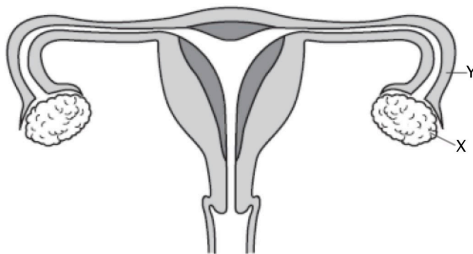
ii. Complete the given table by filling number 1 to 4.

Gland	Hormone secreted	Effect on the body
.....1.....	.....2.....	Regulates the BMR
Pancreas(b-cell)	.....3.....	.....4.....

Question 6

A. Given below is the diagram of the female reproductive system.

[5]



i. Redraw the figure, fill in and label the following:

- a. Uterus
- b. Amnion
- c. Embryo
- d. Placenta

ii. Name the structure homologous to X and Y in males.

iii. Name the pituitary hormones acting on structure X.

B. Answer the following-

[5]

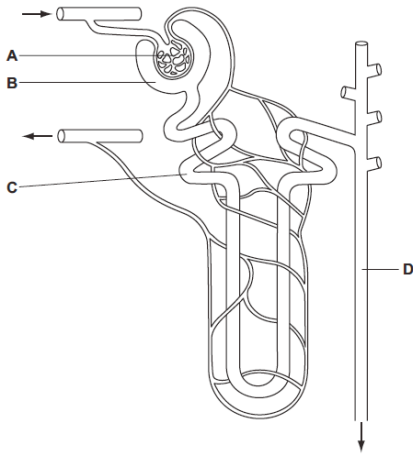
Ben is heterozygous for folded eyelids. This is a dominant trait. He marries Rachel who does not have folded eyelids. Use the letter “E” to represent this allele and answer the following questions:

- a. What are Ben and Rachel’s genotypes?
- b. If they have children, what are the possibilities of their genotypes?
- c. What are the possible phenotypes?
- d. Define the term “allele”

Question 7

A. Given below is a part of the kidney.

[5]



- Identify the structure
- Name the process taking place between A and B
- What is structure C? What process takes place here?
- Name the part of the tubule that (normally) contains the least amount of glucose and that contains maximum glucose.
- Name two things that do not move from A to B.
- How is this structure arranged in the kidney?

B. Explain the role of the following health aids-

[5]

1. Antiseptics
2. Disinfectants
3. Vaccines
4. Analgesics
5. Antibiotics