

MT

2017 ___ ___ 1100

MT - SCIENCE & TECHNOLOGY - II (72) - SEMI PRELIM - II : PAPER - 1

Time : 2 Hours

Model Answer Paper

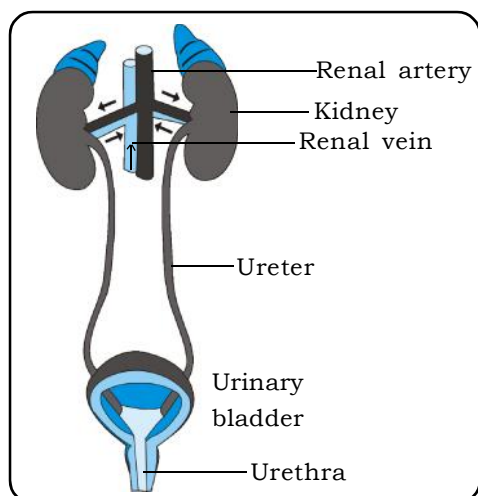
Max. Marks : 40

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| A.1. (A) Fill in the blanks: | | |
| (1) Pulmonary artery takes blood to the lungs for oxygenation. | | 1 |
| (2) Response to the stimulus of touch is called seismonastic response whereas response to the stimulus of chemicals is called as chemotropism . | | 1 |
| (3) Eco-efficiency means the creation of goods and services using fewer resources and creating less waste. | | 1 |
| A.1. (B) State whether the following statements are true or false and if false, write the correct statement: | | |
| (1) False - Carbohydrates are energy giving nutrients. | | 1 |
| (2) False - When light falls on growing plants, the hormone auxin is synthesized at the tip of the shoot. | | 1 |
| A.2. Rewrite the following statements by selecting the correct alternative: | | |
| (1) To observe stomata in dicot leaf we must prepare a slide by taking a lower epidermis of leaf . | | 1 |
| (2) Which of the following is not essential for photosynthesis oxygen . | | 1 |
| (3) To absorb CO ₂ and create partial vacuum in the flask. | | 1 |
| (4) The movement of the plant in response to the stimulus of light is called phototropic movement. | | 1 |
| (5) When a student observed a stomatal epidermal peel of a leaf under microscope, it appeared pinkish red in colour. The stain used was safranin . | | 1 |
| A.3. Answer the following in short : (Any 5) | | |
| (1) (i) Food is synthesized in the leaves of the plants. | | 2 |
| (ii) This synthesized food is to be supplied to all parts of the plants like flowers, roots, fruits, etc. | | |

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| | <p>(iii) Movement of the synthesized glucose from one part of the plant to other part is called translocation.</p> <p>(iv) In the flowering season, sugar stored in roots or stems is translocated to the buds for growing them into flowers. Hence translocation is needed in all tall plants.</p> | |
| (2) | <p>(i) Neurons are of three types i.e. sensory neurons, motor neurons and association neurons.</p> <p>(ii) Sensory neurons conduct impulses from the sense organs to the brain and spinal cord.</p> <p>(iii) Motor neurons conduct impulses from the brain and spinal cord to the effector organs like muscles and glands.</p> <p>(iv) Association neurons perform integrative functions of the nervous system.</p> | 2 |
| (3) | <p>(i) Closing of leaflets of mimosa plant when touched.</p> <p>(ii) Opening of lotus in the morning and tube rose at night.</p> <p>(iii) Insectivorous plants like drosera curl inwards at the touch of an insect and trap the insect.</p> <p>(iv) The explosive fruit of balsam plant bursts open at an appropriate time thus scattering the seeds.</p> | 2 |
| (4) | <p>(i) Liver, the largest gland in the body secretes bile juice which is stored in the gall bladder.</p> <p>(ii) Whenever food enters the small intestine, the gall bladder releases bile into it through a duct.</p> <p>(iii) Bile makes the food alkaline and breaks the large fat globules into smaller ones, this increases the enzyme action.</p> <p>(iv) Pancreas secretes digestive juice. It has digestive enzymes like lipase which helps to break down fats.</p> <p>(v) Various intestinal juices are also secreted by the walls of the small intestine to complete the digestion process of converting fats into fatty acids.</p> | 2 |
| (5) | <p>Consumerism is the desire to purchase more goods and services which may not be required at that time. This leads to consumption of more resources and generates more waste e.g. many times people buy new TV sets, mobiles etc. just because a new model has come in the market and they discard the old one.</p> <p>(i) This leads to generation of waste which is hazardous to the environment.</p> <p>(ii) The silicon chips, batteries etc. from these e-waste pollutes ground water due to leakage of acids, heavy metals etc.</p> <p>(iii) These heavy metals are hazardous to human life. This in turn would affect sustainable development.</p> | 2 |

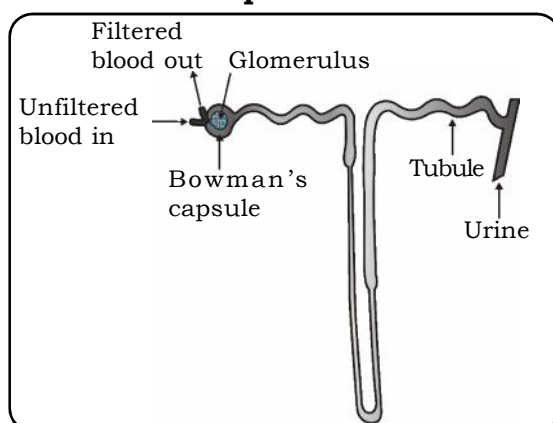
(6) **Human excretory system :**

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(7) **Structure of nephron :**

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A.4. Answer the following in brief : (Any 5)

- (1) (i) Reduce, reuse and recycle is the three 'R mantra'. This is an effective way to eliminate waste and conserve resources.
 (iii) Reduce means using fewer resources in the first place.
 (iv) Reuse means instead of throwing things away, try to find ways to use them again.
 (v) Recycle means the items are put through a process that makes it possible to create new products out of the materials from the old ones.
 (vi) Reducing, reusing and recycling cut the amount of energy used to produce new items and amount of pollution generated as a result. It also conserves valuable natural resources that would otherwise be used to produce new items from raw materials.

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| (2) | <p>Lymph :</p> <p>(i) When blood flows in the capillaries, some amount of water, proteins and dissolved solutes are filtered out from the blood plasma into the tissue spaces. This forms the tissue fluid.</p> <p>(ii) This fluid is similar to blood plasma except that it has very less amount of proteins in it because the capillary wall is impermeable to plasma proteins.</p> <p>(iii) Some amount of this fluid enters small channels called lymph vessels and the fluid now is known as lymph.</p> <p>(iv) This light yellow fluid flows only in the direction that is from the tissues to the heart.</p> | 3 |
| (3) | <p>(i) The alimentary canal begins with the mouth.</p> <p>(ii) The food is processed in the mouth to generate particles with small size.</p> <p>(iii) Such crushed food is wetted with saliva secreted by the salivary glands so the food can smoothly pass through the soft lining of the alimentary canal.</p> <p>(iv) The food that we take is of complex nature. It is converted into simpler molecules with the help of biological catalysts called as enzymes. Enzyme salivary amylase breaks down starch into a simple sugar maltose. Thus digestion starts in the mouth itself.</p> | 3 |
| (4) | <p>Reflex action :</p> <p>(i) Any sudden change in response to some happening in the environment, is called as reflex action.</p> <p>(ii) We react to such a situation without thinking about it or without feeling in control of our reactions.</p> <p>(iii) Example : When we touch a vessel containing very hot tea, immediately the hand is withdrawn.</p> <p>(iv) In this case, the nerves that detect pain are connected to the nerves that bring about the action of the muscle, hence the action is completed quickly.</p> <p>(v) Nerves from all over the body meeting in a bundle in such a connection is called as the spinal cord.</p> <p>(vi) Hence reflex arcs are formed in the spinal cord, although the messages reach the brain.</p> | 3 |
| (5) | <p>The functions of the forebrain are -</p> <p>(i) It is the main thinking part of the brain.</p> <p>(ii) It has sensory areas where information is received from sense organs.</p> <p>(iii) It has motor areas from where impulses are sent to muscles or</p> | 3 |

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| | <p>effector organs. It controls voluntary actions.</p> <p>(iv) It has centres for visual reception, auditory reception, touch, smell, temperature etc.</p> <p>(v) It has centres known as association areas which put together the information received from other receptors as well as information that is already stored in the brain.</p> <p>(vi) It is also the site for intelligence.</p> | |
| (6) | <p>(i) Plants do not have definite excretory system or organ for removal of wastes.</p> <p>(ii) Gaseous excretory materials are eliminated by diffusion.</p> <p>(iii) Many plant waste products are stored in the vacuoles of the leaves, flowers, fruits and even in the bark that falls off. Other waste products are stored as resins and gums in old xylem.</p> <p>(iv) Plants also excrete some waste substances in the soil around them.</p> <p>(v) In some plants, waste is in the form of calcium oxalate crystals called as raphides. These are needle shaped and therefore hurt and cause itching.</p> <p>(vi) Some plant wastes are very useful to human beings. e.g. rubber latex, gum, resins and essential oils like eucalyptus or sandalwood oil.</p> | 3 |
| (7) | <p>The process of release of energy from the assimilated food is called respiration. Depending upon the availability of oxygen, respiration is of two types :</p> <p>(i) Aerobic respiration : It occurs in the presence of oxygen.</p> <p>(ii) Anaerobic respiration : It occurs in the absence of oxygen.</p> | 3 |
| A.5. | Answer in detail: (Any 1) | |
| (1) | <p>(a) Anaerobic reaction CO₂ + Ethanol + 2 ATP.</p> <p>(b) Reaction in human muscles Lactic acid.</p> <p>(c) Aerobic respiration CO₂ + H₂O.</p> <p>(d) Reaction in plant cell Starch.</p> <p>(e) Reaction in Liver Glycogen.</p> | 1 1 1 1 1 |
| (2) | <p>The movement or growth of any part of a plant in response to an external stimulus is called tropism or a tropic movement. Tropic movements are of three types :</p> <p>(i) Phototropic movement (Phototropism) : The movement of a plant in response to the stimulus of light is called phototropism. e.g. the shoot system of any plant responds towards the stimulus of light i.e. it grows in the direction of source of light.</p> | 5 |

- (ii) Gravitropic movement (Gravitropism) : The root system of the plants responds to the stimulus of gravity. This movement is called gravitropic movement.
- (iii) Hydrotropic movement (Hydrotropism) : The root system of the plants responds to the stimulus of water. This movement is called hydrotropic movement.
- (iv) Chemotropic movement (Chemotropism) : It is the movement of a plant part in response to certain chemicals. e.g. the growth of pollen tube towards the ovules.

