

MAHESH TUTORIALS I.C.S.E.

ICSE X

SUBJECT : **BIOLOGY**

BOARD PAPER – 2013

ANSWER SHEET

SECTION - A (40 marks)

(Attempt all questions from this section)

Answer 1

(a)

- | | |
|---|---|
| (i) Cyton | 1 |
| (ii) Cuticle | 1 |
| (iii) DDT (Dichloro Diphenyl Trichloroethane) | 1 |
| (iv) Phenotype | 1 |
| (v) Glomerulus | 1 |

(b)

- | | |
|--|---|
| (i) Chloroplast : In mesophyll cells located between upper and lower epidermis. | 1 |
| (ii) Incus : In middle ear inside tympanic cavity. | 1 |
| (iii) Corpus callosum : Thick band of nerve fibres joining two cerebral hemispheres of cerebrum. | 1 |
| (iv) Guard cells : Pair of guard cells surround the stomata on the upper and lower epidermis of leaf. | 1 |
| (v) Pulmonary semilunar valve : In right ventricle which guards the opening of pulmonary trunk. | 1 |

(c)

- | | |
|--|---|
| (i) Odd term : Boric acid
Category : Food preservatives | 1 |
| (ii) Odd term : Bile
Category : Glandular (exocrine) secretion containing lysozyme. | 1 |
| (iii) Odd term : Acromegaly
Category : Disorders of thyroid gland. | 1 |
| (iv) Odd term : Typing
Category : Unconditioned reflexes. | 1 |
| (v) Odd term : Tympanum
Category : Parts of inner ear | 1 |

(d)

Column A	Column B	
(i) Testis	(f) Gonad	1
(ii) Poliomyelitis	(g) Salk's vaccine	1
(iii) Transpiration	(b) Water vapour	1
(iv) Clotting of blood	(i) Calcium	1
(v) Uriniferous tubule	(a) Kidney	1

(e)

- (i) The cell component visible only during cell division is **chromosome**. 1
- (ii) Pulse wave is mainly caused by the **systole of the left ventricle**. 1
- (iii) The recessive gene is one that expresses itself in **homozygous conditions**. 1
- (iv) A gland which secretes both hormone and enzyme is the **pancreas**. 1
- (v) The ventral root ganglion of the spinal cord contains cell bodies of the **motor neuron**. 1

(f)

- (i) Neutrophils : engulf microbes (phagocytosis) 1
- (ii) Ureter : carries urine from kidneys to the urinary bladder. 1
- (iii) Neurotransmitters : conduction of nerve impulse 1
- (iv) Iris of the eye : regulate the amount of light entering into the eye. 1
- (v) Placenta : Attachment of the foetus to uterus, connection with mother's blood. 1

(g)

- (i) To show/prove that CO₂ is necessary for photosynthesis 1
- (ii) No CO₂ in the flask, (due to presence of KOH) 1
- (iii) CaO (limestone), potassium pyrogallate. 1
- (iv) Leaf 1, no change in colour with starch test. 1
- Leaf 2, will turn blue black at the end of starch test. 1

(h)

- (i) Upper epidermis - palisade tissue - spongy cells - substomatal space - stoma 1
- (ii) Receptor - sensory neuron - spinal cord - motor neuron - effector 1

- (iii) Soil water - root hair - cortex - endodermis - xylem 1
- (iv) Prophase - metaphase - anaphase - telophase - cytokinesis. 1
- (v) Intestinal artery - intestine - hepatic portal vein - liver - hepatic vein. 1

SECTION - B (40 marks)
(Attempt any four questions from this section)

Answer 2

(a)

- (i) (1) Seminiferous tubules 1
 (2) Testicular lobules
 (3) Epididymis
 (4) Vas deferens (sperm duct)
- (ii) (1) **Seminiferous tubules** : Sperm production by the process of spermatogenesis.
 (3) **Epididymis** :
 (i) It is a site for storage of sperms and sperm maturation. ½
 (ii) Helps in transportation of sperms from seminiferous tubules into vas deferens. ½
- (iii) Scrotal sac acts as thermoregulator. The temperature in scrotal sac remains 2-3°C lower than the body temperature which is suitable for maturation of sperms. 1
- (iv) The inguinal canals, facilitate the movement (descent) of testes from the abdominal cavity into the scrotal sacs, during the birth of a male child. Also, The sperm duct (vas deferens) from each testis travels upward into the abdomen passing through an inguinal canal. 1
- (v) Semen is a mixture of mature sperms and secretions of various male reproductive accessory glands. It is milky fluid. 1

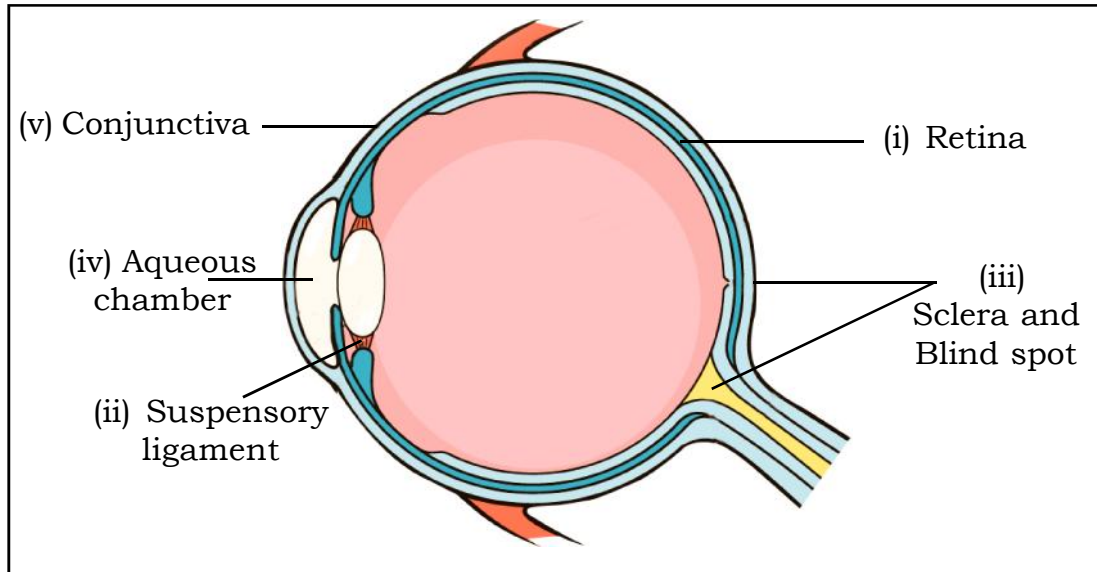
(b)

5

- (i) Chemicals found in the blood which act against antigens - **Antibodies**
- (ii) A constituent that causes pollution - **Pollutant**
- (iii) Onset of menstruation in a young girl - **Menarche**
- (iv) Structure which connects the placenta with the foetus - **Umbilical cord**
- (v) The fluid present between the layers of meninges - **Cerebrospinal fluid**
- (vi) Permanently open structures seen on the bark of an old woody skin - **Lenticels.**
- (vii) The biological process which is the starting point of food chain - **Photosynthesis**
- (viii) The change in an organism resulting due to stimulus - **Response**
- (ix) An antiseptic present in tears - **Lysozyme**
- (x) A solution in which the relative concentration of water molecules and the solute on either side of the cell membrane is the same - **Isotonic solution.**

Answer 3

(a)



5

(b)

5

(i)	<p>Photolysis</p> <p>Photolysis is the splitting up of water molecule into hydrogen and hydroxyl ions in the presence of light during the light phase of photosynthesis.</p>	<p>Photophosphorylation</p> <p>It is the synthesis of a high grade energy molecule ATP from a low grade energy molecule ADP during the light phase of Photosynthesis</p>
(ii)	<p>Bicuspid valve</p> <p>Allows blood to flow from left atrium to left ventricle.</p>	<p>Tricuspid valve</p> <p>Allows blood to flow from right atrium to right ventricle.</p>
(iii)	<p>Vasectomy</p> <p>Sperm duct (vas deferens) is cut and surgically ligated at both cut ends in males for control of fertility.</p>	<p>Tubectomy</p> <p>Surgical cutting of the fallopian tubes and ligating the cut ends in females for control of fertility.</p>
(iv)	<p>Cerebrum</p> <p>Outer gray matter that forms the cortex, contains cell bodies of neurons. Inner white matter contains nerve fibres.</p>	<p>Spinal cord</p> <p>Outer white matter contains axons. Inner gray matter contains cell bodies of motor and association neurons.</p>
(v)	<p>Bowman's capsule</p> <p>Epithelial cells, glomerulus (Blood capillaries).</p>	<p>Malpighian capsule</p> <p>Glomerulus, Bowman's capsule.</p>

Answer 4

(a)

- (i) F₁ progeny is Axial round 1
- (ii) F₂ progeny are Axial round, axial wrinkled, terminal round, terminal wrinkled. 1
- (iii) Phenotypic ratio of F₂ progeny 9 : 3 : 3 : 1. 1
- (iv) **Law of Independent Assortment** : When there are two or more pairs of contrasting characters, the factors or genes controlling different characters assort independently without influencing each other during the formation of gametes. 1

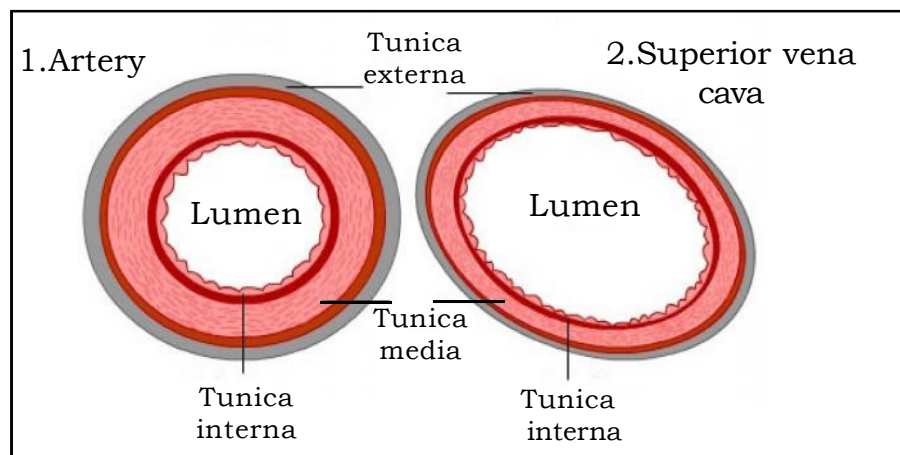
(b)

- 1. Thyroxine. ½
- 2. Regulates basal metabolism. ½
- 3. Posterior lobe of pituitary gland. ½
- 4. Reabsorption of water from urinary filtrate by kidney tubules. ½
- 5. Pancreas ½
- 6. Insulin ½
- 7. Tears ½
- 8. Lubricates eye surface, keeps the eyes clean and protects the eyes from bacterial infection. ½
- 9. Adrenaline ½
- 10. Prepares body for any emergency (fight or flight). ½

Answer 5

(a)

- (i) Atrial systole 1
- (ii) 1. Left pulmonary artery 1
2. Superior vena cava
3. Aorta
- (iii) Simultaneous contraction of both the auricles, because the cuspid valves are open, allowing blood to flow into ventricles. 1
- (iv) 1. Artery 1



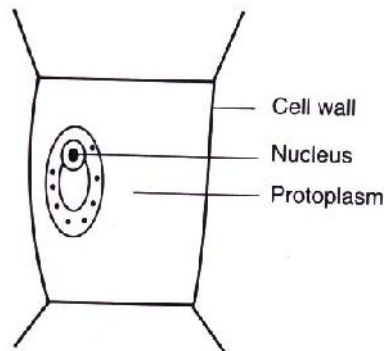
(b)

- (i) The wall of the ventricle is thicker than the auricles as ventricles are the distributing chambers. They have to pump blood to long distances, particularly left ventricle has to pump the blood into aorta under high pressure against the force of gravity. **1**
- (ii) The renal cortex has a dotted appearance. Both the Bowman's capsule and the proximal convoluted part lie in the renal cortex giving it a dotted appearance in sectional view. **1**
- (iii) Wood is highly hydrophilic i.e. has strong affinity for water. The cellulose (wood) imbibes water from surroundings and swells up. Thus the doors get jammed inside the frames. **1**
- (iv) Throat infections can lead to ear infections because eustachian tube connects middle ear with the throat, so infection can be passed. **1**
- (v) The hand automatically shows the direction to turn a cycle without thinking because of conditioned reflex which we learn by experience and gradually respond to it unconsciously. **1**

Question 6

(a)

(i)



- (ii) Plasmolysis or flaccidity. **1**
- (iii) It must be placed in a hypotonic solution. **1**
- (iv) Deplasmolysis. **1**
- (v) Osmosis is the diffusion of water molecules through a semi-permeable membrane from a region of higher concentration of water molecules to a region of lower concentration of water molecules. **1**

(b)

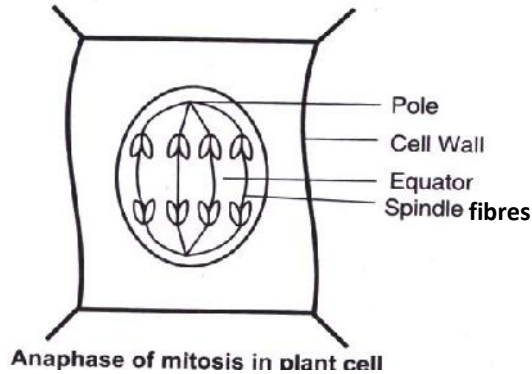
- (i) **Genes** : Genes are units of heredity that determine particular traits (e.g. colour of hair, blood group, colour of eye etc.) **1**
- (ii) **Cytokinesis in plant cells** : Cell plate is formed at the equator, it starts from the middle and proceeds towards periphery. Process in which the cytoplasmic content of the cell is divided into two new daughter cells. **1**
- (iii) **Guttation** : It is the loss of water in the form of water droplets from the leaf hydathodes present on leaf margins. **1**

- (iv) **Diabetes insipidus** : Deficiency of ADH (antidiuretic hormone) leads to frequent and copious urination resulting in loss of water from the body. **1**
- (v) **Disinfectants** : These are strong chemical substances that are applied on spots and places where germs multiply. They are used to sterilize hospital, operation rooms, instruments etc.eg. Phenol. **1**

Answer 7.

(a)

(i)



- (ii) (1) Destroys the soil micro-organisms as well as the crop.
 (2) Acid rain corrodes the buildings, statues. **1**
- (iii) (1) NADP - Nicotinamide Adenine Dinucleotide Phosphate.
 (2) ACT - Adreno-Cortico-Tropin. **1**
- (b)**
- (i) (1) To extend relief and help to the victims of calamities like flood, famine, earthquake, etc. **1**
 (2) To procure and supply blood to the needy victims of war and other calamities. **1**
- (ii) Reasons for the population explosion in the world are :
 a) Better health care for all age groups.
 b) Fewer deaths due to better medical aid.
 c) Food shortage minimised due to green revolution.
 d) Improved nutrition due to consciousness.
 e) Large scale immunisation against fatal diseases.
 f) Fewer infant deaths more people reach reproductive age which contributes to population growth. **2**
- (iii) Adenine, Guanine, Cytosine, Thymine **1**

