

# MAHESH TUTORIALS I.C.S.E.

ICSE X

SUBJECT : **BIOLOGY**

BOARD PAPER – 2014

ANSWER SHEET

SECTION - A (40 marks)

*(Attempt all questions from this section)*

## Answer 1

**(a)**

- |                                      |   |
|--------------------------------------|---|
| (i) Cerebrum                         | 1 |
| (ii) Malleus (Hammer)                | 1 |
| (iii) Recessive                      | 1 |
| (iv) Insulin, Glucagon, Somatostatin | 1 |
| (v) Photophosphorylation             | 1 |

**(b)**

- |   |   |
|---|---|
| (i) It provides mechanical protection and nourishment to brain.                           | 1 |
| (ii) It equalizes air pressure on both sides of the eardrum helping it to vibrate freely. | 1 |
| (iii) It helps to suspend or hold the lens in position.                                   | 1 |
| (iv) It carries sperms from the epididymis to the urethra.                                | 1 |
| (v) They facilitate transpiration in older stem and allow diffusion of gases.             | 1 |

**(c)**

- |                  |   |
|------------------|---|
| (1) follicle     | 1 |
| (2) Graafian     | 1 |
| (3) ovulation    | 1 |
| (4) oviduct      | 1 |
| (5) implantation | 1 |

**(d)**

- |                               |  |   |
|-------------------------------|--|---|
| (i) Odd term - Glucagon       | Category - Pigments in human body.           | 1 |
| (ii) Odd term - Uterus        | Category - Parts of excretory system.        | 1 |
| (iii) Odd term - Phagocytosis | Category - Processes in Plant                | 1 |
| (iv) Odd term - Photon        | Category - Parts of a neuron                 | 1 |
| (v) Odd term - Insulin        | Category - Female sex/reproductive hormones. | 1 |

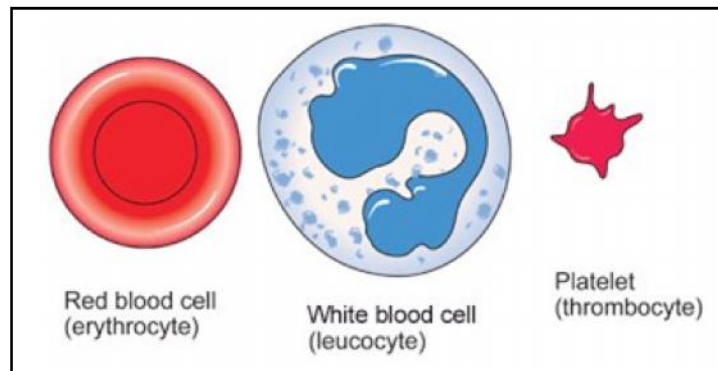
- (e)**
- (i) Transpiration 1
- (ii) It is a process during which water in the form of water vapour is lost through the aerial parts of the plant. (Stomata, lenticles, cuticle) 1
- (iii) Weight of test tube A will decrease after the experiment because water will be lost from it through the leaves by transpiration. Weight of test tube B will remain unchanged after the experiment because water will not be lost by transpiration as there is no plant in it and nor by evaporation as oil is spread over it, which will not allow evaporation. 2
- (iv) It is a control experiment where the purpose of using test tube B is to compare the level of water in both test tubes. 1
- (f)**
- | <b>Column A</b>            | <b>Column B</b>    |   |
|----------------------------|--------------------|---|
| (i) Pituitary gland        | (c) Growth hormone | 1 |
| (ii) Sulphur dioxide       | (d) Acid rain      | 1 |
| (iii) Seminiferous tubules | (e) Sperms         | 1 |
| (iv) Clotting of blood     | (b) Calcium        | 1 |
| (v) Guttation              | (h) Hydathodes     | 1 |
- (g) Choose the correct answer from the options given below :**
- (i) Cretinism and Myxoedema are due to **hyposecretion of thyroxin.** 1
- (ii) **Salivation at the sight of food** is not a natural reflex action. 1
- (iii) After mitotic cell division, a female human cell will have **44 + xx chromosomes.** 1
- (iv) The antibiotic penicillin is obtained from **fungus.** 1
- (v) The site of maturation of human sperms is the **epididymis.** 1
- (h) State the exact location of the following :**
- (i) Tricuspid valve — Between right auricle and right ventricle. 1
- (ii) Amnion— Around the embryo in uterus and inner to chorion. 1
- (iii) Yellow spot— On the horizontal median axis of eyeball in retina. 1
- (iv) Seminal vesicles — Lobulated glands located between the posterior surface of the urinary bladder and the rectum. 1
- (v) Adrenal gland—Above each kidney fitted like a cap. 1

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

**Question 2**

<b>(a)</b>	<b>5</b>	
<b>(i)</b>	<b>Spinal nerves</b>	<b>Cranial nerves</b>
	31 pairs	12 pairs
<b>(ii)</b>	<b>Near vision</b>	<b>Distant vision</b>
	More convex or curved	More flattened (less convex)
<b>(iii)</b>	<b>Corpus callosum</b>	<b>Corpus luteum</b>
	Transfers information from one cerebral hemisphere to the other.	It secretes progesterone
<b>(iv)</b>	<b>Turgor pressure</b>	<b>Wall pressure</b>
	It is the pressure exerted by the contents of a turgid cell on its cell wall.	It is the pressure exerted by the cell wall on contents (protoplasm) of a turgid cell.
<b>(v)</b>	<b>Disinfectant</b>	<b>Antiseptic</b>
	These are strong chemicals applied at places where the germs live and multiply.	These are mild chemicals applied on the body to kill germs.

- (b)**
- (i) (1) Anterior/superior vena cava. (2) Aorta **1**
  - (ii) (5) Carries oxygenated blood to the liver. **1**
  - (8) Brings deoxygenated blood from lower parts of the body to heart. **1**
  - (iii) It brings all the digested food and deoxygenated blood from parts of alimentary canal (gut) to liver.  $\frac{1}{2}$
  - (iv) Blood vessel number 6 - Hepatic Portal Vein  $\frac{1}{2}$
  - (v) **1**



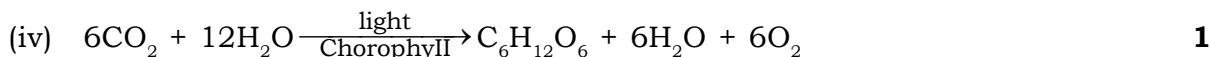
**Answer 3**

(a)

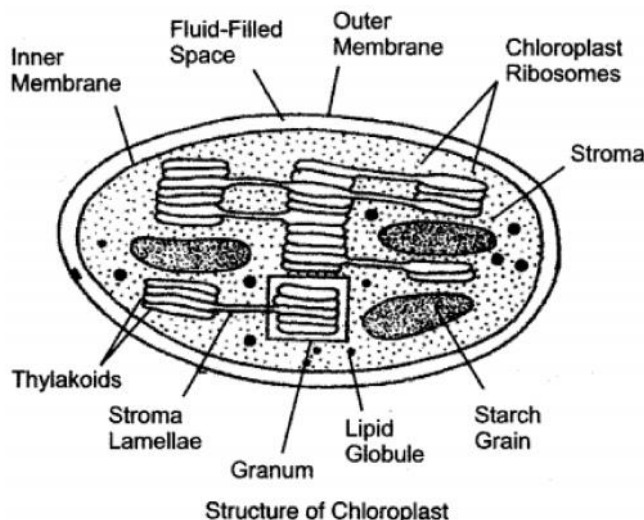
- (i) Beaker 1 : Hypotonic solution  
Beaker 2 : Hypertonic solution  
Beaker 3 : Isotonic solution
- (ii) In beaker 3 the size of potato cube remains the same because of isotonic solution which has same concentration of solutes as that of potato cells. So water is neither lost nor gained by the potato cells.
- (iii) Cell sap of root hairs is much more concentrated than the soil solution and this causes entry of water into the root cells.
- (iv) Osmosis is a process in which solvent molecules move from a solution of their higher concentration to a solution of their lower concentration across a semi-permeable membrane.
- (v) Cell wall is freely permeable while cell membrane is selectively permeable.

(b)

- (i) That light is necessary for photosynthesis. 1
- (ii) To remove all stored starch from the leaves of the plant. 1
- (iii) (1) To kill the cells.  
(2) To chlorophyll pigment. 1



(v)



1

**Answer 4**

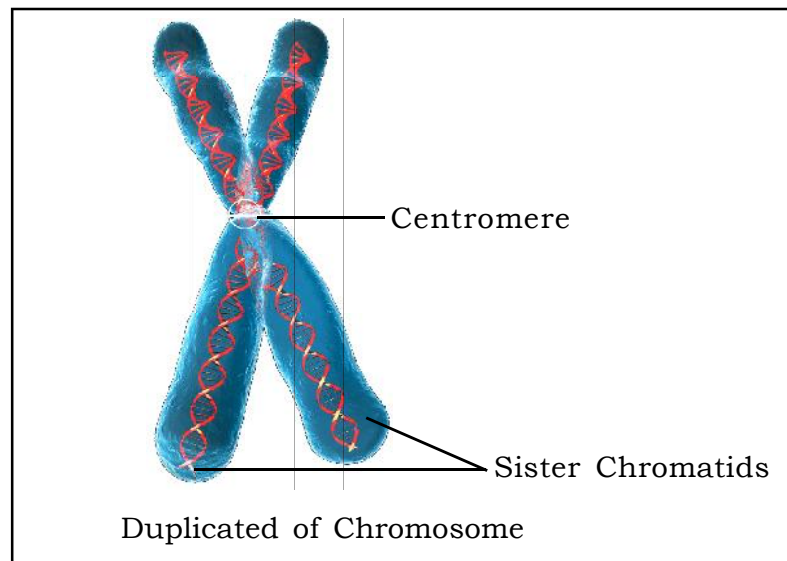
(a)

- (i) Reflex action 1
- (ii) Synapse 1
- (iii) (5) It receives messages from sensory neuron and passes it to the motor neuron. 1
- (6) It passes impulses from the spinal cord to the effector organ. 1

- (iv) In spinal cord the grey matter is inside and white matter is outside around it. In brain grey matter is outside and white matter is inside. **1**
- (b)**
- (i) CFC reacts with ozone in the atmosphere and decreases it. This has created a thinner layer of ozone in the air specially over the polar region. Harmful ultraviolet rays would be able to enter the earth's atmosphere through this thin ozone layer and cause damage to life and diseases like skin cancer in humans. **1**
- (ii) In dim light colours cannot be distinguished because the rod cells are working in dim light but they do not detect colours. Cone cells detect colours but they do not work in dim light like that of moon. **1**
- (iii) Transpiration rate in plants like Balsam is very high during mid-day and exceeds the water absorption rate of the roots. So more water is lost than absorbed. This water deficiency in cells causes them to lose turgidity and the plants get wilt. **1**
- (iv) Carbon monoxide combines with haemoglobin of RBCs and forms a stable compound known as carboxyhaemoglobin. This decreases the oxygen carrying capacity of blood, sometimes resulting in death of person. **1**
- (v) Alcohol affects the cerebellum which is the centre of body balance and co-ordination. Due to the alcohol effect the cerebellum is unable to co-ordinate muscular movements properly. **1**

**Answer 5**

- (a)**
- (i) It is plant cell, because centrosome is absent and spindle apparatus is not connected to it. **1**
- (ii) Prophase. **1/2**
- (iii) Metaphase - In this stage the chromosome lies in one plane at equator and gets attached to a spindle fibre by its centromere. **1 1/2**
- (iv) Mitosis : Diploid number of chromosomes are present in the daughter cells.  
Meiosis : Haploid number of chromosomes are present in the daughter cells. **1**
- (v)



**1**

- (b)**
- |       |                                  |                                 |          |
|-------|----------------------------------|---------------------------------|----------|
| (i)   | (1) Poliomyelitis                | (2) Tuberculosis                | <b>1</b> |
| (ii)  | (1) Pesticides                   | (2) Hydrilla                    | <b>1</b> |
|       | (3) Penicillin                   | (4) Adenine                     | <b>1</b> |
| (iii) | (1) Adenosine Triphosphate       | (2) Thyroid Stimulating Hormone | <b>1</b> |
|       | (3) Diphtheria Pertussis Tetanus | (4) Deoxyribo Nucleic Acid      | <b>1</b> |

**Answer 6**

- (a)**
- |       |   |                              |               |
|-------|---|------------------------------|---------------|
| (i)   | (1) Collecting tubule   | (2) Distal convoluted tubule | <b>2</b>      |
|       | (3) Loop of Henle.  | (4) Bowman's capsule.        |               |
| (ii)  | The afferent arteriole entering the Bowmans capsule is wider than the efferent arteriole which leaves it. So more blood is entering and less blood is moving out of the glomerulus. |                              | <b>1</b>      |
| (iii) | Renal venule.   |                              | $\frac{1}{2}$ |
| (iv)  | Ultrafiltration, Selective Reabsorption and Tubular Secretion.  |                              | <b>1</b>      |
| (v)   | Loop of Henle.  |                              | $\frac{1}{2}$ |

- (b)**
- |       |  |          |
|-------|--|----------|
| (i)   | Monohybrid cross is a cross between two pure breeding different varieties of organisms taking the alternative traits of a single character e.g., cross between pure tall and pure dwarf variety. | <b>1</b> |
| (ii)  | Biomedical waste is the waste that is generated in the hospitals, nursing homes etc., like used bottles, syringes, plastic, bandages etc.  | <b>1</b> |
| (iii) | Innate immunity is the one that occurs as a result of a person's genetic constitution.   | <b>1</b> |
| (iv)  | Diapedesis is the movement of the blood cells, especially white blood cells through intact capillary walls into surrounding body tissue.   | <b>1</b> |
| (v)   | Hormones are chemical messengers produced by endocrine glands and they move through blood to reach their target organs.  | <b>1</b> |

**Answer 7.**

- (a)**
- |       |   |   |               |         |          |
|-------|---|---|---------------|---------|----------|
| (i)   | (1) It causes hypertension.   | (2) It causes hearing impairment.   | <b>1</b>      |         |          |
| (ii)  | (1) WHO   | (2) Red Cross   | (3) Red Cross | (4) WHO | <b>2</b> |
| (iii) | (1) Desire for a male child.  | (2) Economic reasons as children are considered to be helping hands increase the family income. | <b>1</b>      |         |          |
| (iv)  | Law of segregation states that the two members of a pair of factors separate during formation of gametes and are rejoined at random, one from each parent during fertilization. |   | <b>1</b>      |         |          |
- (b)**
- |       |             |               |
|-------|-------------|---------------|
| (i)   | Vasectomy   | $\frac{1}{2}$ |
| (ii)  | Demography  | $\frac{1}{2}$ |
| (iii) | Pericardium | $\frac{1}{2}$ |
| (iv)  | Mutation    | $\frac{1}{2}$ |

(v) Nucleotides	½
(vi) Plasma	½
(vii) Auditory nerve	½
(viii) Tropic hormones	½
(ix) Scrotum	½
(x) Menopause	½

