

MAHESH TUTORIALS I.C.S.E.

ICSE X

SUBJECT : **BIOLOGY**

BOARD PAPER – 2015

ANSWER SHEET

SECTION - A (40 marks)

(Attempt all questions from this section)

Answer 1

(a)

- | | |
|-----------------------|---|
| (i) Active transport | 1 |
| (ii) Glycogen | 1 |
| (iii) Pulmonary veins | 1 |
| (iv) Monohybrid cross | 1 |
| (v) Placenta | 1 |

(b)

- | | |
|---|---|
| (i) Alpha cells of pancreas secrete glucagon . | 1 |
| (ii) Formalin is an example of a disinfectant . | 1 |
| (iii) SO₂ is mainly responsible for the formation of acid rain. | 1 |
| (iv) Sulphadiazine is an example of an antibiotic . | 1 |
| (v) Cretinism is caused due to deficiency of thyroxine . | 1 |

(c)

- | | |
|------------------------|---|
| (i) A - Epididymis | 1 |
| (ii) A - Metaphase | 1 |
| (iii) C - Tuberculosis | 1 |
| (iv) B - Cerebellum | 1 |
| (v) D - DDT | 1 |

(d)

- | | |
|--|---|
| (i) Present in the stroma of the chloroplast. | 1 |
| (ii) Present in the median canal of cochlea of internal ear. | 1 |
| (iii) Present in the epidermis of the stems of old woody plants. | 1 |
| (iv) Present in between the left auricle and left ventricle. | 1 |
| (v) Present in the (inner) medulla region of the kidney. | 1 |

(e)

- | | |
|---|---|
| (i) Anaphase | 1 |
| (ii) A - Spindle fibre | |
| B - Centromere | 2 |
| (iii) Two sister chromatids of each chromosome separate and are drawn apart towards opposite poles. | 1 |
| (iv) Two daughter cells are formed from this type of cell division. | 1 |

- (f)**
- (i) Xylem and Conduction of water and minerals in the plant body. 1
 - (ii) Ciliary body and Accommodation of eye lens 1
 - (iii) Seminiferous tubule and Spermatogenesis 1
 - (iv) Thyroid gland and Control of basal metabolic rate. 1
 - (v) Eustachian tube and Balance of air pressure on either side of the eardrum/tympanum. 1

- (g)**
- (i) Bleeding 1
 - (ii) *Pisum sativum* 1
 - (iii) Vitreous humour 1
 - (iv) Oxyhaemoglobin 1
 - (v) Acid rain 1

(h)

	Column A	Column B	
(1)	Allele	(c) Alternate forms of genes	1
(2)	Leydig cells	(e) Testosterone	1
(3)	Utriculus	(g) Static equilibrium	1
(4)	Snake bite	(b) Tourniquet	1
(5)	Euro IV norms	(a) Control of automobile exhaust	1

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

Answer 2

- (a)**
- (i) Photosynthesis. ½
 - (ii) Photosynthesis is the process by which living plant cells, containing chlorophyll, produce food substances (glucose and starch) from CO₂ and water by using light energy. 1
 - (iii) Snail will leave CO₂ during its respiration, which is essential for photosynthesis process. 1
 - (iv) Test-tube 'B' has more bubbles of oxygen as more CO₂ is available for plant (which is released by snail during respiration) that increases the rate of photosynthesis of the plant. 1
 - (v) Hydrilla ½
 - (vi) $6\text{CO}_2 + 12\text{H}_2\text{O} \xrightarrow[\text{Chlorophyll}]{\text{Light energy}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O} + 6\text{O}_2 \uparrow$ 1
- (b)**
- (i) Smog ½
 - (ii) Immunity ½
 - (iii) Implantation ½
 - (iv) Menopause ½
 - (v) Antidiuretic Hormone (ADH)/Vasopressin ½
 - (vi) Conjunctiva ½
 - (vii) Presbyopia ½

- | | |
|---------------------------|---|
| (viii) Population density | ½ |
| (ix) Lubb | ½ |
| (ix) Phagocytosis | ½ |

Answer 3

(a)

- | | |
|--|---|
| (i) Transpiration. | ½ |
| (ii) Transpiration is the evaporative loss of water from the aerial parts (leaves and stems) of the plant. | 1 |
| (iii) To prevent evaporation of water from the soil of the pot. | 1 |
| (iv) A bell jar without plant. | ½ |
| (v) Benefits of transpiration : | 1 |
| (a) It brings cooling effect to the plant. | |
| (b) It creates/develops a suction force to pull the water to the top of plant. | |
| (vi) Adaptations in plants to reduce transpiration : | 1 |
| (a) The stomata may be sunken or covered by hairs. | |
| (b) The leaves may become narrower or are modified into thorns. | |
| (c) The leaves may be covered with thick cuticle. | |

(b)

- | | |
|---|---|
| (i) Reasons for the increase of population in India : | 1 |
| (a) Low marriage age or a desire for a male child. | |
| (b) Illiteracy. | |
| (ii) Amniotic fluid : | 1 |
| (a) Acts as shock absorber, protects the embryo from mechanical jerks. | |
| (b) Prevents sticking of the foetus to the amnion. | |
| (iii) Ear ossicles amplify the sound vibrations as they move from middle ear to inner ear through oval window. | 1 |
| (iv) Activities of the WHO : | 1 |
| (a) It collects and supplies information about epidemic diseases. | |
| (b) It promotes and supports the research programmes on diseases. | |
| (v) Mendel's Law of Dominance : Out of a pair of contrasting characters present together in an offspring, one dominates over the other or one character is expressed while other remains masked or suppressed. | 1 |

Answer 4

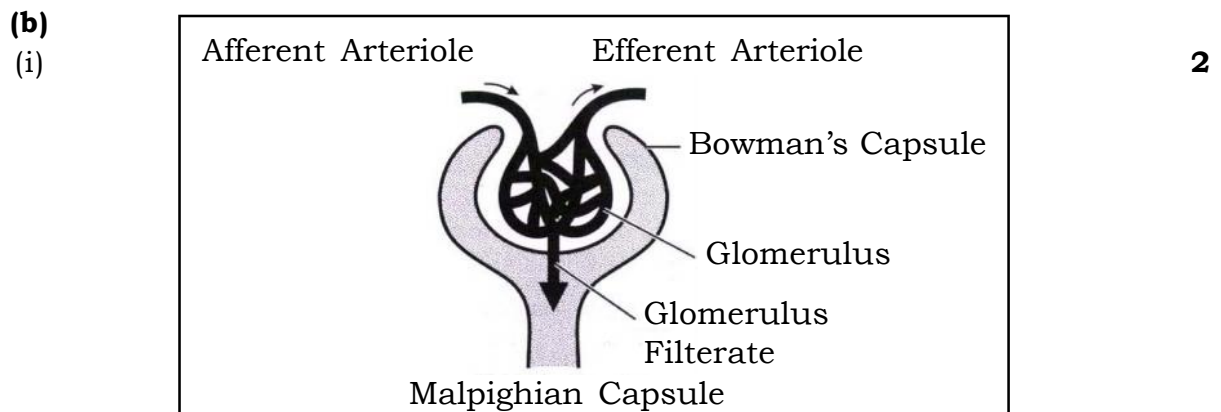
(a)

- | | | |
|---|----------|----|
| (i) (A) Artery | (B) Vein | |
| (C) Capillary | | 1½ |
| (ii) (1) Tunica externa/Connective tissue layer | | |
| (2) Lumen | | |
| (3) Tunica media/Muscular layer | | 1½ |
| (iii) Oxygenated blood flows through A. | | ½ |
| (iv) Arteries are thick walled with narrow lumen and veins are thin walled with wide lumen. | | 1 |
| (v) The exchange of gases takes place in C (capillaries). | | ½ |

(b)				
(i)	Diffusion	Osmosis		1
	It is the movement of the molecules of a substance from its higher concentration towards the its lower concentration.	It is the movement of solvent molecules through a semipermeable membrane from a less concentrated solution to a more concentrated solution.		
(ii)	RBC	WBC		1
	Biconcave disc-shaped	Irregular (amoeboid)		
(iii)	Tubectomy	Vasectomy		1
	Fallopian tubes (oviducts)	Vas deferens (Sperm ducts)		
(iv)	Vasopressin	Insulin		1
	Diabetes insipidus	Diabetes mellitus		
(v)	Rods	Cones		1
	Rhodopsin (Visual purple)	Iodopsin (Visual violet)		

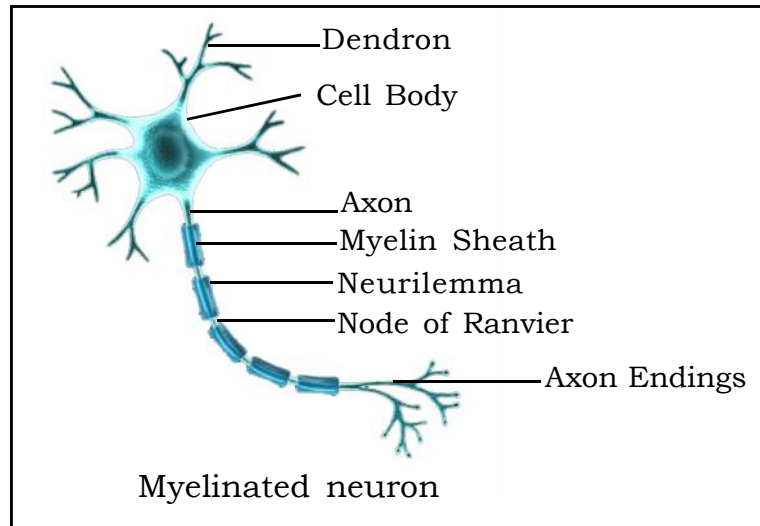
Answer 5

- (a)
- (i) (1) Cortex
 - (2) Medulla
 - (3) Pelvis
 - (4) Ureter 1
 - (ii) In part 2, collecting ducts, Loop of Henle of nephrons are arranged in the form of bundles to form Renal pyramids. So this region appears to be striped. 1
 - (iii) The fluid that passes down '4' (ureter) is urine. Its main nitrogenous waste is urea. 1
 - (iv) Nephron or Uriniferous tubules. 1
 - (v) (1) Ultrafiltration (2) Selective (Tubular) reabsorption 1



(ii)

[3]



Question 6.

(a)

- (i) (i) 1. Urinary bladder 2. Ureter
 3. Prostate gland 4. Vas deferens
 5. Urethra 6. Testis
 7. Scrotum 8. Epididymis

(ii) Fallopian tubes or oviducts

(iii) The high temperature of body does not permit formation and maturation of sperms. Thus the scrotum suspends the testis outside the body at a 2-3 degrees lower temperature than the normal body temperature which is suitable for spermatogenesis.

[5]

(b)

(i)

Heterozygous Round seeds : (Rr) × (Rr)

Gametes	R	r
R	RR (Round)	Rr (Round)
r	Rr (Round)	rr (Wrinkled)
F ₂ generation		

1

(ii) F₂ generation :

Phenotypic ratio : 3 : 1

Genotypic ratio : 1 : 2 : 1

1

(iii) Sex chromosomes in human males and females are known as allosomes. 1

Males : XY Females : XX

(iv) Mutation is a sudden change in one or more genes or in the number or in the structure of chromosomes. 1

(v) Number of chromosomes in the gametes of human beings is 23. 1

Answer 7.

(a)

- (i) Ventricular systole ½
- (ii) Both ventricles are contracting in this phase, because both bicuspid and tricuspid valves are closed in order to prevent the back flow of blood into auricles and the semilunar valves are open. 1
- (iii) (1) Pulmonary artery ½
- (2) Aorta ½
- (3) Bicuspid valve or Mitral Valve ½
- (4) Aortic Semilunar valve ½
- (iv) '2' carries oxygenated blood. ½
- (v) Part 5 is pulmonary semilunar valve which prevents the backflow of blood from pulmonary artery into right ventricle. ½
- (vi) Pericardium. ½

(b)

- (i) **Greenhouse effect** : Greenhouse gases like CO₂, CH₄, CFC, N₂O lead to global warming and excessive increase in the concentration of these gases results in enhanced greenhouse effect which may result in global warming and depletion ozone layer in the stratosphere. 1
- (ii) **Turgor pressure** : The pressure applied by cell contents over cell wall when the cell is in turgid condition. It results due to the movement of water into the cell through osmosis. 1
- (iii) **Selective reabsorption** : Absorption of useful materials from the glomerular filtrate into secondary capillary network to the extent our body needs is known as selective re-absorption. 1
- (iv) **Natality** : The number of live births per thousand of the population at a specified location in an year is known as natality. 1
- (v) **Pulse** : The throb in the arteries caused due to the alternative contraction and elastic recoil of the wall of the artery during a ventricular systole. 1

