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FOR ICSE CLASS 10 EXAM PREPARATION

ICSE Class 10 2027 Sample Paper · Biology

EXAM	YEAR	TYPE	SUBJECT
ICSE Class 10	2027	Sample Paper	Biology

ICSE 2027 EXAMINATION

SPECIMEN QUESTION PAPER

BIOLOGY

(SCIENCE PAPER – 3)

Maximum Marks: 80

Time allowed: Two hours

1. *Answers to this Paper must be written on the paper provided separately.*
2. *You will not be allowed to write during the first **15** minutes.*
3. *This time is to be spent in reading the question paper.*
4. *The time given at the head of this Paper is the time allowed for writing the answers.*

5. ***Section A** is **compulsory**. Attempt **any four** questions from **Section B**.*
6. *The intended marks for questions or parts of questions are given in brackets [ ].*

Instruction for the Supervising Examiner

Kindly read aloud the Instructions given above to all the candidates present in the Examination Hall.

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NOTE:

The Specimen Question Paper in the subject provides a realistic format of the Board Examination Question Paper and should be used as a practice tool. The questions for the Board Examination can be set from any part of the syllabus. However, the format of the Board Examination Question Paper will remain the same as that of the Specimen Question Paper.

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SECTION A (40 Marks)

*(Attempt **all** questions from this Section.)*

Question 1 [15]

Choose the correct answers to the questions from the given options.
(Do not copy the question, write the correct answers only.)

(i) Komal, a biology student of class X observed that the smell of freshly cut grass in her garden spread rapidly in the air around it. This phenomenon is an example of:

(a) diffusion

(b) osmosis

(c) imbibition

(d) capillarity **[Understanding]**

(ii) While playing cricket on a hot, summer afternoon, Rohan felt a little dizzy though he had a balanced meal. The doctor advised him to take an oral rehydration solution. What was most likely the reason for Rohan's condition?

(a) Excessive urination

(b) Asphyxiation

(c) Low blood glucose level

(d) Excessive perspiration **[Application]**

(iii) **Assertion (A):** Plants do not have sense organs but still respond to different stimuli.

Reason (R): Plants have a well-developed hormonal system to respond to sunlight, gravity, water, etc.

(a) (A) is true and (R) is false.

(b) (A) is false and (R) is true.

(c) Both (A) and (R) are true, and (R) is the correct explanation of (A).

(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A). **[Analysis]**

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(iv) Which of the following correctly describes the level of urea in the two blood vessels after a meal containing protein?

(a) Renal Artery - High; Renal Vein – High

(b) Renal Artery - High; Renal Vein - Low

(c) Renal Artery - Low; Renal Vein - Low

(d) Renal Artery - Low; Renal Vein - High **[Application]**

(v) A patient suffering with severe cholera:

(a) passes very little urine due to severe dehydration.

(b) passes excessive urine due to kidney overactivity.

(c) has blood in the urine as the first symptom.

(d) produces normal amounts of urine despite severe fluid loss. **[Application]**

(vi) Which of the following statements are correct?

P – Cobalt ions help in the opening of stomata.

Q – Strawberry leaves show guttation.

R – Duplicated chromosomes are joined at centrosome.

S – Conversion of ADP to ATP occurs in the light dependent phase.

(a) P and R

(b) Q and R

(c) P and S

(d) Q and S **[Analysis]**

(vii) Meena's mother prepared a cucumber salad and garnished it with salt and pepper. After some time, she noticed that a lot of water had accumulated in the salad bowl. The cucumber slices underwent:

(a) active transport

(b) transpiration

(c) exosmosis

(d) endosmosis **[Application]**

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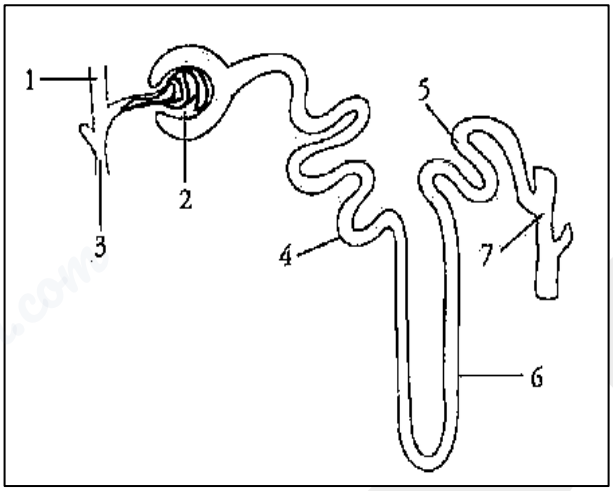
(viii) Which parts of the nephrons are present in the renal cortex and renal medulla?



(a) Renal Cortex – 1, 2, 3; Renal Medulla – 4, 5, 6, 7

(b) Renal Cortex – 1, 2, 3, 4, 5; Renal Medulla – 6, 7

(c) Renal Cortex – 4, 5, 6, 7; Renal Medulla – 1, 2, 3

(d) Renal Cortex – 1, 2, 3, 4; Renal Medulla – 5, 6, 7 **[Understanding]**

(ix) As the school bell rang for the lunch break, Tina's mouth started watering thinking of her favourite food in the lunch box. This is a/an:

(a) voluntary action

(b) somatic reflex

(c) acquired reflex

(d) natural reflex **[Application]**

(x) The path of blood flow during pulmonary circulation is:

(a) Right auricle, Right ventricle, Pulmonary artery, Lungs, Pulmonary veins, Left auricle.

(b) Left auricle, Left ventricle, Pulmonary veins, Lungs, Pulmonary artery, Right auricle.

(c) Left auricle, Left ventricle, Aorta, Tissues, Vena cava, Right auricle.

(d) Right auricle, Right ventricle, Pulmonary veins, Lungs, Pulmonary artery, Left auricle. **[Application]**

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(xi) A rabbit in a food chain occupies the position of:

(a) producer

(b) primary consumer

(c) secondary consumer

(d) tertiary consumer **[Understanding]**

(xii) **Assertion (A):** Pericardial fluid is present between the heart and pericardium.

Reason (R): The human heart has four chambers.

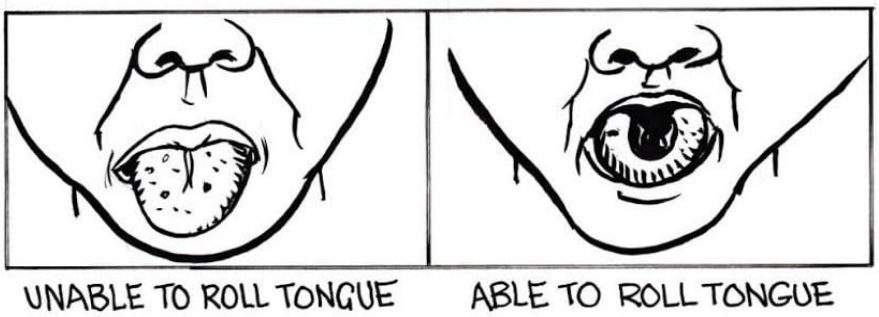
(a) (A) is true and (R) is false.

(b) (A) is false and (R) is true.

(c) Both (A) and (R) are true, and (R) is the correct explanation of (A).

(d) Both (A) and (R) are true, but (R) is not the correct explanation of (A). **[Understanding]**

(xiii) Tongue rolling is a dominant trait. Arun who cannot roll his tongue, marries a woman who is a carrier of the trait. What percentage of their children can roll their tongue?



(a) 25%

(b) 50%

(c) 75%

(d) 100 % **[Application]**

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(xiv) For the past few years there has been irregular rainfall, leading to crop failures and water shortages. This is a result of:

(a) climate change

(b) soil erosion

(c) earth rotation

(d) acid rain **[Understanding]**

(xv) Root hairs are epidermal outgrowths of the outermost layer of roots. They are well suited for absorption of water from the soil due to:

P – Large surface area

Q – Lower concentration of cell sap

R – Higher concentration of cell sap

S – Freely permeable cell membrane

(a) P and S

(b) Q and S

(c) P and R

(d) R and S **[Application]**

Question 2

(i) Give the biological / technical terms for the following: [5]

(a) Respiratory openings present on the stems of woody plants.

(b) The fluid present between the cornea and lens of the eye.

(c) The canal through which the testes descend into scrotum just before the birth of a male baby.

(d) The type of cell division for the formation of gametes in humans.

(e) The neurotransmitter stored in the axon endings of neurons. **[Recall]**

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(ii) The ovaries are a pair of small oval-shaped reproductive organs situated in the pelvic cavity of a female. They perform two main functions – production of female gametes and secretion of hormones. These hormones regulate the menstrual cycle and bring about the development of secondary sexual characteristics in females. [5]

Select the correct terms to fill in the blanks:

[fertilisation, 280, uterus, oviduct, ova, 40, ovulation, ovules, parturition]

(a) The gametes produced by ovaries are called _____. **[Recall]**

(b) The release of a mature ovum from graafian follicle is known as _____. **[Recall]**

(c) Menstrual flow occurs when _____ of the female gamete fails to occur. **[Understanding]**

(d) Implantation of the embryo is in the _____. **[Recall]**

(e) The gestation period lasts for _____ weeks. **[Recall]**

(iii) Choose the **ODD** term out from each of the following set of terms. Mention the category to which the remaining three belong: [5]

(a) Neutrophil, Monocyte, Eosinophil, Basophil

(b) TSH, ADH, ACTH, FSH

(c) Wisdom tooth, Pinna, Tongue, Vermiform appendix

(d) Haemoglobin, Fibrin, Prothrombin, Fibrinogen

(e) Vas deferens, Endometrium, Seminiferous tubule, Vas efferens **[Analysis]**

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(iv) Tanya, a ten-year-old girl had a severe earache. Her mother took her to an E.N.T. doctor for a checkup. The doctor noticed that she had a throat infection which had spread to her ear. Answer the following questions: [5]

(a) Name the structure that connects the throat and ear. **[Recall]**

(b) What is the collective term for the three cartilaginous structures present in the middle ear? **[Recall]**

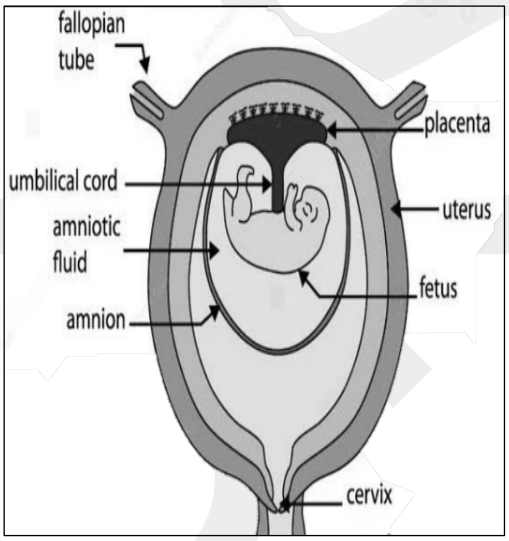
(c) Which is the sensory organ located in cochlea? **[Recall]**

(d) What is the significance of the tiny hair present in the auditory canal? **[Understanding]**

(e) What is the function of auditory nerve? **[Understanding]**

(v) Study the diagram given below and match the structure with its function: [5]

Example: Fallopian tube – (f)

Structure	Functions
	(a) Allows diffusion of glucose from maternal blood into foetal blood (b) A tube-like structure that transports substances to and from the foetus (c) Protective membrane surrounding the foetus (d) Cushions the foetus and absorbs mechanical shocks (e) Dilates to enable the birth of baby (f) Site of fertilisation

[Understanding]

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SECTION B (40 Marks)

*(Attempt **any four** questions from this Section.)*

Question 3

Avinash placed a potted plant on a windowsill on a hot summer morning. By afternoon, the leaves had wilted though the soil was well watered. He moved the plant indoors and the leaves regained their turgidity.

(i) Name the process responsible for the wilting of leaves. [1]
[Recall]

(ii) Define the above process. [2]
[Understanding]

(iii) Explain how the process will differ on a rainy day. [2]
[Application]

(iv) Which are the primary pores through which the above process takes place? Where are they located? [2]
[Recall]

(v) List *three* adaptations in plants to reduce this process. [3]
[Application]

Question 4

(i) Pallavi, a 30-year-old woman showed certain male characteristics such as growth of moustache, beard and hair on her chest. The endocrinologist diagnosed it as a hormonal disorder.

(a) Mention the biological term for the disorder. [1]
[Recall]

(b) Which hormone is responsible for this disorder? Name the gland which secretes this hormone. [2]
[Recall]

(c) Explain the term *hormone*. [2]
[Understanding]

(d) Expand the following abbreviations: [2]

1. TSH
2. ACTH

[Recall]

(ii) Draw a neat, labelled diagram of a turgid root hair cell. [3]
[Application]

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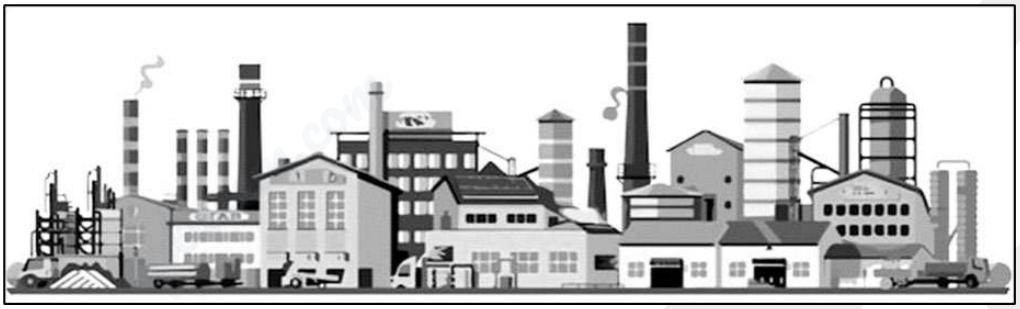
Question 5

Kiran lived with his family in the outskirts of a city which had a lot of greenery around. After a few years, a number of factories mushroomed which affected the quality of life of the people living there.



(i) What message does the picture convey to you? [1]

[Understanding]

(ii) Name *any two* types of pollution caused by the factories. [2]

[Recall]

(iii) Mention *two* reasons for population explosion in India. [2]

[Application]

(iv) State *any two* health problems that the residents may face in this case. [2]

[Recall]

(v) List *any three* resources that come under pressure due to rising population. [3]

[Recall]

Question 6

Rahul fell down while riding a bicycle and injured his knee. The injury healed within a few days due to a kind of cell division.

(i) Name the type of cell division responsible for the healing of wound. [1]

[Recall]

(ii) How many chromosomes are present in each cell of the human body? What will be number of chromosomes in the daughter cells during the healing process? [2]

[Application]

(iii) State *Mendel's Law* of Segregation of gametes. [2]

[Recall]

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(iv) Why is haemophilia uncommon in human females? [2]

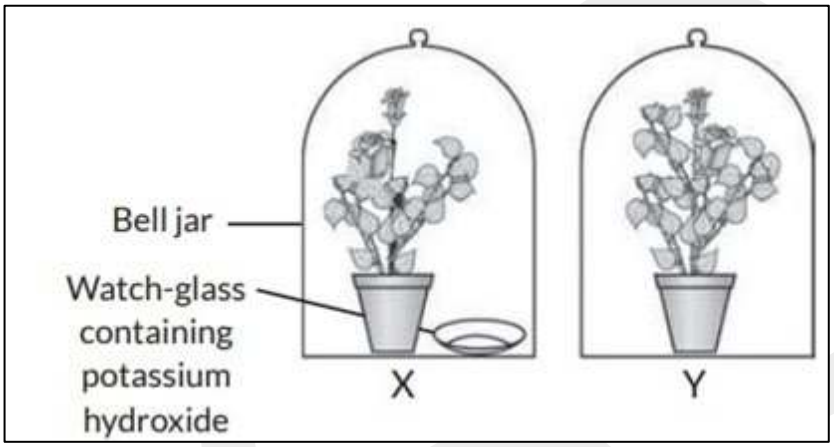
[Understanding]

(v) Draw a neat, labelled diagram of an animal cell having 4 chromosomes in the metaphase stage. [3]

[Application]

Question 7

A potted plant under a bell jar with a watch glass containing potassium hydroxide is placed under sunlight for three hours. After exposure to sunlight none of the leaves of the plant "X" turned blue black when tested with iodine, while the leaves of the control plant "Y" did.



(i) What is the aim of the experiment? [1]

[Understanding]

(ii) Write the balanced equation for photosynthesis. Name the mineral element essential for the formation of chlorophyll. [2]

[Recall]

(iii) Explain the conclusion drawn from this experiment after the iodine test. [2]

[Analysis]

(iv) Which hormone promotes the growth of plants towards sunlight? What is this tropic movement called? [2]

[Recall]

(v) Draw a neat, labelled diagram of a *stomatal apparatus* surrounded by *epidermal cells*. [3]

[Analysis]

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Question 8

(i) Who proposed the theory of *'Natural Selection'*? [1]

[Recall]

(ii) Mention *two* characteristic features of Australopithecus. [2]

[Recall]

(iii) What is the reason for Hyperopia? How can it be corrected? [2]

[Understanding]

(iv) State *one* difference between *identical twins* and *fraternal* twins. [2]

[Understanding]

(v) Draw a neat, labelled diagram of a human blood smear. [3]

[Application]

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ICSE 2027 SPECIMEN

DRAFT MARKING SCHEME – BIOLOGY (SCIENCE PAPER 3)

Question 1			[15x1]
(i)	(a)	diffusion	
(ii)	(d)	Excessive perspiration	
(iii)	(c)	Both (A) and (R) are true, and (R) is the correct explanation of (A).	
(iv)	(b)	Renal Artery - High ; Renal Vein - Low	
(v)	(a)	passes very little urine due to severe dehydration.	
(vi)	(d)	Q and S	
(vii)	(c)	exosmosis	
(viii)	(b)	Renal Cortex – 1,2,3,4,5 ; Renal Medulla – 6,7	
(ix)	(c)	acquired reflex	
(x)	(a)	Right auricle, Right ventricle, Pulmonary artery, Lungs, Pulmonary veins, Left auricle.	
(xi)	(b)	primary consumer	
(xii)	(d)	Both (A) and (R) are true, but (R) is not the correct explanation of (A).	
(xiii)	(b)	50%	
(xiv)	(a)	climate change	
(xv)	(c)	P and R	
Question 2			
(i)	(a) (b) (c) (d) (e)	Lenticels Aqueous humour Inguinal canal Meiosis Acetylcholine	[5x1]
(ii)	(a) (b) (c) (d) (e)	ova ovulation fertilisation uterus 40	[5x1]

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(iii)	(a) O – Monocyte C – Granulocytes (b) O – ADH C – Secreted by anterior lobe of pituitary gland (c) O – Tongue C– Vestigial organs (d) O – Haemoglobin C – Components of blood clotting (e) O – Endometrium C – Parts of male reproductive system	[5x1]
(iv)	(a) Eustachian tube (b) Ossicles (c) Organ of corti / Spiral organ (d) Prevent dust and other small foreign objects from reaching the ear drum. (e) Transports nerve impulses from the inner ear to the brain for hearing and body balance.	[5x1]
(v)	(a) - Placenta (b) - Umbilical cord (c) - Amnion (d) - Amniotic fluid (e) - Cervix	[5x1]
Question 3		
(i)	Transpiration	[1]
(ii)	It is the loss of water as water vapour from the aerial parts of the plant.	[2]
(iii)	Stomata Leaves and young green stems.	[2]
(iv)	Rate of transpiration will be less as the atmosphere will have more humidity. Diffusion of water vapour from the plant to outside will be slow.	[2]
(v)	Narrow leaves, thick cuticle, fewer stomata	[3]

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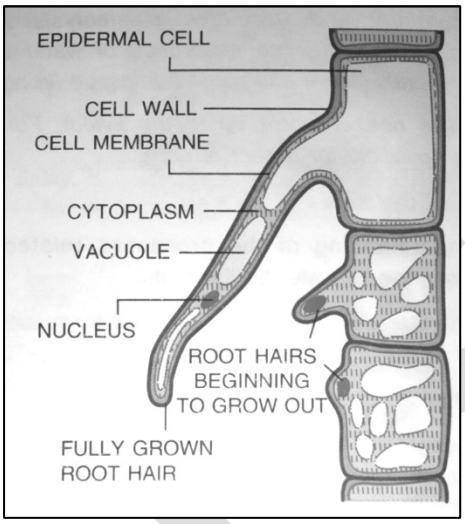
Question 4		
(i)	(a) Adrenal virilism	[1]
	(b) Cortical hormones / Androgens. Adrenal gland	[2]
	(c) Secretions of Endocrine glands which are directly released into the blood and act on target organs or tissues to regulate physiological processes.	[2]
	(d) 1. TSH - Thyroid Stimulating Hormone 2. ACTH - Adreno Cortico Tropic Hormone	[2]
(ii)	Diagram of a turgid root hair cell:  	[3]
Question 5		
(i)	To protect our environment, factories should not be constructed near residential areas.	[1]
(ii)	Air, water	[2]
(iii)	High birth rate, lack of awareness of family planning methods	[2]
(iv)	Respiratory diseases, allergies, skin infections *(Any two)*	[2]
(v)	Food, fossil fuels, minerals	[3]

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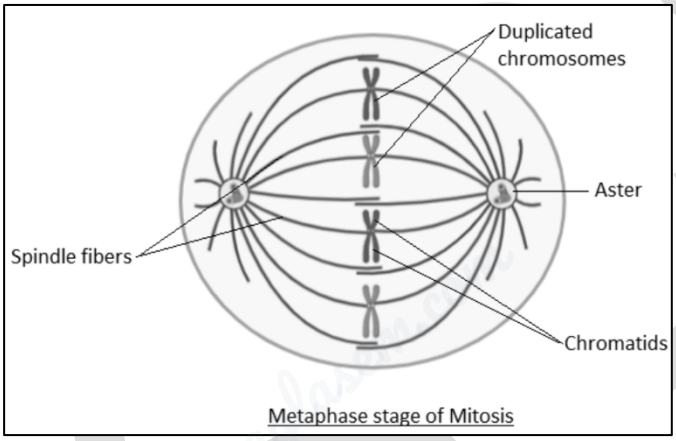
Question 6		
(i)	Mitosis	[1]
(ii)	46 or 23 pairs in each human body cell. Daughter cells- 46 or 23 pairs	[2]
(iii)	Pairs of alleles separate during gamete formation.	[2]
(iv)	Females have 2 X chromosomes. If one carries the recessive gene, the dominant gene supresses the disease. Whereas males have only one X chromosome and if it has the recessive gene, they show the disease.	[2]
(v)		[3]
Question 7		
(i)	To prove that CO_2 is necessary for photosynthesis.	[1]
(ii)	$6CO_2+12H_2O \xrightarrow[Chlorophyll]{Sunlight} C_6H_{12}O_6+6H_2O+6O_2$ Magnesium	[1+1]
(iii)	Plant X – CO_2 was absorbed by KOH. Photosynthesis did not take place. Starch was absent. Plant Y- CO_2 was available for photosynthesis. Starch was prepared. So the leaves turn blue black during iodine test.	[2]
(iv)	Auxins. Phototropism	[2]

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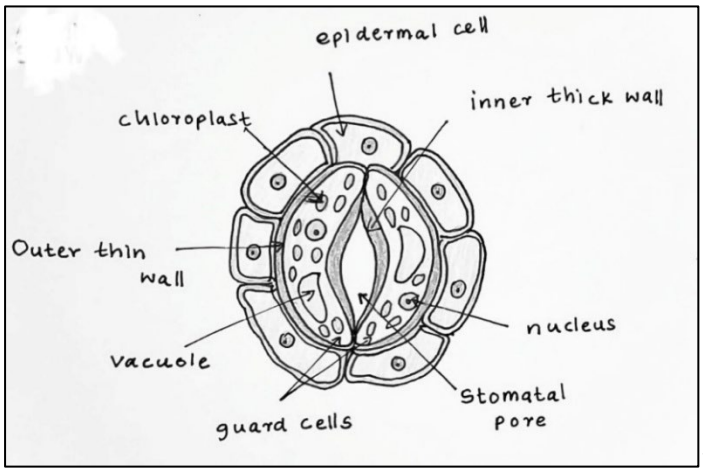
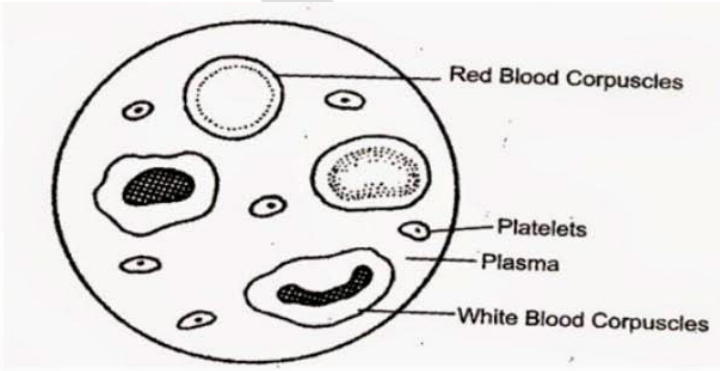
(v)	Diagram of stomatal apparatus  	[3]
Question 8		
(i)	Charles Darwin	[1]
(ii)	Lack of chin, body covered by hair.	[2]
(iii)	Shortening of eyeball from front to back or the lens is too flat. Convex lens.	[2]
(iv)	Identical twins- a single fertilised egg divides into two, to form two separate individuals of the same gender, i.e. either 2 boys or 2 girls. Fraternal twins- two fertilised eggs form two individuals. They may either be 2 boys or 2 girls or 1 boy and 1 girl.	[2]
(v)	Diagram of blood smear  	[3]

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