

Version No.			

ROLL NUMBER						



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1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
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2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
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Answer Sheet No. _____

Sign. of Candidate _____

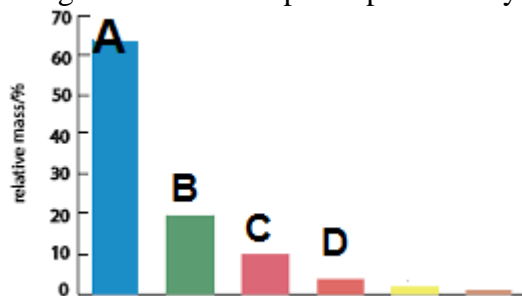
Sign. of Invigilator _____

BIOLOGY SSC-I (3rd Set)
SECTION – A (Marks 12)
Time allowed: 15 Minutes

Section – A is compulsory. All parts of this section are to be answered on this page and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. **Do not use lead pencil.**

Q.1 Fill the relevant bubble for each part. All parts carry one mark.

- (1) The following graph shows percentage composition of bio-elements by mass of a human being. Which labeled part represents Hydrogen.

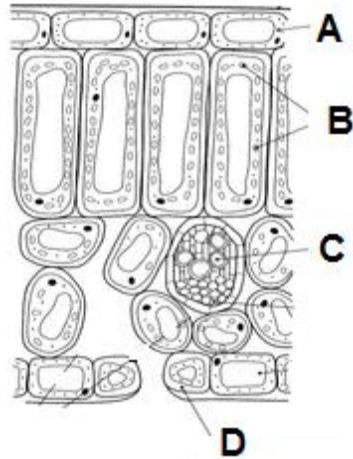


- A. B.
 C. D.
- (2) Malarial patient has plasmodium in his blood. What would be the possible explanation if a healthy person who is not having any malarial symptoms shows plasmodium in his blood?
- A. Plasmodia are dead
 B. Plasmodia are in incubation period
 C. Plasmodia are not mature
 D. Plasmodia are inactive
- (3) Which option is correct regarding the mode of nutrition of following organism?

	Animal	Prokaryote	Fungi	Plant	
A.	Heterotrophic	Heterotrophic	Ingestive	Autotrophic	<input type="radio"/>
B.	Ingestive	Absorptive	Autotrophic	Heterotrophic	<input type="radio"/>
C.	Ingestive	Heterotrophic	Absorptive	Photosynthesize	<input type="radio"/>
D.	Absorptive	Autotrophic	Ingestive	Autotrophic	<input type="radio"/>

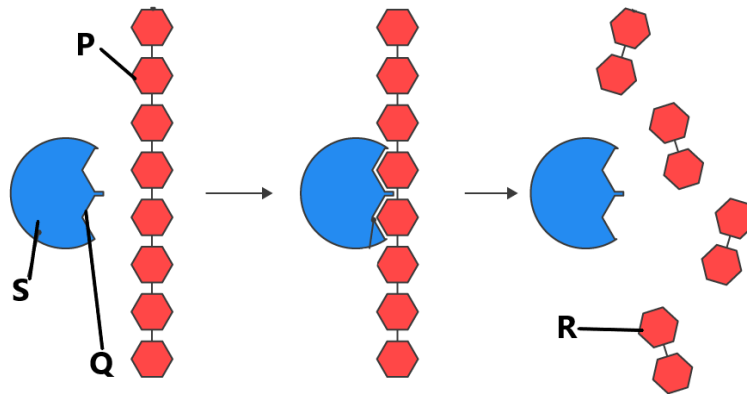
- (4) All of the following are macromolecules **EXCEPT**:
- | | | | |
|------------|-----------------------|------------|-----------------------|
| A. Protein | <input type="radio"/> | B. Starch | <input type="radio"/> |
| C. DNA | <input type="radio"/> | C. Glucose | <input type="radio"/> |

- (5) The diagram shows cells in part of the leaf of a green plant. Which region contains cells which are responsible for the transport of water?



- | | | | |
|----|-----------------------|----|-----------------------|
| A. | <input type="radio"/> | B. | <input type="radio"/> |
| C. | <input type="radio"/> | D. | <input type="radio"/> |

- (6) The diagram shows an amylase molecule catalysing the breakdown of a starch molecule.

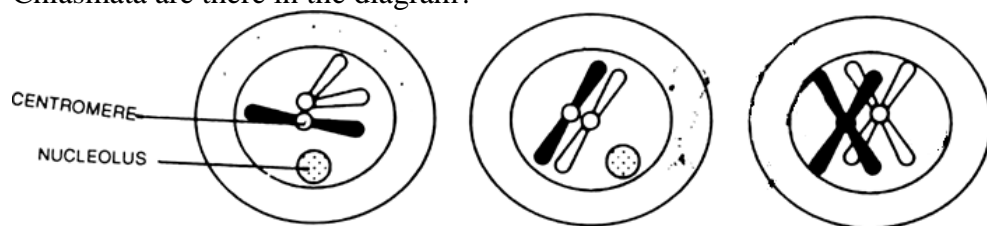


What are the labelled parts P, Q, R and S?

	Enzyme	Product	Substrate	Active site
A	P	Q	R	S
B	R	S	P	Q
C	S	P	Q	R
D	S	R	P	Q

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- (7) Chiasmata formation takes place during prophase I. Find out how many Chiasmata are there in the diagram?



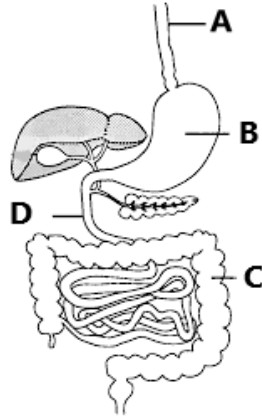
- | | | | |
|------|-----------------------|------|-----------------------|
| A. 1 | <input type="radio"/> | B. 2 | <input type="radio"/> |
| C. 3 | <input type="radio"/> | D. 4 | <input type="radio"/> |

(8) Which of the following substance could be lipid?

Substances	Amino acid	Glucose	Fatty acid	Glycerol
A	✓	x	x	x
B	x	x	✓	✓
C	x	✓	x	x
D	✓	✓	x	x

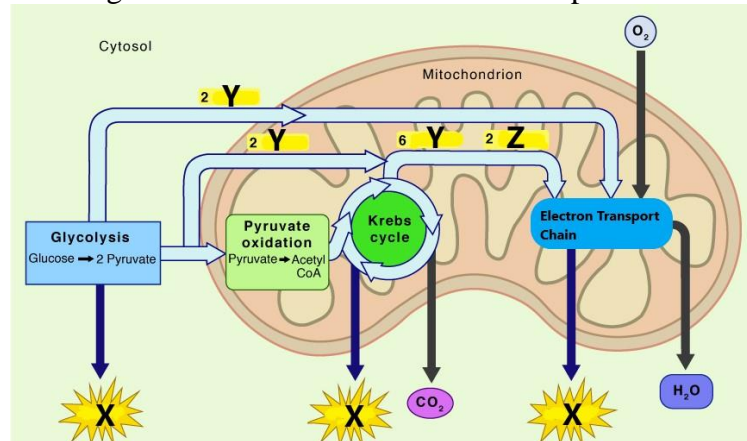
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(9) The diagram shows part of human alimentary canal. In which region maximum amino acids are absorbed in the blood?



- A. B.
 C. D.

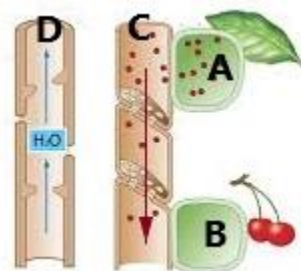
(10) The diagram shows overview of cellular respiration.



Which labelled part represents NADH?

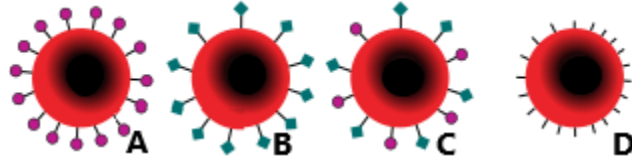
- A. X only B. Y only
 C. Z only D. Both Y and Z

(11) The diagram shows pressure flow mechanism through phloem. Which labelled part will act as sugar sink?



- A. B.
 C. D.

(12) The diagram shows red blood cells with antigens according to ABO blood group system. Which cell represents blood group O?



A.
C.

B.
D.



Federal Board SSC-I Examination
 Biology Model Question Paper
 (Curriculum 2006)

Time allowed: 2.45 hours

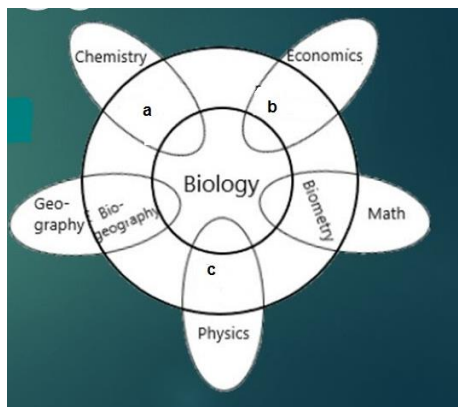
Total Marks: 53

Note: Answer any eleven parts from Section 'B' and attempt any two questions from Section 'C' on the separately provided answer book. Write your answers neatly and legibly.

SECTION – B (Marks 33)

Q.2 Attempt any **ELEVEN** parts from the following. All parts carry equal marks. Be brief and to the point. (11 × 3 = 33)

- i. If a student want to investigate the effect of different factors on the activity of salivary amylase. He will design an experiment in order to reach conclusion.
 - a. What would be the most appropriate first step to initiate?
 - b. What characteristics should be considered for its accuracy?
- ii. Biology is not an isolated branch of science. It has relationship with other branches. Explain with examples the link of biology with a, b & c in the diagram.

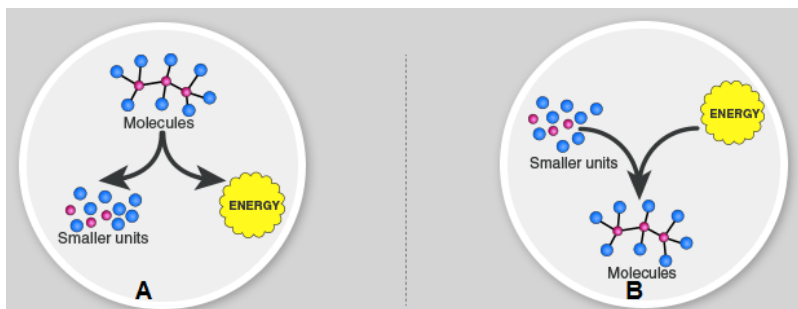


- iii. Justify viruses are at the borderline of living and non living things.
- iv. Calculate surface area to volume ratio of the following cells. (2)

Cells	Height	Width	Length	Surface area	Volume	Surface area/Volume
Bacteria	1 μm	1 μm	4 μm			
Guard cell	9 μm	9 μm	20 μm			

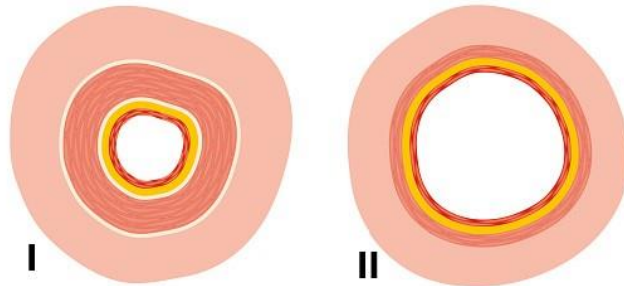
Which cell has highest surface area to volume ratio? (1)

- v. After accident or injury sometime the limb amputation is required. What is the reason behind it?
- vi. Classify the following metabolic reactions A and B. (1)

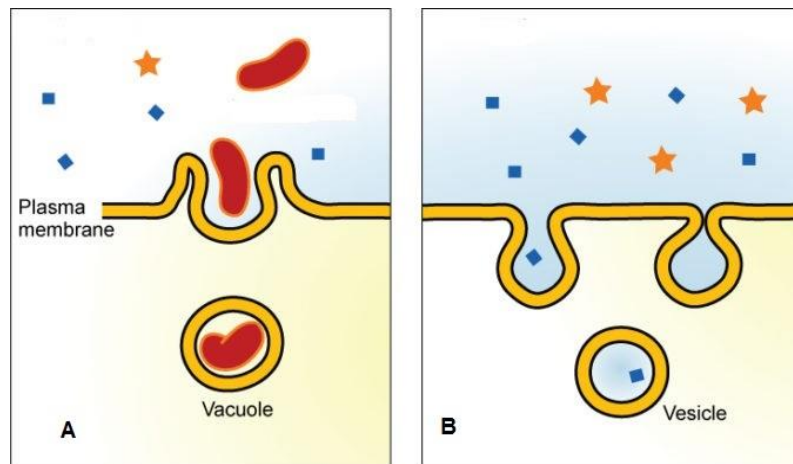


Draw a table to show differences between them. (2)

- (vii) A child had weak and soft bones which lead to bending of bones. The doctor advised him to spend more time in sun and drink milk regularly. Name the disease and cause of the disease.
- (viii) a. According to starch sugar hypothesis which organelle of guard cells performs its function during day to keep stomata open? (1)
 b. How does it regulate the opening and closing of stomata? (2)
- (ix) 'Having perfect vision in the day light but blind at night' would it be considered as a disease? Assess the cause and suggest the treatment and diet.
- (x) Write down the importance of redox reactions in bioenergetics?
- (xi) A cell works as an open system. Comment on it.
- (xii) The diagrams show sections through two types of blood vessel.



- a. Name the blood vessel I and II (1)
 b. Give comparison between them. (2)
- (xiii) Dark reaction of photosynthesis is not dependent on light. If a plant is kept in darkness then dark reaction will not occur. Why? Give reasons.
- (xiv) a. Identify the type of endocytosis in diagrams A and B. (1)
 b. Explain both the processes with the help of examples. (2)



- (xv) Define cofactor. Categorize it into different types.

SECTION – C (Marks 20)

Note: Attempt any **TWO** questions. All questions carry equal marks. (2×10 = 20)

- Q.3** a. What is the difference between cytokinesis of a plant cell and an animal cell? (4)
 b. Explain various types of cells which contribute to the functioning of the human body. (Write any three types of cells only) (6)
- Q.4** a. Elaborate the phases of aerobic respiration by means of word and symbol equation. (6)
 b. State the symptoms, causes, treatment and prevention of diarrhea and ulcer. (4)

- Q.5** a. i. Complete the checker board for donor and recipient blood groups showing cross matching for blood transfusion. (3)

	A	B	AB	O
A	✓	✗	✓	✗
B				
AB				
O				

- ✓ means: Can be transfused ✗ means: Agglutination (Can't be transfused)
- ii. Analyze the consequences when a person having blood group O receives blood group AB from a donor. (3)
- b. Enlist the characteristics of two kingdom and five kingdom classification. (1+3)

BIOLOGY SSC-I (3rd Set)
Student Learning Outcomes Alignment Chart
(Curriculum 2006)

SECTION – A

Q.1

- (1) Describe bioelements as the most the most basic level of biological organization.
- (2) Describe the steps involved in biological method i.e. recognition of a biological problem, observation and identification, building up hypotheses, drawing deductions, devising experiments and inferring results (malaria as an example).
- (3) Describe the diagnostic characteristics of the five kingdoms.
- (4) Define biomolecules and distinguish them as micromolecules and macromolecules.
- (5) Conceptualize transport and its needs.
- (6) Describe, through equation, that enzyme substrate complex is formed and release of enzyme takes place after completing the reaction.
- (7) Describe the events of Prophase-I.
- (8) Sort out the action of enzymes in specific regions of alimentary canal, with respect to their substrates and products.
- (9) Describe the main functions of these parts in relation to ingestion, digestion, absorption, assimilation and egestion of food.
- (10) Describe aerobic respiration by means of word and symbol equation.
- (11) Explain the mechanism of food translocation by the theory of Pressure Flow Mechanism.
- (12) Describe the blood groups in ABO and Rh blood group systems, with reference to the presence/ absence of antigens and antibodies.

SECTION – B

Q.2

- i. Describe the steps involved in biological method i.e. recognition of a biological problem, observation and identification, building up hypotheses, drawing deductions, devising experiments and inferring results (malaria as an example).
- ii. Link the study of biology with that of physics, chemistry, mathematics, geography and economics.
 - a. Describe the acellular structure of virus and justify why virus are excluded from the Five-Kingdom classification system.
- iii. Describe cell size and shape as they relate to surface area to volume ratio.
- iv. Describe Necrosis and Apoptosis.
- v. Define metabolism and differentiate between catabolism and anabolism.
- vi. Describe the deficiency symptoms of Vitamins A, C and D and of Calcium and Iron.
- vii. Relate transpiration with stomatal opening and closing.
- viii. Describe the deficiency symptoms of Vitamins A, C and D and of Calcium and Iron.
- ix. Describe the importance of Oxidation-Reduction reactions for the flow of energy through living systems.
- x. Describe the cell as a functioning open system.
- xi. Describe the major pathway of blood through circulatory system.
- xii. Outline the processes (Light and Dark reactions) involved in photosynthesis.
- xiii. Describe the phenomena of diffusion, facilitated diffusion, osmosis, filtration, active transport, endocytosis and exocytosis.
- xiv. State that some enzymes require co-factor for their functioning.

SECTION – C

- Q.3** a. Describe the physical division of cytoplasm during cytokinesis in animal and plant cells.
- b. Determine ways in which various types of cells contribute to the healthy functioning of the human body (*e.g., describe the roles of individual cells in nerves, muscle, blood, skin and bone*).
- Q.4** a. Outline the mechanism of respiration while defining Glycolysis, Krebs cycle and Electron Transport Chain.
- b. State the signs and symptoms, causes, treatments and preventions of the disorders of gut i.e. diarrhea, constipation, and ulcer.
- Q.5** a. State the risk of incompatibility in blood transfusion due to antigen-antibody reactions.
- b. Describe the diagnostic characteristics of the five kingdoms.

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BIOLOGY SSC I (3rd Set)

Table of Specifications

Assessment Objectives	Unit 1: Introduction to Biology	Unit 2: Solving a Biological problem	Unit 3: Biodiversity	Unit 4: Cells and Tissues	Unit 5: Cell Cycle	Unit 6: Enzymes	Unit 7: Bioenergetics	Unit 8: Nutrition	Unit 9: Transport	Total Marks	Percentage
K (Knowledge)	1(1)(1) 2 ii (3)		1(3)(1) 5 b (4)	1(4)(1) 2 xi (3)		2 xv (3)	2 x (3)	1(8)(1) 2 vii (3) 4 b (4)		27	31%
U (Understanding)		1(2)(1) 2 i (3)	2 iii (3)	2 xiv (3) 3 b (6)	1(7)(1) 3 a (4)	1(6)(1) 2 vi (3)	4 a (6)	1(9)(1) 2 ix (3)	1(5)(1) 1(12)(1) 2 viii (3) 2 xii (3)	43	49.4%
A (Application)				1(11)(1) 2 iv (3)	2 v (3)		1(10)(1) 2 xiii (3)		5 a (6)	17	19.5%
Total Marks	4	4	8	17	8	7	13	12	14	87	100%

KEY:

1(1)(1)

Question No. (Part No.) (Allocated Marks)

Note: (i) The policy of FBISE for knowledge based questions, understanding based questions and application based questions is approximately as follows:

- a) 30% knowledge based.
- b) 50% understanding based.
- c) 20% application based.

(ii) The total marks specified for each unit/content in the table of specification is only related to this model question paper.

(iii) The level of difficulty of the paper is approximately as follows:

- a) 40% easy
- b) 40% moderate
- c) 20% difficult