

Strictly based on the latest CBSE syllabus dated 4th April 2017 for Academic year 2017-18

 **OSWAAL BOOKS**
LEARNING MADE SIMPLE

FOR
MARCH
2018
EXAM

CHAPTERWISE & TOPICWISE

QUESTION BANK

BIOLOGY

Includes Solved Papers 2017
(Kendriya Vidyalaya Sangathan)

CBSE CLASS 11

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PREFACE

CBSE always believes in Global Trends of Educational Transformation. The CBSE curriculum gets its lead from National Curriculum Framework – 2005 and Right to Free and Compulsory Education Act – 2009. The aim of CBSE Curriculum is not just to let learners obtain basic knowledge but to make them life-long learners. CBSE always updates and reviews the syllabus to make it more relevant with educational transformation and in last few years the chapters and topics which CBSE has added are very interesting and increase practical knowledge.

Oswaal Question Banks are designed to nurture individuality and thus enhance one's innate potentials which helps in increasing the self-study mode for students. This book strengthens knowledge and attitude related to subject. It is designed in such a way that students can set their own goals and can improve their problem solving and thinking skills.

The journey of this book is never ending as this book is reviewed every year and new questions, previous year's examination questions, new HOTS or any change in syllabus is updated time to time. Also regular review and readers' feedback increases the efficiency of this book gradually.

Moreover every Question Bank strictly follows the latest syllabus and pattern, and contains more than sufficient questions and brief description of chapters, which help students in practicing and completing the syllabus. Questions incorporated in this Question Bank encompass all the 'Typologies' mentioned by CBSE namely Remembering, Understanding, Application, High Order Thinking Skills and Evaluation. Solutions for these have been checked twice and efforts have been made to align them closely to the Marking Scheme. Practically, this book provides students everything they need to learn and excel.

At last we would like to thank our authors, editors, reviewers and specially students who regularly send us suggestions which helps in continuous improvement of this book and makes this book stand in the category of "One of the Best". Wish you all Happy Learning.

–Publisher

Latest Syllabus for Academic Year 2017-18

Biology, Class-11 (Code No. 044)

Time : 3 Hours

Max. Marks : 70

Unit	Title	No. of Periods	Marks
I	Diversity of Living Organisms	23	07
II	Structural Organisation in Plants and Animals	22	12
III	Cell: Structure and Function	35	15
IV	Plant Physiology	40	18
V	Human Physiology	40	18
	Total	160	70

Unit-I Diversity of Living Organisms

23 Periods

Chapter-1: The Living World

What is living? Biodiversity; Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature; tools for study of taxonomy-museums, zoological parks, herbaria, botanical gardens.

Chapter-2: Biological Classification

Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups: Lichens, Viruses and Viroids.

Chapter-3: Plant Kingdom

Salient features and classification of plants into major groups - Algae, Bryophyta, Pteridophyta, Gymnospermae and Angiospermae (three to five salient and distinguishing features and at least two examples of each category); Angiosperms - classification upto class, characteristic features and examples.

Chapter-4: Animal Kingdom

Salient features and classification of animals non-chordates up to phyla level and chordates up to class level (three to five salient features and at least two examples of each category). (No live animals or specimen should be displayed.)

Unit-II Structural Organisation in Animals and Plants

22 Periods

Chapter-5: Morphology of Flowering Plants

Morphology and modifications: Tissues

Chapter-6: Anatomy of Flowering Plants

Anatomy and functions of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed (to be dealt along with the relevant experiment of the Practical Syllabus).

Chapter-7: Structural Organisation in Animals

Animal tissues: Morphology, anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of an insect (cockroach). (a brief account only)

Unit-III Cell: Structure and Function

35 Periods

Chapter-8: Cell-The Unit of Life

Cell theory and cell as the basic unit of life: Structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system, endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles; mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus, nuclear membrane, chromatin, nucleolus.

Chapter-9: Biomolecules

Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids, enzymes, types, properties, enzyme action.

Chapter-10: Cell Cycle and Cell Division

Cell cycle, mitosis, meiosis and their significance.

Unit-IV Plant Physiology

40 Periods

Chapter-11: Transport in Plants

Movement of water, gases and nutrients; cell to cell transport, Diffusion, facilitated diffusion, active transport; plant-water relations, Imbibition, water potential, osmosis, plasmolysis; long distance

transport of water - Absorption, apoplast, symplast, transpiration pull, root pressure and guttation; transpiration, opening and closing of stomata; Uptake and translocation of mineral nutrients - Transport of food, phloem transport, massflow hypothesis; diffusion of gases.

Chapter-12: Mineral Nutrition

Essential minerals, macro- and micronutrients and their role; deficiency symptoms; mineral toxicity; elementary idea of hydroponics as a method to study mineral nutrition; nitrogen metabolism, nitrogen cycle, biological nitrogen fixation.

Chapter-13: Photosynthesis in Higher Plants

Photosynthesis as a mean of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis.

Chapter-14: Respiration in Plants

Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient.

Chapter-15: Plant - Growth and Development

Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA; seed dormancy; vernalisation; photoperiodism.

Unit-V Human Physiology

40 Periods

Chapter-16: Digestion and Absorption

Alimentary canal and digestive glands, role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats; calorific values of proteins, carbohydrates and fats; egestion; nutritional and digestive disorders - PEM, indigestion, constipation, vomiting, jaundice, diarrhoea.

Chapter-17: Breathing and Exchange of Gases

Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders related to respiration - asthma, emphysema, occupational respiratory disorders.

Chapter-18: Body Fluids and Circulation

Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure.

Chapter-19: Excretory Products and Their Elimination

Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system - structure and function; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in excretion; disorders - uraemia, renal failure, renal calculi, nephritis; dialysis and artificial kidney.

Chapter-20: Locomotion and Movement

Types of movement - ciliary, flagellar, muscular; skeletal muscle- contractile proteins and muscle contraction; skeletal system and its functions; joints; disorders of muscular and skeletal system - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.

Chapter-21: Neural Control and Coordination

Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse; reflex action; sensory perception; sense organs; elementary structure and functions of eye and ear.

Chapter-22: Chemical Coordination and Integration

Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease.

Note : Diseases related to all the human physiological systems to be taught in brief.

PRACTICALS

Time : 3 Hours

Max. Marks : 30

Evaluation Scheme	
One Major Experiment Part - A (Expt. No. 1, 3, 7, 8)	5 marks
One Minor Experiment Part - A (Expt. No. 6, 9, 10, 11, 12, 13)	4 marks
Slide Preparation Part - A (Expt. No. 2, 4, 5)	5 marks
Spotting Part B	7 marks
Practical Record + Viva Voce	4 marks
Project Record + Viva voce	5 marks
Total	30 marks

A. List of Experiments

60 Periods

1. Study and description of three locally available common flowering plants, one from each of the families Solanaceae, Fabaceae and Liliaceae (Poaceae, Asteraceae or Brassicaceae can be substituted in case of particular geographical location) including dissection and display of floral whorls, anther and ovary to show number of chambers (floral formulae and floral diagrams). Types of root (Tap and adventitious); stem (herbaceous and woody); leaf (arrangement, shape, venation, simple and compound).
2. Preparation and study of T.S. of dicot and monocot roots and stems (primary).
3. Study of osmosis by potato osmometer.
4. Study of plasmolysis in epidermal peels (e.g. Rhoeo leaves).
5. Study of distribution of stomata in the upper and lower surface of leaves.
6. Comparative study of the rates of transpiration in the upper and lower surface of leaves.
7. Test for the presence of sugar, starch, proteins and fats. Detection in suitable plant and animal materials.
8. Separation of plant pigments through paper chromatography.
9. Study of the rate of respiration in flower buds/ leaf tissue and germinating seeds.
10. Test for presence of urea in urine.
11. Test for presence of sugar in urine.
12. Test for presence of albumin in urine.
13. Test for presence of bile salts in urine.

B. Study/observation of the following (spotting)

1. Study of the parts of a compound microscope.
2. Study of the specimens/slides/models and identification with reasons - Bacteria, Oscillatoria, Spirogyra, Rhizopus, mushroom, yeast, liverwort, moss, fern, pine, one monocotyledonous plant, one dicotyledonous plant and one lichen.
3. Study of virtual specimens/slides/models and identification with reasons - Amoeba, Hydra, liverfluke, Ascaris, leech, earthworm, prawn, silkworm, honeybee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.
4. Study of tissues and diversity in shapes and sizes of plant and animal cells (palisade cells, guard cells, parenchyma, collenchyma, sclerenchyma, xylem, phloem, squamous epithelium, muscle fibers and mammalian blood smear) through temporary/permanent slides.
5. Study of mitosis in onion root tip cells and animals cells (grasshopper) from permanent slides.
6. Study of different modifications in roots, stems and leaves.
7. Study and identification of different types of inflorescence (cymose and racemose).
8. Study of imbibition in seeds/ raisins.
9. Observation and comments on the experimental set up for showing: **(a)** Anaerobic respiration **(b)** Phototropism **(c)** Effect of apical bud removal **(d)** Suction due to transpiration
10. Study of human skeleton and different types of joints with the help of virtual images/models only.
11. Study of external morphology of cockroach through virtual images/models.

□□

QUESTION PAPER DESIGN

BIOLOGY (Code No. 044)

Class - XI (2017-18)

Time: 3 Hours

Max. Marks: 70

S. No.	Typology of Question	Very Short Answer (VSA) (1 Mark)	Short Answer-I (SA-I) (2 Marks)	Short Answer-II (SA-II) (3 Marks)	Value based question (4 Marks)	Long Answer (LA) (5 Marks)	Total Marks	% Weightage
1.	Remembering- (Knowledge based Simple recall question to know specific facts, terms, concepts, principles, or theories, Identify, define, or recite, information)	2	1	1	-	-	7	10%
2.	Understanding- (Comprehension -To be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase information)	-	2	4	-	1	21	30%
3.	Application (Use abstract information in concrete situation, to apply knowledge to new situations, Use given content to interpret a situation, provide an example, or solve a problem)	-	2	4	-	1	21	30%
4.	High Order Thinking Skills (Analysis & Synthesis- Classify, Compare, Contrast, or differentiate between different pieces of information, Organize and/or integrate unique pieces of information from a variety of sources)	2	-	1	-	1	10	14%
5.	Evaluation- (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on values)	1	-	2	1	-	11	16%
Total		5×1=5	5×2=10	12×3=36	1×4=4	3×5=15	70 (26)	100%

QUESTION WISE BREAK UP

Type of Question	Mark(s) per Question	Total No. of Questions	Total Marks
VSA	1	5	05
SA-I	2	5	10
SA-II	3	12	36
VBQ	4	1	04
LA	5	3	15
Total		26	70

- Internal Choice:** There is no overall choice in the paper. However, there is an internal choice in one question of 2 marks weightage, one question of 3 marks weightage and all three questions of 5 marks weightage.
- The above template is only a sample. Suitable internal variations may be made for generating similar templates keeping the overall weightage to different form of questions and typology of questions same.

KENDRIYA VIDYALAYA SANGATHAN
[AGRA REGION]
SESSION ENDING EXAMINATION 2017
SUBJECT : BIOLOGY
CLASS–XI
(SOLVED PAPER)

Time : 3 Hours

Max. Marks : 90

General Instructions :

- (i) Answers to questions carrying 1 mark may be answered in one word to one sentence.
- (ii) Answers to questions carrying 3 marks may be answered in about 50-75 words.
- (iii) Answer to questions carrying 4 marks may be answered in about 150 words.
- (iv) Answers to questions carrying 6 marks may be answered in about 200 words.
- (v) Attempt all parts of a question together.

1. What is the nature of the cell wall? 1
2. Name the substance that fixes the brown algae to the substrate. 1
3. Name the site of synthesis of glycoproteins and glycolipids in a cell. 1
4. How many types of amino acids found to occur in proteins? 1
5. What is the value of water potential of pure water? 1
6. Bring out the differences between chlorophyceae and phaeophyceae. 2
7. Give the location of hepatic caecae in a cockroach. What is their function? 2
8. What are kinetochores? What is their function? 2
9. 'Omnis cellula-e-cellula'. Who gave this statement and what does it mean? 2

OR

- Describe the role of haemoglobin in the transport of respiratory gases. 2
10. Write differences between arithmetic and geometric growth rate. 2
 11. Represent diagrammatically the apoplastic and symplastic pathways of water transport in plants. 3
 12. What is meant by flux? Describe its two kinds. 3
 13. Represent systematically the process of ATP synthesis through chemiosmosis in chloroplast. 3
 14. Give the structural formula of (a) adenine (b) adenosine (c) adenylic acid
 15. Draw a well labeled diagram of mitochondria. 3
 16. Where does mitosis take place in plants and animals? What is its significance in multicellular organisms? 3
 17. Represent diagrammatically a pinnately compound leaf and a palmately compound leaf. Name one example of each. 3
 18. What is periderm? How does periderm formation takes place in dicot stem? 3
 19. Draw a well labeled diagram of alimentary canal of a cockroach. 3

20. Who proposed the five kingdom classification? Name the five kingdoms. 3

OR

How are the animals of Arthropoda different from those of Mollusca? 3

21. What is exophthalmic goitre? Mention any four symptoms of this disorder. 3

22. Write short notes on hind brain. 3

23. Leena and Rita are final year BSc. students. Suddenly their classmate Arun's mother needed blood transfusion. She is B positive. Leena and Rita made all efforts to find suitable blood donor from their college to help Arun.

(a) What blood group/groups can be transfused by Arun's mother.

(b) Name the blood group known as universal donor.

(c) Name the blood group referred to as universal acceptor.

(d) What values are shown by Leena and Rita? 4

24. Where does non cyclic photophosphorylation take place? Describe this process with the help of its schematic representation. Why is this process called so? 5

OR

Where does glycolysis occur in cell? Describe the sequence of reactions in it. Mention the end product. 5

25. Suggest five measures that can be proposed at global level for the prevention and control of diabetes and its complications. 5

26. Mention the schemes implemented by government of India to tackle malnutrition and health problems in children. 5

SOLUTIONS

1. The plant cell wall is a complex matrix of linked polysaccharides such as cellulose and pectin, forming a thick semi-permeable rigid barrier outside the plasma membrane.
2. Algin 1
3. Golgi Apparatus 1
4. 20 1
5. Zero 1

6. S. No.	Phaeophyceae	Chlorophyceae	
1.	Marine forms.	Chiefly fresh water in nature.	
2.	Unicellular forms do not exist.	Unicellular species are more.	
3.	Thylakoids occur in groups of three.	Stacked in groups of 2-20.	
4.	Chlorophyll 'a' and 'c' present.	Chlorophyll 'a' and 'b' is present.	
5.	Fucoxanthin is present.	Fucoxanthin is absent.	
6.	Reserve food is laminarin.	Reserve food is starch.	(Any two) 1 × 2 = 2

7. Hepatic or gastric caecae are 6-8 narrow and hollow blind tubules called is present at the junction of foregut and mid gut. The hepatic caecae are similar to vertebrate liver, secretes digestive juices and help in the digestion. 1+1=2
8. The kinetochore is a protein structure on chromatids where the spindle fibers attach during cell division to pull sister chromatids apart. Their proteins help to hold the sister chromatids together and also play a role in chromosome editing. 1 + 1 = 2

9. Rudolf Virchow gave this statement. It means "All cells come from cells. Every cell is born of a previous cell, which was born of a previous cell. Life comes from life."

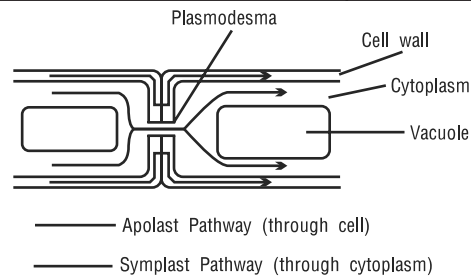
OR

Role of haemoglobin in the transport of respiratory gases :

- Oxygen binds with haemoglobin to form oxyhaemoglobin. 1 molecule of haemoglobin carries 4 molecules of oxygen.
 - CO₂ binds with haemoglobin to form carbamino-haemoglobin. CO₂ is carried as carbamino-haemoglobin by blood.
- 1 + 1

10. S.No.	Arithmetic growth	Geometric growth
1.	In arithmetic growth only one daughter cells divides and all the other cells undergo differentiation and maturation.	In geometric growth the growth is proportional to the nutrients supply after which it declines. All the daughter cells divide by mitosis. This is also known as exponential growth.
2.	The graph obtained is a linear one. Eq : Elongation of root occurring at a constant rate.	Represented by a sigmoid curve where the three phases are initial, exponential and stationary phases. Eq : Cells growing in a culture medium.

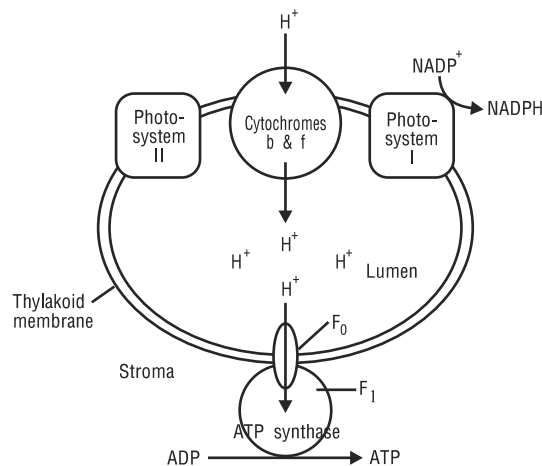
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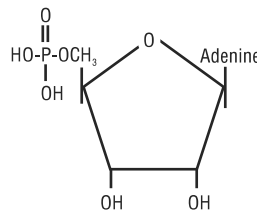
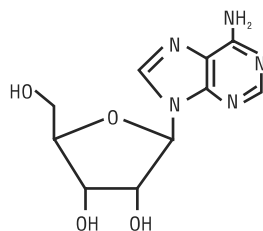
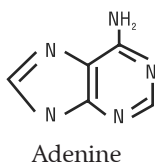
12. Flux refers to the movement of substances across the various compartments. Its two types are:

1. **Flux of movement of molecules through membrane :** It is defined as the rate of transport or diffusion of substances across the semipermeable membrane.
 2. **Metabolic flux :** It involves the flow of metabolites through a metabolic pathway.
- 1 + 2 = 3

13.



14.



3

15.

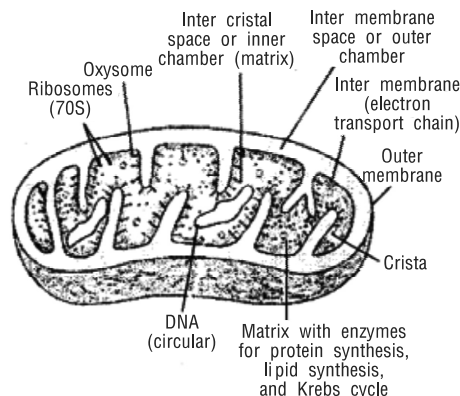


Fig. : Mitochondria

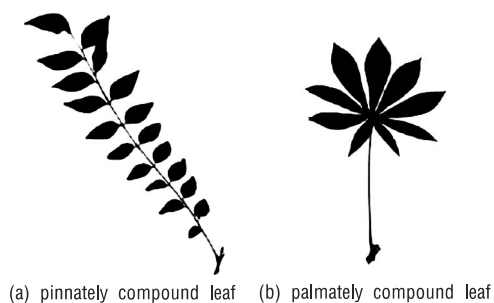
3

16. It takes place both in somatic and reproductive cells of the plants and animals.

In multicellular organisms, mitosis produces more cells for growth and repair. Mitosis division is responsible for growth and development of a single-celled zygote into a multicellular organism. Mitosis division helps in maintaining the proper size. Mitosis also helps in restoring wear and tear in body tissues, replacing damaged or lost part, healing wounds and regeneration of detached parts.

1 + 2 = 3

17.



(a) pinnately compound leaf (b) palmately compound leaf

Fig. : Compound leaves

Examples :

Pinnately compound — Neem, Cassia etc.

Palmately compound — Cannabis, white clover, etc.

2 + 1 = 3

18. Periderm is composed of the phellogen, phellem, and phelloderm.

During secondary growth, the outer epidermal layer and the cortical layer are broken because of the cambium. To replace them, the cells of the cortex turn meristematic, giving rise to cork cambium or phellogen. It is composed of thin-walled, narrow and rectangular cells. Phellogen cuts off cells on its either side. The cells cut off towards the outside give rise to the phellem or cork. The suberin deposits in its cell wall make it impervious to water. The inner cells give rise to the secondary cortex or phelloderm. The secondary cortex is parenchymatous.

1 + 2 = 3

19.

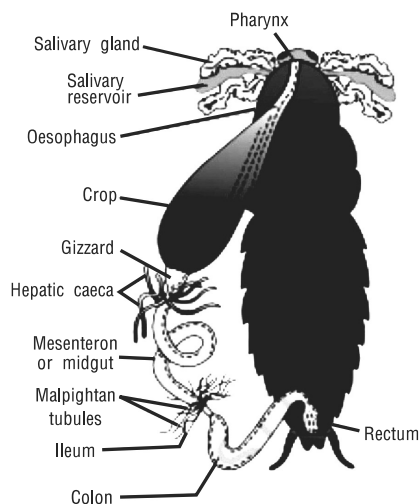


Fig. : Alimentary Canal of Cockroach

3

20. R. H. Whittaker proposed a five kingdom classifications in the year 1969 based on cell structure, thallus organisations, mode of nutrition, reproduction and phylogenetic relationships.

The five kingdom were named Monera, Protista, Fungi, Plantae and Animalia.

OR

Following are the differences between Arthropoda and Mollusca :

S. No.	Athropoda	Mollusca
1.	Body is divided into head, thorax and abdomen.	Soft body divided into three distinct parts : a distinct head, visceral mass and muscular foot.
2.	Body is covered by chitinous exoskeletons.	Body is covered by calcareous shell.
3.	They have jointed appendages.	They have distinct foot for moving around.
4.	Excretion occurs through coxal gland on malpighian tubules.	Excretion occurs through nephridia.
5.	Respiration occurs through tracheae, gills or book lungs.	Respiration occurs through gills.

(Any two) $1 \times 3 = 3$

21. **Exophthalmic goitre** : It is also called Grave's disease. It is an endocrine disorder which is the most common cause of hyperthyroidism. In Grave's disease excessive secretion of thyroxine hormone is accompanied by diffuse enlargement of the thyroid glands.

Such patients show some typical symptoms that include elevated metabolic rate, sweating, rapid and irregular heartbeat, weight loss despite increased appetite, frequent bowel movement and nervousness. Some patients may also experience exophthalmos (or protrusion of the eye balls). Thus, this condition is also known as exophthalmic goitre. 1 + 2 = 3

22. **Hind Brain** : It consists of three regions: pons, cerebellum, and medulla oblongata.

(i) **Pons** is a band of nerve fibres that lies between medulla oblongata and midbrain. It connects the lateral parts of cerebellar hemisphere together.

(ii) **Cerebellum** is a large and well developed part of hindbrain. It is located below the posterior sides of cerebral hemispheres and above the medulla oblongata. It is responsible for maintaining posture and equilibrium of the body.

(iii) **Medulla oblongata** is the posterior and simplest part of the brain. It is located beneath the cerebellum. Its lower end extends in the form of spinal cord and leaves the skull through foramen magnum. 1 × 3 = 3

23. (a) Blood group: B, O
 (b) O
 (c) AB
 (d) Caring, helpful.

1 × 4 = 4

24. **Non-cyclic photophosphorylation** : It takes place in the grana of chloroplasts.

The Process :

- (i) The process initiates with excitation of special types of chlorophyll molecules P680 and P700 (The letter P stands for pigment and the figures for the wavelength of light at which these molecules absorb).
- (ii) P680 and P700 molecules of chlorophyll form the reaction centres or photocentres.
- (iii) The accessory pigments and other chlorophyll molecules harvest the solar energy and pass it on to the reaction centres.
- (iv) Thus, a photon absorbed anywhere in the harvesting zone of P680 centre can pass its energy to the P680 molecule.
- (v) The cluster of pigment molecules which transfer their energy to P680 absorb at or below the wavelength of 680 nm.
- (vi) Together with P680 they form the photosystem I or PS II. Similarly P700 forms photosystem I or PS I along with pigment molecules which absorb at or below 700 nm.
- (vii) When P680 acquires a sufficient quantum of energy, it emits an electron. This electron with high potential energy moves down an electron transport chain and during this process ATP is formed.
- (viii) The electron lost from P680 is ultimately compensated by P700 which transfers it to ferredoxin (an iron-containing protein). In turn, ferredoxin transfers the electron to NADP to generate NADPH.

As synthesis of ATP occurs in light and the process is not cyclic i.e., the same electron are not coming back to the oxidised photosystems or in the other words, it needs a constant supply of water molecules to be oxidised and NADP to be reduced, therefore the process is called non-cyclic photophosphorylation.

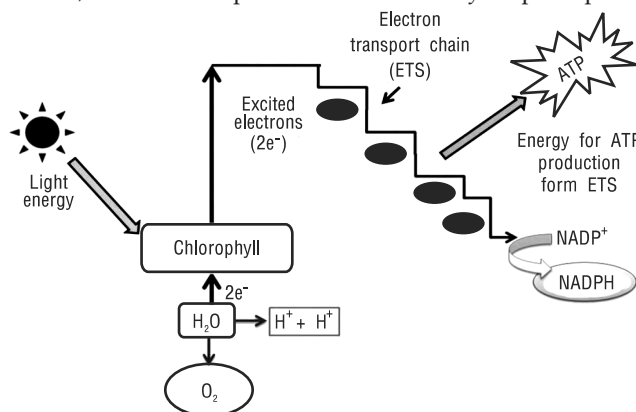


Fig. : Non-Cyclic Photophosphorylation

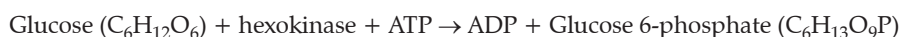
1 + 3 + 1 = 5

OR

Glycolysis : Glycolysis means for “the splitting of sugar”. A glucose molecule is converted into 2 molecules of pyruvic acid during glycolysis. It occurs in chloroplast of the cell.

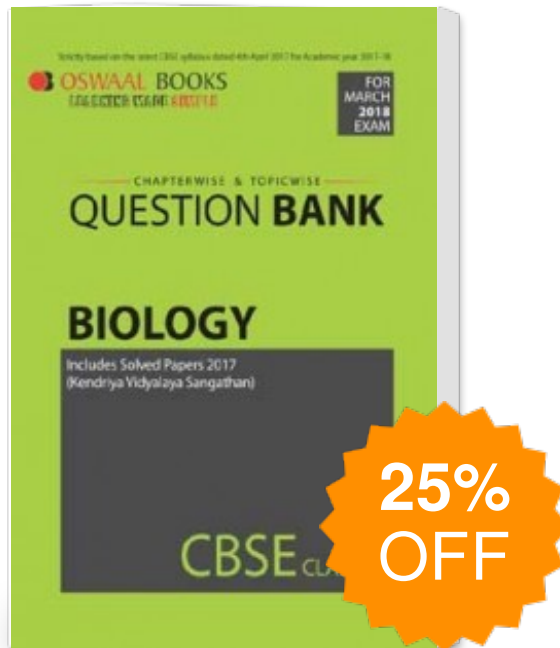
Sequence of reactions in Glycolysis :

Step 1 : The enzyme hexokinase phosphorylates (adds a phosphate group to) glucose in the cell's cytoplasm. In the process, a phosphate group from ATP is transferred to glucose producing glucose 6-phosphate.



Step 2 : The enzyme phosphoglucosomerase converts glucose 6-phosphate into its isomer fructose 6-phosphate. Isomers have the same molecular formula, but the atoms of each molecule are arranged differently.

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