

**SAMPLE CONTENT**

**MHT-CET**



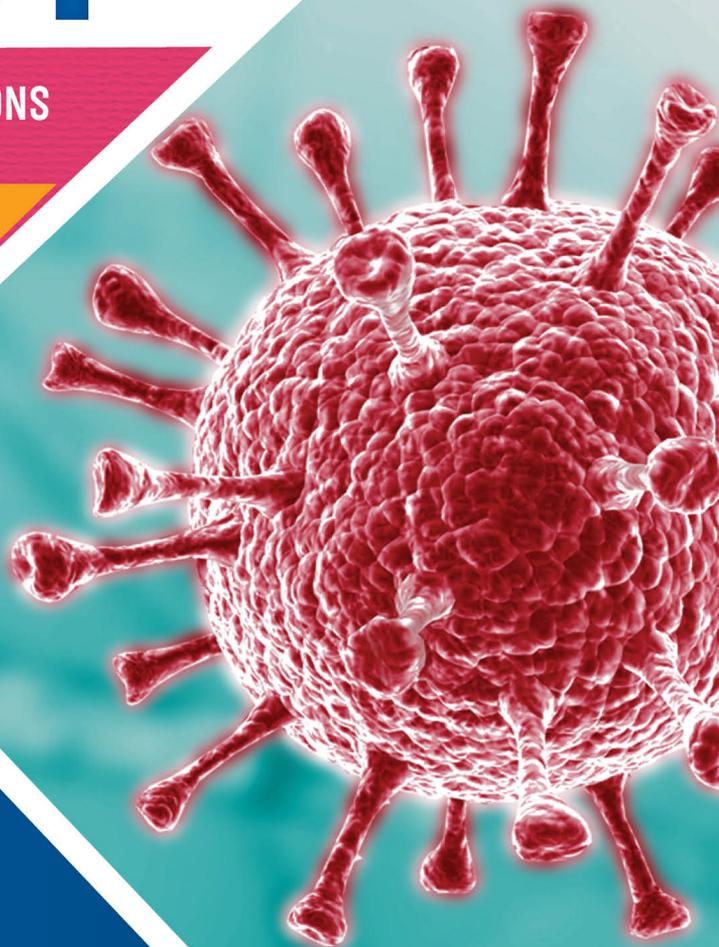
**TEST SERIES**

**BIOLOGY**

WITH ANSWER KEY & SOLUTIONS

**◀ 1750  
MCQs ▶**

- **19** Topic Tests
- **06** Revision Tests
- **05** Model Test Papers



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# MHT-CET

# BIOLOGY TEST SERIES

With Answer Key & Solutions

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- Answers provided to all the questions and Solutions for difficult questions.
-  symbol represents Questions that belong to the Reduced Syllabus.

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## PREFACE

Target's 'MHT-CET Biology Test Series' is a complete practice book, extremely handy for the preparation of MHT-CET examination. This book would act as a go-to tool for preparation and practice at the same time.

The core objective of the book is to help students gauge their preparedness to appear for MHT-CET Examination, as it includes a beautiful assortment of MCQ's in the form of Topic Tests and Revision Tests along with Model Test Papers as per latest paper pattern. Topic Tests are provided for powerful concept building.

Revision Tests develop confidence in the students, as it includes MCQs from three/four different topics. Model Test Papers would help students analyse their strengths and area of improvement to yield better results.

All Test Papers in this book have been created in line with the examination pattern and touches upon all the conceptual nodes of the subject.

We have provided answers to all the questions along with detailed solutions for difficult questions.

We are sure that, these question papers would provide ample practice to students in a systematic manner and would boost their confidence to face the challenges posed in examinations.

We welcome your valuable suggestions and feedback towards this book.

*We wish the students all the best for their examinations!*

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This work is purely inspired by the paper pattern prescribed by State Common Entrance Test Cell, Government of Maharashtra. Every care has been taken in the publication of this reference book by the Authors while creating the contents. The Authors and the Publishers shall not be responsible for any loss or damages caused to any person on account of errors or omissions which might have crept in or disagreement of any third party on the point of view expressed in the reference book.

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## MHT-CET PAPER PATTERN

- There will be three papers of Multiple Choice Questions (MCQs) in 'Mathematics', 'Physics and Chemistry' and 'Biology' of 100 marks each. Duration of each paper will be 90 minutes.
- Questions will be based on the syllabus prescribed by Maharashtra State Board of Secondary and Higher Secondary Education with approximately 20% weightage given to Std. XI and 80% weightage will be given to Std. XII curriculum.
- Difficulty level of questions will be at par with JEE (Main) for Mathematics, Physics, Chemistry and at par with NEET for Biology.
- There will be no negative marking.
- Questions will be mainly application based.
- Details of the papers are as given below:

Paper	Subject(s)	No. of MCQs based on		Mark(s) Per Question	Total Marks	Duration in Minutes
		Std XI	Std XII			
Paper I	Mathematics	10	40	2	100	90
Paper II	Physics	10	40	1	100	90
	Chemistry	10	40			
Paper III	Biology	20	80	1	100	90

- **Chapters / units from Std. XI curriculum:**

Sr.no	Subject	Chapters/Units of Std. XI
1	Physics	Motion in a plane, Laws of Motion, Gravitation, Thermal properties of matter, Sound, Optics, Electrostatics, Semiconductors
2	Chemistry	Some Basic concepts of chemistry, Structure of atom, Chemical Bonding, Redox reactions, Elements of group 1 and 2, States of Matter (Gaseous and Liquids), Adsorption and colloids (Surface Chemistry), Hydrocarbons, Basic principles of organic chemistry
3	Mathematics	Trigonometry II, Straight Line, Circle, Measures of Dispersion, Probability, Complex Numbers, Permutations and Combinations, Functions, Limits, Continuity
4	Biology	Biomolecules, Respiration and Energy Transfer, Human Nutrition, Excretion and Osmoregulation

- **Language of Question Paper:**  
The medium for examination shall be English / Marathi / Urdu for Physics, Chemistry and Biology. Mathematics paper shall be in English only.
- **Duration of Examination:**  
The duration of the examination for PCB is 180 minutes and PCM is 180 minutes.

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1. Match the Column I with Column II with respect to number of carbon atoms the monosaccharides possess and select the correct option.

	Column I		Column II
i.	Erythrose	p.	Trioses
ii.	Ribose	q.	Pentoses
iii.	Fructose	r.	Hexoses
iv.	Glyceraldehyde	s.	Tetroses

- (A) i – s, ii – q, iii – r, iv – p  
 (B) i – q, ii – p, iii – s, iv – r  
 (C) i – s, ii – r, iii – p, iv – q  
 (D) i – q, ii – r, iii – p, iv – s
2. \_\_\_\_\_ is a saturated fatty acid.  
 (A) Stearic acid (B) Oleic acid  
 (C) Palmitoleic acid (D) Linolenic acid
3. Which of the following reaction occurs when a disaccharide is formed from monosaccharide?  
 (A) Condensation  
 (B) Hydration  
 (C) Hydrolysis  
 (D) Dehydrogenation
4. Lactose is composed of  
 (A) Glucose and fructose  
 (B) Glucose and galactose  
 (C) Two glucose molecules  
 (D) Glucose and maltose
5. Which of the following is an example of structural protein?  
 (A) Myoglobin (B) Keratin  
 (C) Immunoglobulin (D) Thrombin
6. \_\_\_\_\_ is a simple lipid.  
 (A) Glycerol  
 (B) Glycolipid  
 (C) Phospholipid  
 (D) Glycerophospholipid
7. Nucleotide differs from nucleoside by presence of  
 (A) Phosphoric acid  
 (B) Nitrogenous base  
 (C) Pentose sugar  
 (D) both (A) and (B)
8. Non-competitive inhibitors  
 (A) do not bind with the enzyme at substrate binding site but bind at prosthetic group.  
 (B) bind with the enzyme at substrate binding site.

- (C) do not bind at prosthetic group.  
 (D) do not inhibit the activity of enzymes.
9. Monosaccharides are linked together by  
 (A) glycosidic bond  
 (B) dipeptide bond  
 (C) phosphodiester bonds  
 (D) polypeptide bond
10. Which of the following is also known as dehydrogenases?  
 (A) Transferases (B) Oxidoreductases  
 (C) Hydrolases (D) Lyases
11. RNA differs from DNA  
 (A) in the nature of purines alone  
 (B) in the nature of sugar alone  
 (C) in the nature of sugar and pyrimidines  
 (D) in the nature of pyrimidines alone
12. Which of the following is CORRECT about enzymes?  
 (A) They are amphoteric in nature.  
 (B) They work best under optimum conditions.  
 (C) They are colloidal in nature.  
 (D) All of the above
13. Nucleic acids are composed of many small units called as  
 (A) monosaccharides (B) nucleotides  
 (C) polypeptides (D) co-factors
14. Which of the following is a purine that pairs with cytosine?  
 (A) Adenine (B) Guanine  
 (C) Thymine (D) Uracil
15. Proportion of hydrogen and oxygen in carbohydrates is  
 (A) 1:1 (B) 2:1  
 (C) 3:1 (D) 4:1
16. Two or more polypeptide chains fold, giving a characteristic structure to the protein molecule which is held by  
 (A) glycosidic bonds  
 (B) disulphide bonds  
 (C) phosphodiester bonds  
 (D) hydrogen bonds
17. Glycolipid is a  
 (A) derived lipid  
 (B) compound lipid  
 (C) simple lipid  
 (D) conjugated protein



18. Which of the following is INCORRECT regarding monosaccharides?  
 (A) Monosaccharides cannot be further hydrolyzed.  
 (B) They are classified as aldoses and ketoses.  
 (C) They are crystalline, soluble in water and sweet to taste.  
 (D) Ribulose and fructose are monosaccharides with aldehyde groups.
19. \_\_\_\_\_ is NOT a pyrimidine base.  
 (A) Thymine (B) Adenine  
 (C) Cytosine (D) Uracil
20. Carbohydrates are classified on the basis of  
 (A) number of polymers of amino acids.  
 (B) number of sugar units they contain.  
 (C) proportion of H:O ratio.  
 (D) types of nucleic acids they contain.
21. Plant fats  
 (A) are saturated fatty acids.  
 (B) are unsaturated fatty acids.  
 (C) do not have double bond between carbon atoms of its chain.  
 (D) consist of maximum possible hydrogen atoms.
22. Select the INCORRECT match.  
 (A) Glucose –  $C_6H_{12}O_6$   
 (B) Formaldehyde – HCHO  
 (C) Fructose –  $C_4H_{10}O_2$   
 (D) Lactic acid –  $CH_3CHOH.COOH$
23. Carbohydrates  
 (A) have general formula  $C_x(H_2O)_y$   
 (B) means hydrates of carbon  
 (C) have proportion of H:O ratio 3:1  
 (D) both (A) and (B)
24. Lipids are  
 (A) homogeneous compounds.  
 (B) inorganic compounds.  
 (C) soluble in water.  
 (D) soluble in organic and non-polar solvents.
25. What is the similarity between cholesterol and phytosterol?  
 (A) They are compound lipids.  
 (B) They are derived lipids.  
 (C) They are simple lipids.  
 (D) They are conjugated proteins.
26. Which of the following are macromolecules?  
 (A) Proteins (B) Nucleic acids  
 (C) Lipids (D) Both (A) and (B)
27. When a sugar combines with nitrogenous base it is called  
 (A) nucleotide (B) nucleoside  
 (C) derived lipid (D) compound lipid
28. Purine : pyrimidine ratio is  
 (A) 1:1 (B) 2:1  
 (C) 3:1 (D) 4:1
29. Which of the following set includes amino acids?  
 (A) Glycine, serine, rhamnose  
 (B) Lysine, digitoxose, cysteine  
 (C) Serine, glycine, lysine  
 (D) Alanine, rhamnose, lysine
30. Pick out the ODD one out.  
 (A) Glycolipid (B) Steroids  
 (C) Waxes (D) Carotenoids
31. \_\_\_\_\_ is the reservoir of biomolecules in the cell on which enzymes can act to produce useful products as per the need of the cell.  
 (A) Genetic pool (B) Metabolic pool  
 (C) Cytoplasmic pool (D) Germplasm
32. \_\_\_\_\_ involves continuous process of breakdown and synthesis of biomolecules through chemical reactions.  
 (A) Catabolism (B) Anabolism  
 (C) Metabolism (D) Both (B) and (C)
33. \_\_\_\_\_ are small organic molecules produced by organisms that are not essential for their growth, development and reproduction.  
 (A) Primary metabolites  
 (B) Secondary metabolites  
 (C) Tertiary metabolites  
 (D) Essential metabolites
34. Morphine is the first alkaloid isolated from \_\_\_\_\_ is used as pain reliver and cough suppressant.  
 (A) *Papaver somniferum*  
 (B) *Sorghum vulgare*  
 (C) *Helianthus annuus*  
 (D) *Zamia pygmaea*
35. Which of the following enzymes catalyze the covalent linkage of the molecules utilizing the energy obtained from hydrolysis of an energy-rich compound?  
 (A) Isomerases (B) Ligases  
 (C) Oxidoreductases (D) Lyases
36. Increase in the \_\_\_\_\_ gradually increases the velocity of enzyme activity within the limited range of substrate levels.  
 (A) competitive inhibitor  
 (B) substrate concentration  
 (C) enzyme-substrate complex  
 (D) activation energy
37. Complete the analogy.  
 Transferase: Catalyze the transfer of certain groups :: \_\_\_\_\_ : Catalyze structural rearrangements  
 (A) Lyases (B) Ligases  
 (C) Isomerases (D) Synthetases



38. From the following identify the derived proteins.  
(A) Histones (B) Metaproteins  
(C) Haemoglobin (D) Albumins
39. Which of the following type of RNA shows presence of DHU arm and amino acid binding arm?  
(A) mRNA (B) rRNA  
(C) tRNA (D) Both (B) and (C)
40. Which of the following are the Implications proposed by Erwin Chargaff?  
i. Purine and pyrimidine always occur in equal amount in DNA.  
ii. The base ratio i.e. A+T/G+C may vary in the DNA of different groups of animals and plants but the ratio remains constant for particular species.  
iii. Pyrimidine bases are single ring (monocyclic) nitrogenous bases.  
(A) i and iii (B) i and ii  
(C) ii and iii (D) i, ii and iii
41. Simple proteins on hydrolysis yield only \_\_\_\_\_.  
(A) nucleotides (B) glycerol  
(C) monosaccharides (D) amino acids
42. Which of the following proteins are involved in packaging of DNA into nucleosomes?  
(A) Haemoglobin (B) Histones  
(C) Metaprotein (D) Mucoproteins
43. In \_\_\_\_\_ the peptide chains are much looped, twisted and folded back on themselves due to formation of disulphide bonds.  
(A) primary structure  
(B) secondary structure  
(C) tertiary structure  
(D) Both (B) and (C)
44. Phospholipids are amphiphilic in nature because they have \_\_\_\_\_.  
(A) hydrophobic head and tail  
(B) hydrophilic head and tail  
(C) hydrophilic head and hydrophobic tail  
(D) hydrophobic head and hydrophilic tail
45. Glycolipids are also known as \_\_\_\_\_.  
(A) cerebrosides (B) simple lipids  
(C) derived lipids (D) phospholipids
46. Which of the following is a trisaccharide?  
(A) Erythrose (B) Raffinose  
(C) Ribose (D) Lactose
47. The exoskeleton of insects is made up of \_\_\_\_\_.  
(A) chitin (B) ribose  
(C) mucoprotein (D) lipoprotein
48. Which of the following is not the heteropolysaccharide?  
(A) Hyaluronic acid (B) Heparin  
(C) Hemicellulose (D) Glycogen
49. Which of the following is CORRECT with respect to cellulose?  
P. Natural sources: Plant fibers (cotton, flax, hemp, jute, etc.), wood.  
Q. Structural units: It is made from  $\beta$  glucose molecules.  
R. Functions: It is a major component of cell wall. It provides structural support.  
(A) P and R (B) P and Q  
(C) Q and R (D) P, Q and R
50. Glycogen is stored in liver and muscles and it readily provides energy when the blood \_\_\_\_\_ level decreases.  
(A) lactose (B) glucose  
(C) galactose (D) ribulose

- Identify the group that represents only primary metabolites.  
(A) Amino acids, Lipids, Cocaine, Sugars  
(B) Lipids, Terpene, Sugars, Proteins  
(C) Nicotine, Cocaine, Terpene, Amino acids  
(D) Sugars, Lipids, Proteins
- How many molecules of PGAL are used for synthesis of one molecule of glucose?  
(A) 2 (B) 5 (C) 10 (D) 12
- The floor of the buccal cavity correlates with  
(A) Tongue  
(B) Dentine  
(C) Palate  
(D) Salivary glands
- Which mode of excretion is followed by fresh water invertebrates or amphibian larvae?  
(A) Ammonotelic (B) Ureotelic  
(C) Uricotelic (D) Guanotelic
- Simple lipids are  
(A) lipids which contain additional elements or groups in addition to fatty acids and alcohol.  
(B) esters of fatty acids with alcohol.  
(C) hydrolytic products of lipids.  
(D) esters of amino acids and aldehyde or ketone group.
- Which of the following is not true about enzymes?  
(A) They act on specific substrate.  
(B) They act at optimum temperature.  
(C) They are made of amino acids and glycerol.  
(D) They act at specific pH.
- Which layer of the gastrointestinal tract is formed of loose connective tissues containing blood vessels, lymph vessels and nerves?  
(A) Mucosa (B) Submucosa  
(C) Serosa (D) Muscularis
- \_\_\_\_\_ is responsible for blood supply to kidney.  
(A) Renal vein  
(B) Renal artery  
(C) Inferior vena cava  
(D) Pulmonary artery
- Identify the CORRECT statement regarding carbohydrates.  
(A) They have either aldehyde or ketone group and two or more hydroxyl groups.  
(B) The general formula for complex carbohydrates is  $C_nH_{2n}O_n$ .  
(C) Glucose, fructose are complex carbohydrates.  
(D) In mammals, the monosaccharide – lactose present in milk provides energy to their young ones.
- In ETS, ATP is released between which cytochromes?  
(A) Cytochrome b-c<sub>1</sub> and cytochrome c  
(B) Cytochrome a and cytochrome a<sub>3</sub>  
(C) Cytochrome b-c<sub>1</sub> and cytochrome a<sub>3</sub>  
(D) Both (A) and (B)
- Number of molars in a normal adult human are  
(A) 4 (B) 8 (C) 12 (D) 2
- Which of the following organisms are guanotelic?  
(A) Spiders and scorpions  
(B) Birds and reptiles  
(C) Fishes and amphibians  
(D) All of these
- Which of the following are the two functional groups characteristic of sugars?  
(A) Methyl and Hydroxyl  
(B) Carbonyl and Methyl  
(C) Phosphate and Carbonyl  
(D) Carbonyl and hydroxyl
- Simple proteins on hydrolysis yield only \_\_\_\_\_.  
(A) amino acids (B) cholesterol  
(C) nucleosides (D) monosaccharides
- Structural lipids of the cell membrane are \_\_\_\_\_.  
(A) Chromolipid (B) Phospholipid  
(C) Steroid (D) Simple lipid
- \_\_\_\_\_ is the funnel-shaped area in the region of medulla of kidney.  
(A) Renal pelvis (B) Calyces  
(C) Renal pyramid (D) Renal papilla
- Monosaccharide that consists of 3C atoms is  
(A) Glyceraldehyde (B) Erythrose  
(C) Glucose (D) Ribose
- The net gain of ATP for five glucose molecule in anaerobic respiration is  
(A) 2 ATP (B) 5 ATP  
(C) 10 ATP (D) 15 ATP
- Which of the following is responsible for the emulsification of fats?  
(A) Pepsin (B) Bile salts  
(C) Pancreatic juice (D) HCl



20. Kidneys are associated with secretion of  
(A) ANF (B) CCK  
(C) vasopressin (D) calcitriol
21. \_\_\_\_\_ is a purine.  
(A) Guanine (B) Thymine  
(C) Cytosine (D) Uracil
22. \_\_\_\_\_ sugar is present in milk.  
(A) Glucose (B) Galactose  
(C) Sucrose (D) Lactose
23. Which of the following is NOT a monosaccharide?  
(A) Sucrose (B) Fructose  
(C) Glucose (D) Deoxyribose
24. Minor calyces merge together to form major calyces which unite together to form  
(A) ureter  
(B) collecting tubule  
(C) renal pelvis  
(D) convoluted duct
25. Cholesterol is a  
(A) steroid (B) carotenoid  
(C) compound lipid (D) simple lipid
26. Which of the following is NOT a phosphate donor in glycolysis?  
(A) PEPA (B) NADP  
(C) ATP (D)  $H_3PO_4$
27. Name the cartilaginous flap that guards the opening of the glottis.  
(A) Gullet (B) Epiglottis  
(C) Vestibule (D) Acini
28. Which of the following is NOT a disaccharide?  
(A) Lactose (B) Maltose  
(C) Galactose (D) Sucrose
29. Pick out the CORRECT statement with respect to pairing of nitrogenous bases in DNA.  
(A) Two – hydrogen bonds are present between guanine and cytosine.  
(B) Three – hydrogen bonds are present between adenine and thymine.  
(C) Total number of purine bases is equal to the total number of pyrimidine bases.  
(D) Purine and pyrimidine ratio is 2:1.
30. In anaerobic respiration, reduction of acetaldehyde to ethyl alcohol is assisted by coenzyme  
(A)  $NADH_2$   
(B)  $NADPH_2$   
(C) Thiamine pyrophosphate  
(D) Flavin Adenine Dinucleotide
31. Identify the function of the pancreatic cells.  
(A) Production of bile  
(B) Production of insulin  
(C) Glycogen storage  
(D) Synthesis of vitamins
32. The blood flowing through the kidney is filtered as glomerular filtrate at the rate of 125ml/min. How much glomerular filtrate is produced per day?  
(A) 100 litres (B) 180 litres  
(C) 200 litres (D) 20 litres
33. Identify the INCORRECT statements.  
(A) Prosthetic group is non-protein in nature and is attached to the protein component of enzyme by chemical bonds.  
(B) Amino acids are building blocks of lipids.  
(C) Nucleotides are basic units of nucleic acids.  
(D) The enzymes which act within the cell in which they are synthesized are known as endo-enzymes.
34. Which of the following happens during link reaction?  
(A) Oxidative decarboxylation  
(B) Oxidative Phosphorylation  
(C) Carboxylation  
(D) Condensation
35. In proteins, amino acids are linked together by peptide bonds which join the \_\_\_\_\_ of one amino acid residue to the \_\_\_\_\_ of another residue.  
(A) aldehyde group, ketone group  
(B) carboxyl group, amino group  
(C) carboxyl group, aldehyde group  
(D) ketone group, amino group
36. What is the blood colloidal osmotic pressure pressure?  
(A) 15 mm Hg (B) 30 mm Hg  
(C) 55 mm Hg (D) 10 mm Hg
37. Which of the following is NOT a macromolecule?  
(A) Cellulose (B) Glycogen  
(C) DNA (D) Lecithin
38. During the process of glycolysis, instead of glucose, if fructose-6-phosphate is used as substrate, then how many ATP will be gained?  
(A) 1 (B) 2 (C) 3 (D) 4
39. There are \_\_\_\_\_ number of teeth present in the upper jaw.  
(A) 32 (B) 20 (C) 16 (D) 8
40. \_\_\_\_\_ have green glands as excretory organs.  
(A) Echinoderms (B) Crustaceans  
(C) Mammals (D) Insects



41. Identify the structure which is absolutely necessary for the many biological activities of proteins.
- (A) Primary structure  
(B) Secondary structure  
(C) Tertiary structure  
(D) Both (A) and (B)
42. In anaerobic respiration, pyruvic acid undergoes decarboxylation to form
- (A) Acetaldehyde (B) Ethyl alcohol  
(C) Glucose (D) Citric Acid
43. Vitamins are absorbed in
- (A) lacteals  
(B) rectum  
(C) blood capillaries in the villi  
(D) lacteals and blood capillaries in villi
44. Highly coiled part of nephron is
- (A) proximal convoluted tubule  
(B) loop of Henle  
(C) distal convoluted tubule  
(D) collecting tubule
45. Identify the sugar present in the RNA.
- (A) Hexose sugar  
(B) Deoxyribose sugar  
(C) Ribose sugar  
(D) Dextrose sugar
46. The Respiratory Quotient for carbohydrates
- (A) 0.7 (B) 0.9  
(C) 1 (D) Infinite
47. Goblet cells are found in which layer of the gastrointestinal tract?
- (A) Serosa (B) Submucosa  
(C) Muscularis (D) Mucosa
48. When glucose is fermented using yeast, the net gain of ATP per glucose molecule is
- (A) 2 ATP (B) 12 ATP  
(C) 18 ATP (D) 38 ATP
49. Salivary glands are made up of
- (A) serous cells  
(B) acinar cells  
(C) goblet cells  
(D) Kupffer cells
50. When a protein has more than two polypeptide subunits their arrangement in space is called \_\_\_\_\_.
- (A) primary structure  
(B) secondary structure  
(C) tertiary structure  
(D) quaternary structure

# Model Test Paper - 01

Time: 90 min

Total Marks: 100

- Which of the following is the INCCORECT statement with respect to galactose?
  - Galactose can also exist in  $\alpha$  and  $\beta$  forms.
  - Galactose looks very similar to glucose molecules.
  - Galactose cannot play the same role in respiration as glucose.
  - Glucose and galactose can be easily converted into one another.
- Identify the location of oxidative phosphorylation.
  - Cytoplasm
  - Mitochondrial matrix
  - Inner mitochondrial membrane
  - Outer mitochondrial membrane
- Identify the location of the parotid glands.
  - Below the tongue
  - Front of the ear
  - Below the eye orbit
  - Between two jaws
- \_\_\_\_\_ has special receptors called osmoreceptors.
  - Medulla
  - Hindbrain
  - Neurohypophysis
  - Hypothalamus
- Which one of the following layer of the anther wall helps in its dehiscence?
  - Epidermis
  - Middle layer
  - Endothecium
  - Tapetum
- Which of the following is true if chamber A has water potential as  $-300$  units and chamber B has water potential as  $-500$  units? Also which of the two chambers has a higher  $\Psi_w$ ?
  - Osmosis takes place from chamber A to B and, chamber A has higher  $\Psi_w$ .
  - Osmosis takes place from chamber B to A and, chamber B has higher  $\Psi_w$ .
  - Osmosis takes place from chamber A to B and, chamber B has higher  $\Psi_w$ .
  - Osmosis takes place from chamber B to A and, chamber A has higher  $\Psi_w$ .
- In the expression for arithmetic growth,  $L_t = L_0 + rt$ , 'r' represents
  - elongation per unit time
  - growth rate
  - base of natural logarithms
  - both (A) and (B)
- Identify the INCORRECT statement.
  - In grasshopper, XX-XO type of sex determination is observed.
  - In birds male has genotype ZW and female has genotype ZZ.
  - In honey bee, male bees produce sperms by mitosis.
  - In large number of insects, male gametes (sperms) do not bear the 'X' chromosome.
- Match Column I with Column II and choose the correct option.
 

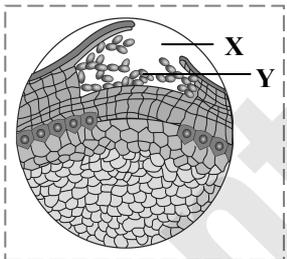
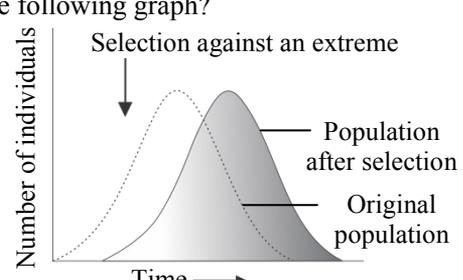
	Column I		Column II
1.	Pitch of DNA helix	a.	200 bp
2.	Distance between consecutive base pairs in a DNA helix	b.	3.4 nm
3.	Nucleosome content of DNA helix	c.	$0.34 \times 10^{-9}$ m
4.	Number of base pairs per turn of DNA helix	d.	10 bp

  - 1 - b, 2 - c, 3 - a, 4 - d
  - 1 - c, 2 - b, 3 - a, 4 - d
  - 1 - b, 2 - d, 3 - c, 4 - a
  - 1 - b, 2 - c, 3 - d, 4 - a
- Which amongst the following is considered as the living fossil?
  - Ichthyostega*
  - Archaeopteryx*
  - Coelacanth*
  - Seymouria*
- What is the incubation period of *P. malariae*?
  - 14 days
  - 17 days
  - 12 days
  - 28 days
- All are improved breeds of sugar developed at the Sugarcane Breeding Institute, Coimbatore, EXCEPT
  - CO-421
  - CO-419
  - CO-453
  - CO-12
- What is the pairing of primers to ssDNA segment known as
  - Deanneling
  - Annealing
  - Polymersiation
  - Denaturation
- In *Chlamydomonas*, asexual reproduction occurs by
  - fission
  - amphimixis
  - flagellated zoospores
  - gemmule formation

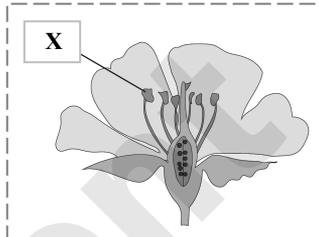


15. Identify the part of the nasal chamber also known as the conditioner.  
(A) Vestibule (B) Respiratory part  
(C) Sensory part (D) External nares
16. Which of the following cells are mainly responsible for production and probably also for circulation of CSF in brain ventricles and central canal?  
(A) Ependymal cells  
(B) Schwann cells  
(C) Satellite cells  
(D) Oligodendrocytes
17. Identify the INCORRECT pair.  
(A) Ectoparasite – Ticks on dog  
(B) Commensalism – Orchids growing on mango trees  
(C) Endoparasite – Marine fish infested with copepods  
(D) Mutualism – Interaction between Cuckoo and Crow
18. The process of decomposition in which detritus is degraded and converted into simple inorganic substances due to enzymatic action of fungi and bacteria is  
(A) Leaching (B) Catabolism  
(C) Humification (D) Mineralization
19. The species-area relationship equation is described as  $\log S = \log C + Z \log A$ . Regardless of the species under study, what is the value of Z for smaller areas?  
(A) 0.1 to 0.2 (B) 10 to 20  
(C) 0.6 to 1.2 (D) 0.2 to 0.6
20. \_\_\_\_\_ is responsible for causing diversity in amino acid molecules.  
(A) Number of carboxyl group in amino acids  
(B) Peptide bonds  
(C) Sequence of amino acids  
(D) R-group of amino acids
21. Anaerobic respiration can also be called as  
(A) oxidative decarboxylation  
(B) substrate level dephosphorylation  
(C) fermentation  
(D) electron transport chain
22. The succus entericus contains which set of digestive enzymes?  
(A) Rennin, amylase, chymotrypsin  
(B) Trypsin, pepsin, lactase  
(C) Maltase, enterokinase, trypsin  
(D) Sucrase, maltase, dipeptidase
23. Which hormone catalyses the following conversion?  
Angiotensinogen  $\longrightarrow$  angiotensin  
(A) Parathormone (B) Androgen  
(C) Aldosterone (D) Renin
24. Identify the INCORRECT statement with respect to asexual reproduction.  
(A) Asexual reproduction does not involve fusion of gametes.  
(B) Fragmentation is a method of asexual reproduction.  
(C) Reproduction by seed is a method of asexual reproduction.  
(D) Asexual reproduction is responsible for the production of clones.
25. Which of the following will be the consequence of placing a cell in an isotonic solution?  
(A) Water will diffuse into the cell  
(B) Water will diffuse out of the cell  
(C) There will be no net flow of water inside or outside of the cell  
(D) Cell will die due to loss of water
26. Which of the following hormone is responsible for removing apical dominance?  
(A) Gibberellins (B) Ethylene  
(C) Auxin (D) Cytokinin
27. What would be the possibility of a haemophilic daughter being born if a normal man marries a carrier woman (heterozygous) for haemophilia?  
(A) 75% (B) 50%  
(C) 25% (D) 0%
28. Calculate the number of base pairs in it if the length of a DNA segment is 2.72 m.  
(A)  $4 \times 10^9$  bp (B)  $8 \times 10^9$  bp  
(C)  $5 \times 10^8$  bp (D)  $6 \times 10^8$  bp
29. Which among the following is an example of molecular evidence of evolution?  
(A) Forelimbs of terrestrial vertebrates  
(B) Remnant of a tail in human  
(C) Flippers of penguins and dolphins  
(D) ATP as energy currency
30. The injectable Typhoid polysaccharide vaccine is sold as \_\_\_\_\_  
(A) Typhi 21 (B) Typherix  
(C) Ty 21a (D) Vivotif Berna
31. Which outbreeding process involves the mating of superior male of one breed with superior female of another breed?  
(A) Outcrossing  
(B) Interspecific hybridization  
(C) Outbreeding  
(D) Crossbreeding
32. Identify the source of the restriction enzyme *AhaI*.  
(A) *H. influenzae* Rd  
(B) *B. thuringiensis* H  
(C) *Arthrobacter luteus*  
(D) *Escherichia coli* Ry13



33. Fibromuscular band called \_\_\_\_\_ is present in the scrotum.  
 (A) dartos (B) gubernaculum  
 (C) spermatic cord (D) prepuce
34. Both atria and ventricles are in diastole for about  
 (A) 0.1 seconds (B) 0.3 seconds  
 (C) 0.4 seconds (D) 0.7 seconds
35. The potential difference seen in resting nerve is  
 (A)  $-20$  mV (B)  $-70$  mV  
 (C)  $-150$  mV (D)  $-200$  mV
36. The interaction that is detrimental to one of the species is  
 (A) Mutualism (B) Commensalism  
 (C) Amensalism (D) Both (A) and (B)
37. Calculate the energy available to snake as food in the following chain, if the grass is able to trap only 30 J of energy.  
 Grass  $\rightarrow$  Grasshopper  $\rightarrow$  Frog  $\rightarrow$  Snake  
 (A) 0.03 J (B) 0.003 J  
 (C) 0.3 J (D) 0.0003 J
38. The predator fish Nile perch being introduced into Lake Victoria is an example of  
 (A) habitat loss and fragmentation  
 (B) co-extinction  
 (C) over-exploitation  
 (D) alien species invasion
39. Which of the following statement is INCORRECT with respect to structure of amino acid?  
 (A) Amino acid contains two functional groups – Amino group and Carboxyl group.  
 (B) The carboxyl group ( $-\text{COOH}$ ) of amino acid is basic in nature.  
 (C) R-group of amino acids is responsible for causing diversity in amino acid molecules.  
 (D) In  $\alpha$  amino acids, the amino group and carboxyl group are attached to the same carbon atom.
40. Identify the enzyme that catalyzes the following reaction:  
 Glucose  $\rightarrow$  glucose-6-phosphate?  
 (A) Phosphofructokinase  
 (B) Hexokinase  
 (C) Phosphohexose isomerase  
 (D) Phosphoglyceromutase
41. In the liver, phagocytic cells called \_\_\_\_\_ cells are present.  
 (A) goblet (B) serous  
 (C) Kupffer (D) mast
42. Genetic disorder that causes kidney to excrete too much of certain amino acid results in  
 (A) uremia (B) nephritis.  
 (C) cystine stones (D) renal failure
43. Find the odd one out from the following and select the correct option.  
*Bryophyllum, Kalanchoe, Begonia, Asparagus*  
 (A) *Bryophyllum* (B) *Kalanchoe*  
 (C) *Begonia* (D) *Asparagus*
44. Identify the structures labelled as X and Y in the given diagram of lenticel and select the correct option.
- 
- (A) X: Loose complementary cells; Y: Lenticular pore  
 (B) X: Subsidiary cells; Y: Lenticular pore  
 (C) X: Lenticular pore; Y: Subsidiary cells  
 (D) X: Lenticular pore; Y: Loose complementary cells
45. Which of the following element is present in less amount in plant tissues?  
 (A) Oxygen (B) Magnesium  
 (C) Manganese (D) Nitrogen
46. A pea plant with yellow pods is crossed with another pea plant with green pods produced 51 green pods and 49 yellow pods. Identify the genotype of plant with green pods.  
 (A) gg (B) Gg  
 (C) GG (D) none of these
47. Which of the following correctly represents a set of stop codons?  
 (A) UAA, UGA, AUG  
 (B) UAA, AUG, UAG  
 (C) UAG, UGA, UGG  
 (D) UAA, UGA, UAG
48. Which type of natural selection is represented in the following graph?
- 
- (A) Stabilizing selection  
 (B) Disruptive selection  
 (C) Directional selection  
 (D) Balancing selection
49. Myosarcoma is related to tumor of  
 (A) Bone (B) Cartilage  
 (C) Muscle (D) Skin



50. The temperature and pH of nutrient medium should be maintained at \_\_\_\_\_ and \_\_\_\_\_ respectively during tissue culture.  
(A) 15-25<sup>0</sup>C; 4 – 4.8  
(B) 18-20<sup>0</sup>C; 5 – 5.8  
(C) 4-10<sup>0</sup>C; 6 – 6.8  
(D) 18-20<sup>0</sup>C; 7 – 7.8
51. Which is the recombinant protein used to dissolve blood clots?  
(A) Factor IX  
(B) Urokinase  
(C) Interleukin-1 receptor  
(D) Tissue plasminogen activator
52. \_\_\_\_\_ cells lie in between seminiferous tubules.  
(A) Leydig (B) Sertoli  
(C) Sustentacular (D) Germinal
53. Where does the cardiovascular center lie?  
(A) Spinal cord  
(B) Medulla oblongata  
(C) Pons  
(D) Cerebellum
54. Which of the following are parts of forebrain?  
(A) Olfactory lobes, cerebrum, diencephalon.  
(B) Thalamus, hypothalamus.  
(C) Telencephalon, diencephalon.  
(D) Cerebellum, medulla oblongata.
55. Which of the following is INCORRECT with respect to hibernation?  
(A) It is also called as winter sleep.  
(B) It is state of reduced activities in some organisms to escape cold winter conditions.  
(C) Animals rest in cool places.  
(D) It is shown by bear inhabiting in cold regions.
56. Which of the following method represents *in-situ* conservation of endangered species?  
(A) Zoological park (B) National park  
(C) Culture collection (D) Botanical garden
57. The structure of DNA shows presence of following bonds, except  
(A) Peptide bond  
(B) Phosphodiester bond  
(C) Hydrogen bond  
(D) Glycosidic bond
58. In a 3.2 Kbp long piece of DNA, 820 adenine bases were found. Identify the number of cytosine bases.  
(A) 780 (B) 2380  
(C) 760 (D) 790
59. Complete the reaction by identifying X.  
$$C_6H_{12}O_6 \xrightarrow{\text{Glycolysis}} \text{'X'} + 2NADH+H^+ \longrightarrow 2CH_3CHOHCOOH + 2NAD^+$$
  
(A) 4CH<sub>3</sub>COCOOH (B) 2CH<sub>3</sub>COCOOH  
(C) 6CH<sub>3</sub>COCOOH (D) 2CH<sub>3</sub>CHO
60. Which conversion is catalyzed by saliva?  
(A) Proteins into amino acids  
(B) Glycogen into glucose  
(C) Starch into maltose  
(D) Lipids into fatty acids
61. Condition of having kidney stones is referred as  
(A) Nephritis (B) Proteinuria  
(C) Bright's disease (D) Renal calculi
62. Identify the structure labelled as X in the given diagram along with its function and select the correct option.
- 
- |     | Structure | Function               |
|-----|-----------|------------------------|
| (A) | Stigma    | Produce pollen grains  |
| (B) | Stigma    | Receives pollen grains |
| (C) | Anther    | Produce pollen grains  |
| (D) | Anther    | Receives pollen grains |
63. Water transport need in most of the plants is met by \_\_\_\_\_.  
(A) osmosis  
(B) root pressure  
(C) guttation  
(D) transpiratory pull
64. Which of the following hormone can be used as a weedicide?  
(A) IAA (B) IBA  
(C) GA (D) 2,4-D
65. Identify the CORRECT statement from the following.  
(A) Individual with genotype Hb<sup>A</sup>Hb<sup>S</sup> shows severe symptoms of Sickle cell anaemia.  
(B) Males with Turner syndrome are fertile.  
(C) Females with Klinefelter syndrome are fertile.  
(D) Colour blindness is a sex-linked or X-linked recessive disorder.
66. Amino acid sequence in protein synthesis is decided by the sequence of codons present on  
(A) tRNA (B) mRNA  
(C) rRNA (D) siRNA
67. Charas, marijuana, ganja and hashish are obtained from  
(A) *Erythroxylum coca*  
(B) *Papaver somniferum*  
(C) *Cannabis sativa*  
(D) *Datura stramonium*
68. Biofortified wheat with high protein content is  
(A) Pusa Sem 2 (B) Atlas-66  
(C) Pusa Sadabahar (D) Pusa Sawani



69. What is the right granted by the government to an inventor in order to prevent others from commercially using his invention?  
 (A) Biopiracy (B) Bioethics  
 (C) Patent (D) Biowar
70. All are true for epididymis, EXCEPT  
 (A) It receives sperms from testis.  
 (B) It stores sperms till ejaculation.  
 (C) It helps maturation of sperms.  
 (D) It passes through the prostate and opens into the urethra
71. \_\_\_\_\_ acts as the pacemaker of the heart.  
 (A) SA node (B) AV node  
 (C) AV septum (D) Bundle of His
72. Identify the part of the brain which can distinguish smell.  
 (A) Epithalamus (B) Pons varolii  
 (C) Olfactory lobes (D) Medulla
73. Which of the following indicates parasitism between species A and B?  
 (A) +, - (B) -, -  
 (C) +, + (D) +, 0
74. What is the respiratory quotient of proteins?  
 (A) 1.0 (B) 0.8 (C) 0.9 (D) 0.5
75. \_\_\_\_\_ is sudden worsening of renal failure that most commonly happens after severe bleeding.  
 (A) ARF (B) Uremia  
 (C) CKD (D) Nephritis
76. Complete the given analogy with respect to the essential whorls of a flower.  
 Androecium:Stamen:: Gynoecium: \_\_\_\_\_  
 (A) Pistil (B) Carpel  
 (C) Sepals (D) Calyx
77. In *Mirabilis jalapa*, when two  $F_1$  pink flowered plants were crossed with each other, the  $F_2$  generation produced 20 red, 40 pink and 20 white flowering plants. Identify the type of inheritance.  
 (A) Recessive epistasis  
 (B) Polygenic inheritance  
 (C) Incomplete dominance  
 (D) Co-dominance
78. Which one of the following makes use of RNA as a template to initiate DNA synthesis?  
 (A) Reverse transcriptase  
 (B) DNA-dependent RNA polymerase  
 (C) DNA dependent DNA polymerase  
 (D) RNA polymerase
79. What is the antibacterial substance present in tears?  
 (A) Perforin (B) Lysozyme  
 (C) Histamine (D) CRP
80. At what temperature does denaturation take place in the thermal cycler?  
 (A) 50 – 55°C (B) 90 – 98°C  
 (C) 40 – 60°C (D) 70 – 75°C
81. hCG level decreases  
 (A) after second trimester  
 (B) after first trimester  
 (C) during third trimester  
 (D) after delivery
82. What is the contraction of heart muscles known as?  
 (A) diastole  
 (B) systole  
 (C) ventricular systole  
 (D) ventricular diastole
83. \_\_\_\_\_ lobe has visual area mainly for sense of vision.  
 (A) Frontal (B) Occipital  
 (C) Parietal (D) Temporal
84. Which of the following biome receives least rainfall and has high temperature?  
 (A) Coniferous forest  
 (B) Desert  
 (C) Arctic and Alpine Tundra  
 (D) Tropical forest
85. Which hormone can lower blood- $\text{Na}^+$  concentration by way of water reabsorption in DCT and collect duct?  
 (A) Oxytocin (B) PTH  
 (C) ADH (D) ACTH
86. Which of the following part attaches ovule to the placenta inside the ovary?  
 (A) Hilum (B) Nucellus  
 (C) Funiculus (D) Synergids
87. Who proposed the chromosomal theory of inheritance?  
 (A) Norman Borlaug  
 (B) Watson and Crick  
 (C) Sutton and Boveri  
 (D) Mendel
88. In processing of eukaryotic hnRNA during protein synthesis tailing involves \_\_\_\_\_.  
 (A) addition of methyl guanosine triphosphate at 3' end  
 (B) addition of methyl guanosine triphosphate at 5' end  
 (C) addition of adenylate residues at 3' end  
 (D) removal of exons and splicing of introns
89. Rupturing of amniotic membrane of foetus occurs  
 (A) after expulsion stage  
 (B) after birth  
 (C) during expulsion stage  
 (D) during dilation stage



90. Which of the following is responsible for converting inactive fibrinogens into active fibrins?  
(A) Thrombokinase (B) Prothrombin  
(C) Thromboplastin (D) Thrombin
91. Identify the cranial nerves that control the movement of eye.  
(A) III, IV and V (B) IV, V and VII  
(C) III, IV and VI (D) III, V and VII
92. \_\_\_\_\_ recessive sex linked genes are required for expression of sex linked traits in females.  
(A) 2 (B) 4  
(C) 6 (D) 8
93. Identify the term that refers to the process by which DNA duplicates to form identical copies.  
(A) Transcription  
(B) Translation  
(C) Reverse transcription  
(D) Replication
94. The natural method of contraception is also known as  
(A) coitus interruptus  
(B) rhythm method  
(C) physiological method.  
(D) none of these
95. Total volume of air accommodated in the lungs at the end of a forced inspiration is represented as  
(A)  $TLC = RV + ERV + TV + IRV$   
(B)  $EC = TV + ERV$   
(C)  $IRV = ERV + RV$   
(D)  $VC = IRV + TV + ERV$
96. \_\_\_\_\_ gland is located in a bony depression called sella turcica.  
(A) Pituitary (B) Pineal  
(C) Parathyroid (D) Thyroid
97. All are temporary methods of birth control, EXCEPT  
(A) vasectomy (B) saheli  
(C) IUD (D) nirodh
98. How many lobes is the Pituitary gland divided into?  
(A) Two (B) Three  
(C) Four (D) Seven
99. Identify X, Y and Z in the given chart and select the correct option.

'X' is the female reproductive whorl of a flower



Individual member of 'X' is called 'Y'



'Y' consists of stigma, ovary and 'Z'

- (A) X: Gynoecium; Y: Pistil; Z: Style  
(B) X: Androecium; Y: Carpel; Z: Anther  
(C) X: Gynoecium; Y: Carpel; Z: Style  
(D) X: Androecium; Y: Stamens; Z: Anther

100. A Red list of endangered species is maintained by  
(A) CSIR (B) IUCN  
(C) NEERI (D) WLS

**Topic Test - 01**

- |   |         |         |   |
|---|---------|---------|---|
| 1. (A)  | 2. (A)  | 3. (A)  | 27. (B)   |
| 4. (B)  | 5. (B)  |         | 28. (A)   |
| 6. (A)  |         |         | 29. (C)   |
| Glycolipid, phospholipid and glycerophospholipid are compound lipids.     |         |         | 30. (A)   |
| 7. (A)  | 8. (A)  | 9. (A)  | Glycolipids are compound lipids whereas steroids, waxes and carotenoids are derived lipids. |
| 10. (B)   | 11. (C) | 12. (D) | 31. (B)   |
| 13. (B)   | 14. (B) | 15. (B) | 32. (C)   |
| 16. (B)   | 17. (B) |         | 33. (B)   |
| 18. (D)   |         |         | 34. (A)   |
| Ribulose and fructose are monosaccharides with ketone groups.             |         |         | 35. (B)   |
| 19. (B)   |         |         | 36. (B)   |
| Adenine is a purine base.   |         |         | 37. (C)   |
| 20. (B)   | 21. (B) |         | 38. (B)   |
| 22. (C)   |         |         | Histones and albumins are simple proteins and haemoglobin is conjugated protein.            |
| Fructose – $C_6H_{12}O_6$   |         |         | 39. (C)   |
| 23. (D)   |         |         | 40. (B)   |
| 24. (D)   |         |         | 41. (D)   |
| Lipids are heterogeneous, organic compounds. They are insoluble in water. |         |         | 42. (B)   |
| 25. (B)   |         |         | 43. (C)   |
| 26. (D)   |         |         | 44. (C)   |
| Lipids are micromolecules.  |         |         | 45. (A)   |
|   |         |         | 46. (B)   |
|   |         |         | 47. (A)   |
|   |         |         | 48. (D)   |
|   |         |         | Glycogen is a homopolysaccharide.   |
|   |         |         | 49. (D)   |
|   |         |         | 50. (B)   |

**Topic Test - 02**

- |   |         |   |         |         |
|---|---------|---|---------|---------|
| 1. (D)  | 2. (A)  | 16. (A)   | 17. (B) | 18. (B) |
| 3. (A)  |         | 19. (C)   |         |         |
| Hexokinase helps in Glycolysis and hence present in cytoplasm. Rest help in Krebs cycle, hence present in mitochondria.   |         | End products of aerobic respiration are $CO_2$ , $H_2O$ and energy.   |         |         |
| 4. (B)  |         | 20. (D)   | 21. (B) | 22. (A) |
| 5. (C)  |         | 23. (A)   | 24. (D) | 25. (A) |
| During formation of one molecule of Acetyl Co –A, one $NADH_2$ is formed, which ultimately yields 3 ATP molecules in ETS. |         | 26. (C)   | 27. (B) | 28. (D) |
| 6. (A)  | 7. (D)  | 29. (B)   | 30. (D) | 31. (C) |
|   | 8. (C)  | 32. (A)   | 33. (B) | 34. (A) |
| 9. (D)  |         | 35. (B)   | 36. (A) | 37. (C) |
| In alcoholic fermentation of sucrose, the first step is hydrolysis followed by glycolysis, decarboxylation and reduction. |         | 38. (D)   |         |         |
| 10. (C)   | 11. (D) | 39. (C)   |         |         |
|   | 12. (C) | During anaerobic respiration, the net gain of ATP is 2 ATP per glucose molecule.  |         |         |
| 13. (D)   | 14. (A) | Thus number of ATP molecules generated by the breakdown of 20 glucose molecules during anaerobic respiration is $(2 \times 20 \text{ ATP})$ 40 ATP. |         |         |
|   | 15. (D) |   |         |         |



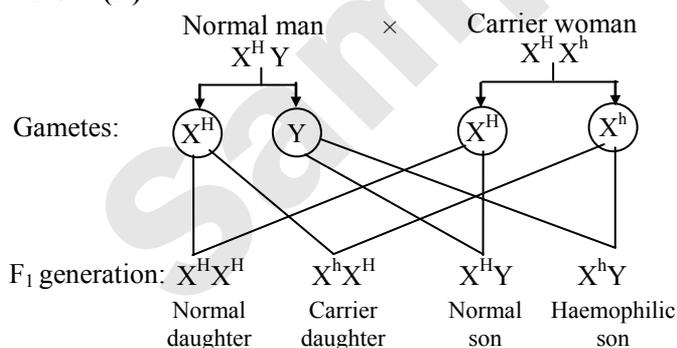
### Revision Test - 01

- |        |        |        |         |         |         |
|--------|--------|--------|---------|---------|---------|
| 1. (D) | 2. (A) | 3. (A) | 39. (C) | 40. (B) | 41. (C) |
| 4. (A) | 5. (B) | 6. (C) | 42. (A) | 43. (C) | 44. (A) |
| 7. (B) | 8. (B) |        | 45. (C) | 46. (C) | 47. (D) |
| 9. (A) |        |        | 48. (A) | 49. (A) | 50. (D) |
- The general formula for simple carbohydrates is  $C_nH_{2n}O_n$  and for complex carbohydrates it is  $(C_6H_{10}O_5)_n$ .  
 Glucose and fructose are simple carbohydrates. In mammals, the disaccharide-lactose present in milk provides energy to their young ones.
- |         |         |         |
|---------|---------|---------|
| 10. (D) | 11. (C) | 12. (A) |
| 13. (D) | 14. (A) | 15. (B) |
| 16. (A) |         |         |
| 17. (A) |         |         |
- Erythrose – 4C atoms  
 Glucose – 6C atoms  
 Ribose – 5C atoms
- |         |         |         |
|---------|---------|---------|
| 18. (C) | 19. (B) | 20. (D) |
|---------|---------|---------|
21. (A)  
 Thymine, cytosine and uracil are pyrimidines.
22. (D)
23. (A)  
 Sucrose is a disaccharide.
- |         |         |         |
|---------|---------|---------|
| 24. (C) | 25. (A) | 26. (B) |
|---------|---------|---------|
- |         |         |  |
|---------|---------|--|
| 27. (B) | 28. (C) |  |
|---------|---------|--|
29. (C)  
 Two hydrogen bonds are present between adenine and thymine.  
 Three hydrogen bonds are present between guanine and cytosine.  
 Purine and pyrimidine ratio is 1:1.
- |         |         |         |
|---------|---------|---------|
| 30. (A) | 31. (B) | 32. (B) |
|---------|---------|---------|
- |         |         |         |
|---------|---------|---------|
| 33. (B) | 34. (A) | 35. (B) |
|---------|---------|---------|
36. (B)
37. (D)  
 Lecithin is a micro-molecule.
38. (C)  
 During the process of glycolysis, 4 molecules of ATP are generated. If fructose-6-phosphate is used as substrate instead of glucose, then phosphorylation -I will not occur and only one ATP molecule will be utilized in phosphorylation II. Hence, net gain of ATP will be  $4 - 1 = 3$ ATP



### Model Test Paper - 01

1. (D)  
Glucose and galactose cannot be easily converted into one another.
2. (C)      3. (B)      4. (D)
5. (C)
6. (A)  
Chamber A has a higher water potential and hence osmosis will take place from chamber A to chamber B.
7. (D)
8. (B)  
In birds male has genotype ZZ and female has genotype ZW.
9. (A)      10. (C)      11. (D)
12. (D)  
CO-12 is hybrid variety of jowar.
13. (B)      14. (C)      15. (B)
16. (A)
17. (D)  
Brood parasitism – Interaction between Cuckoo and Crow
18. (B)      19. (A)      20. (D)
21. (C)      22. (D)      23. (D)
24. (C)  
Reproduction by seed is a method of sexual reproduction.
25. (C)      26. (D)
27. (D)



28. (B)  
The number of base pairs can be calculated by dividing the length of the DNA by the distance between the base pairs  
i.e.  $\frac{2.72\text{m}}{0.34 \times 10^{-9}\text{m/bp}} = 8 \times 10^9 \text{ bp}$
29. (D)      30. (B)      31. (D)
32. (C)      33. (B)      34. (C)

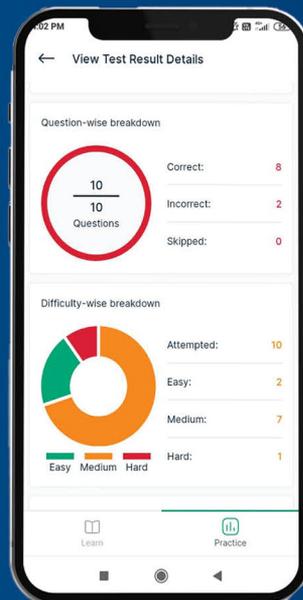
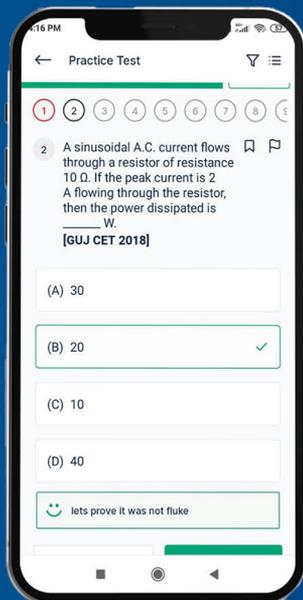
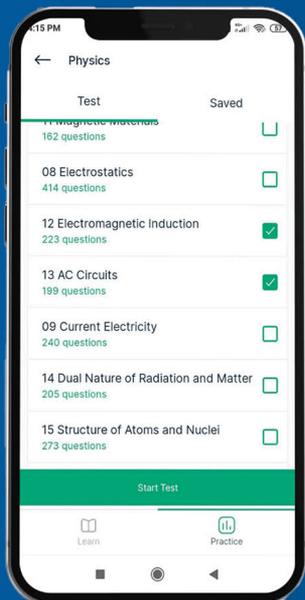
35. (B)      36. (C)
37. (A)  
This is based on Lindeman's 10 percent Law. So, if grass traps 30 Joule energy then,  
Grass(30 J)  $\rightarrow$  Grasshopper (3 J)  $\rightarrow$  Frog(0.3 J)  $\rightarrow$  Snake(0.03 J)  
So, energy available for Snake is 0.03 J.
38. (D)
39. (B)  
The carboxyl group ( $-\text{COOH}$ ) of amino acid is acidic in nature, whereas the amino group ( $-\text{NH}_2$ ) is basic in nature.
40. (B)      41. (C)      42. (C)
43. (D)  
*Asparagus* is vegetatively propagated through roots. *Bryophyllum*, *Kalanchoe* and *Begonia* are propagated through leaves.
44. (D)      45. (C)
46. (B)  
In the given cross, green pods and yellow pods are produced in 1:1 ratio, hence it has to be a test cross. Thus, genotype of green pods must be Gg.
47. (D)      48. (C)      49. (C)
50. (B)      51. (D)      52. (A)
53. (B)      54. (A)
55. (C)  
Hibernating animals rest in warm places.
56. (B)      57. (A)
58. (A)  
 $3.2\text{ kbp} = 3200\text{ bp}$   
Adenine = 820, then Thymine = 820 ( $\because A = T$ )  
 $A + T = 1640$  i.e.  $820 + 820$   
 $\therefore G + C = 3200 - 1640 = 1560$   
 $\therefore \text{Cytosine} = \frac{1560}{2} = 780$  ( $\because C \equiv G$ )
59. (B)      60. (C)      61. (D)
62. (C)      63. (D)      64. (D)
65. (D)  
Klinefelter syndrome occurs in males and Turner syndrome occurs in females. Thus, males with Klinefelter syndrome are sterile and females with Turner syndrome are sterile. Individual with genotype  $\text{Hb}^A \text{Hb}^S$  is a carrier of Sickle cell anaemia.



66. (B)      67. (C)      68. (B)  
69. (C)      70. (D)      71. (A)  
72. (C)      73. (A)      74. (C)  
75. (A)      76. (B)      77. (C)  
78. (C)      79. (B)      80. (B)  
81. (B)      82. (B)      83. (B)  
84. (B)      85. (C)      86. (C)  
87. (C)      88. (C)      89. (D)  
90. (D)  
91. (C)  
Oculomotor, Pathetic and Abducens are the cranial nerves that control the activity of eye muscles.  
92. (A)      93. (D)      94. (B)  
95. (A)  
Total Lung Capacity (TLC): Total volume of air accommodated in the lungs at the end of a forced inspiration.  
96. (A)      97. (A)  
98. (A)  
Pituitary gland is divided into two lobes – adenohypophysis and neurohypophysis.  
99. (C)      100. (B)



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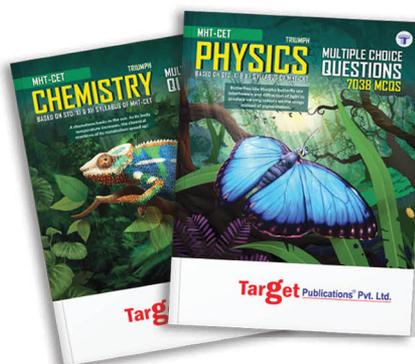
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