EXERCISE-I (Conceptual Questions) Build Up Your Understanding

BIOMOLECULES

1. Which is correct in following –
(1) Monosaccharides also known as sugars
(2) Polysaccharides are non sugars
(3) Maltose and Lactose are reducing sugar
(4) All of these

CBM015

2. Which of the following gives osazone different from the other three :-
(1) Glucose (2) Mannose
(3) Galactose (4) Fructose

CBM017

3. The change in the optical rotation of freshly prepared solution of glucose is known as :-
(1) Tautomerism
(2) Racemisation
(3) Specific rotation
(4) Mutarotation

CBM011

4. Structure of glycogen is similar to :-
(1) Amylose (2) Amylopectin
(3) Cellulose (4) Glucose

CBM016

5. Anomers of glucose (α-form & β-form) are differ in the stereochemistry at which carbon-
(1) C-1 (2) C-2
(3) C-3 (4) All of these

CBM018

6. Sucrose in presence of invertase on hydrolysis gave –
(1) Glucose (2) Fructose
(3) Ethyl alcohol (4) Both (1) and (2)

CBM019

7. Cellulose can not be tested by followings –
(1) Fehling's solution (2) Tollen's reagent
(3) Both of these (4) None of these

CBM022

8. Which of the following do not have hemiacetal group:-
(1) Fructose (2) Maltose
(3) Sucrose (4) Glucose

CBM024

9. Which of the following carbohydrates are branched polymer of glucose.
(1) Glycogen (2) Amylopectin
(3) Cellulose (4) Both (1) and (2)

CBM038

10. Reducing sugars are one which :
(1) Reduce fehling's solutions
(2) Not reduce tollen's reagent
(3) Have bonded aldehydic or ketonic groups
(4) All of these

CBM042

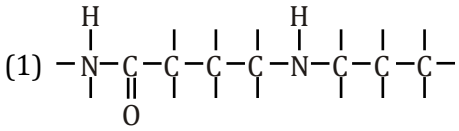
11. Which of the following are polysaccharides –
(a) Starch (b) Cellulose
(c) Dextrins (d) Glycogen
(1) a, b & c (2) a, b, d
(3) a & c (4) a, b, c, d

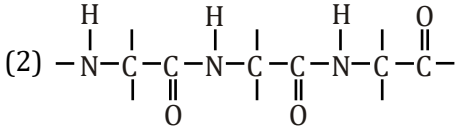
CBM021

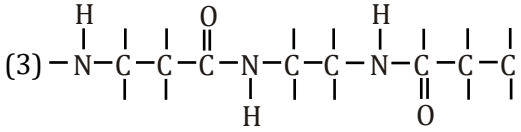
12. The helical structure of protein is stabilized by –
(1) Hydrogen bonds (2) Ether bonds
(3) Peptide bonds (4) Dipeptide bonds

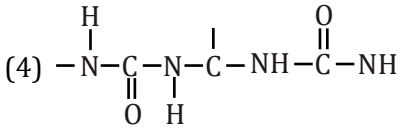
CBM004

13. Which of the following structures represents the peptide chain -

(1) 

(2) 

(3) 

(4) 

CBM005

14. Which functional group participates in disulfide bond formation in proteins –
(1) Thioether (2) Thiol
(3) Thioester (4) Thiolactone
CBM006

15. Which is simplest amino acid –
(1) Alanine (2) Asparagine
(3) Glycine (4) Tyrosine
CBM008

16. Which of the following biomolecules is insoluble in water -
(1) α–Keratin (2) Haemoglobin
(3) Ribonuclease (4) Adenine
CBM009

17. Lysine; $H_2N-(CH_2)_4-\underset{\underset{NH_2}{|}}{CH}-COOH$ is :-
(1) α-Amino acid
(2) γ-amino acid
(3) Amino acid synthesised
(4) β-Amino acid
CBM013

18. In fibrous protein, polypeptide chains are held together by :-
(1) H-bond
(2) Disulphide linkage
(3) Electrostatic forces attraction
(4) Both (1) and (2)
CBM014

19. In amino acids, more number of amino than carboxyl groups makes it –
(1) Acidic (2) Basic
(3) Neutral (4) None of these
CBM025

20. Which amino acids are called non essential –
(1) Those which can be synthesized in the body.
(2) Those which have more amino groups as compared to carboxyl groups
(3) Those which have equal number of amino acid and carboxyl groups
(4) None of these
CBM026

21. Which of the following is not essential amino acid –
(1) Serine (2) Lysine
(3) Threonine (4) Tryptophan
CBM027

22. In acidic & alkaline solution amino acids exists as a –
(1) Positive ion & negative ion respectively
(2) Negative ion & positive ions respectively
(3) Neutral in both medium
(4) None of these
CBM028

23. In which of following shapes are found in tertiary structure of proteins –
(1) Fibrous (2) Globular
(3) Both of these (4) None of these
CBM029

24. The example of globular protein is
(1) Silk (2) Collagen
(3) Haemoglobin (4) All of these
CBM030

25. If a native protein is subjected to physical or chemical treatment which may disrupt its various forms without affecting its primary structure, are called –
(1) Inactive protein (2) Denatured protein
(3) Both of these (4) None of these
CBM031

26. The coagulation of egg protein while boiling of egg is called –
(1) Reversible protein denaturation
(2) Irreversible protein denaturation
(3) Renaturation
(4) None of these
CBM032

27. The correct statement in respect of protein haemoglobin is that it –
(1) Maintains blood sugar level
(2) Acts as an oxygen carrier in the blood
(3) Forms antibodies and offers resistance to diseases
(4) Acts as a catalyst for biological reactions
CBM002

28. Which of the following is not an amino acid
(1) Histidine (2) Benzidine
(3) Alanine (4) Proline
CBM040

29. The nitrogenous base having two possible hydrogen bonding sites is –
(1) Thymine (2) Cytosine
(3) Guanine (4) None
CBM001

30. The presence or absence of hydroxy group on which carbon atom of sugar differentiates RNA and DNA?
(1) 3^{rd} (2) 4^{th}
(3) 1^{st} (4) 2^{nd}
CBM010

31. Which one of the following bases is not present in DNA ?
(1) Cytosine (2) Thymine
(3) Quinoline (4) Adenine
CBM012

32. RNA contains following pyrimidine bases –
(a) Thymine (b) Uracil
(c) Cytosine (d) Adenine
(1) b & c (2) a, b, c
(3) a, b, d (4) All of these
CBM036

33. Which of the following is correct about H–bonding in nucleotide –
(1) A–T G–C (2) A–G T–C
(3) G–T A–C (4) A–A T–T
CBM045

34. Mainly DNA is localized in –
(1) Cytoplasm (2) Nucleus
(3) Mitochondria (4) Chloroplasts
CBM035

35. DNA molecules can duplicate themselves-called –
(1) Replication (2) Translation
(3) Transcription (4) None of these
CBM037

36. Which of the following B group vitamins can be stored in our body.
(1) Vitamin B_1 (2) Vitamin B_2
(3) Vitamin B_6 (4) Vitamin B_{12}
CBM020

37. Vitamin K
(1) Is phylloquinone
(2) Soluble in oils and fats
(3) Deficiency lenthens the blood clotting
(4) All of these
CBM039

38. An enzyme molecule may contain protein and non-protein part. Non-protein part is known as:-
(1) Holoenzyme (2) Cofactor
(3) Inverted enzyme (4) None of these
CBM033

39. Vitamin C is called :
(1) Antisterility (2) Antiscurvy
(3) both of these (4) None of these
CBM041

40. Which vitamin is synthesize in human body from carotene
(1) Vitamin-A (2) Vitamin-C
(3) Vitamin-K (4) All of these
CBM044

41. Multiple deficiencies caused by lack of more than one vitamin are more common in human beings. This condition of vitamin deficiency is known as
(1) Avitaminosis (2) Xerophthalmia
(3) Convulsions (4) None of these
CBM043

42. The cell membranes are mainly composed of–
(1) Phospholipids
(2) Proteins
(3) Fats
(4) Carbohydrates
CBM007

43. On hydrolysis of proteins, the product is/are–
(1) Amino acids (2) Peptides
(3) Enzymes (4) Both (1) and (2)
CBM023

44. Cofactor which gets attached to the enzyme at the time of reaction are known as
(1) Coenzymes (2) Apoenzyme
(3) Prothetic group (4) None of these
CBM034

45. The hormone that helps in the conversion of glucose to glycogen is –
(1) Bile acids (2) Adrenaline
(3) Insulin (4) Cortisone
CBM003

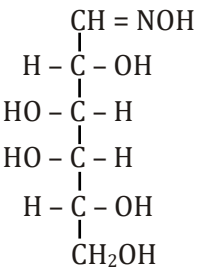
EXERCISE-I (Conceptual Questions) ANSWER KEY

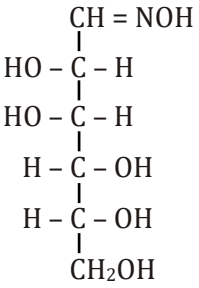
Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**4**	**3**	**4**	**2**	**1**	**4**	**3**	**3**	**4**	**1**	**4**	**1**	**2**	**2**	**3**
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	**1**	**1**	**4**	**2**	**1**	**1**	**1**	**3**	**3**	**2**	**2**	**2**	**2**	**1**	**4**
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	**3**	**1**	**1**	**2**	**1**	**4**	**4**	**2**	**2**	**1**	**1**	**1**	**4**	**1**	**3**

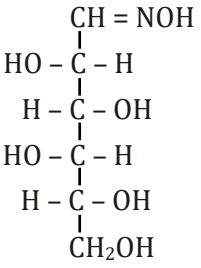
EXERCISE-II (Previous Year Questions) AIPMT/NEET

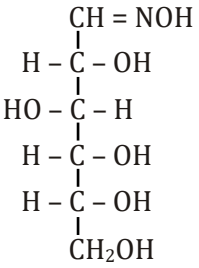
AIPMT 2014

1. D (+) glucose reacts with hydroxylamine and yields an oxime. The structure of the oxime would be :

(1) 

(2) 

(3) 

(4) 

CBM062

NEET-I 2016

2. In a protein molecule various amino acids are linked together by :

(1) α-glycosidic bond (2) β-glycosidic bond

(3) Peptide bond (4) Dative bond

CBM063

3. The **correct** statement regarding RNA and DNA, respectively is :

(1) The sugar component in RNA is arabinose and the sugar component in DNA is 2'-deoxyribose.

(2) The sugar component in RNA is ribose and the sugar component in DNA is 2'-deoxyribose.

(3) The sugar component in RNA is arabinose

(4) The sugar component in RNA is 2'-deoxyribose and the sugar component in DNA is arabinose.

CBM064

4. Which one given below is a non-reducing sugar ?

(1) Maltose (2) Lactose

(3) Glucose (4) Sucrose

CBM065

NEET-II 2016

5. The central dogma of molecular genetics states that the genetic information flows from :-

(1) DNA → RNA → Proteins

(2) DNA → RNA → Carbohydrates

(3) Amino acids → Proteins → DNA

(4) DNA → Carbohydrates → Proteins

CBM066

6. Which one of the following compounds shows the presence of intramolecular hydrogen bond?

(1) Cellulose

(2) Concentrated acetic acid

(3) H_2O_2

(4) HCN

CBM067

NEET(UG) 2018

7. The difference between amylose and amylopectin is

(1) Amylopectin have 1 → 4 α-linkage and 1→ 6 α-linkage

(2) Amylose have 1 → 4 α-linkage and 1→ 6 β-linkage

(3) Amylopectin have 1 → 4 α-linkage and 1→ 6 β-linkage

(4) Amylose is made up of glucose and galactose

CBM068

8. Which of the following compounds can form a zwitterion ?

(1) Aniline (2) Acetanilide

(3) Benzoic acid (4) Glycine

CBM127

NEET(UG) 2019

9. The non-essential amino acid among the following is:

(1) Valine (2) Leucine

(3) Alanine (4) Lysine

CBM069

NEET(UG) 2019 (ODISHA)

10. Which structure(s) of proteins remains(s) intact during denaturation process ?
(1) Both secondary and tertiary structures
(2) Primary structure only
(3) Secondary structure only
(4) Tertiary structure only

CBM070

NEET(UG) 2020

11. Sucrose on hydrolysis gives :
(1) α-D-Fructose + β-D-Fructose
(2) β-D-Glucose + α-D-Fructose
(3) α-D-Glucose + β-D-Glucose
(4) α-D-Glucose + β-D-Fructose

CBM071

12. Which of the following is a basic amino acid:
(1) Lysine (2) Serine
(3) Alanie (4) Tyrosine

CBM072

NEET(UG) 2020 (COVID-19)

13. The reaction of concentrated sulphuric acid with carbohydrates ($C_{12}H_{22}O_{11}$) is an example of
(1) Dehydration (2) Oxidation
(3) Reduction (4) Sulphonation

CBM073

14. Deficiency of which vitamin causes osteomalacia?
(1) Vitamin A (2) Vitamin D
(3) Vitamin K (4) Vitamin E

CBM074

NEET(UG) 2021

15. The RBC deficiency is deficiency disease of:
(1) Vitamin B_{12} (2) Vitamin B_6
(3) Vitamin B_1 (4) Vitamin B_2

CBM075

NEET(UG) 2023

16. Given below are two statements:
Statement-I : A unit formed by the attachment of a base to l' position of sugar is known as nucleoside
Statement-II : When nucleoside is linked to phosphorous acid at 5'-position of sugar moiety, we get nucleotide.
In the light of the above statements, choose the **correct** answer from the options given below:
(1) Both Statement-I and Statement-II are false
(2) Statement-I is true but Statement-II is false
(3) Statement-I is false but Statement-II is true
(4) Both Statement-I and Statement-II are true

CBM114

17. Cheilosis occurs due to deficiency of_____.
(1) thiamine (2) nicotinamide
(3) pyridoxamine (4) riboflavin

CBM115

NEET(UG) 2024 (Re-examination)

18. Given below are two statements :
Statement-I : Glycogen is similar to amylose in its structure.
Statement-II : Glycogen is found in yeast and fungi also.
In the light of the above statements, choose the **correct** answer from the options given below :
(1) Statement-I is true but Statement-II is false
(2) Statement-I is false but Statement-II is true
(3) Both Statement-I and Statement-II are true
(4) Both Statement-I and Statement-II are false

CBM116

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**4**	**3**	**2**	**4**	**1**	**1**	**1**	**4**	**3**	**2**	**4**	**1**	**1**	**2**	**1**
Question	16	17	18												
Answer	**2**	**4**	**2**												

EXERCISE-III (Analytical Questions) Master Your Understanding

1. Match the column.

Column-I (Reaction of Glucose)		Column-II (Product)	
(a)	Glucose $\xrightarrow{HI, \Delta}$	(p)	Osazone
(b)	Glucose $\xrightarrow{Br_2 \text{ water}}$	(q)	n-Hexane
(c)	Glucose $\xrightarrow{\text{Nitric acid}}$	(r)	Gluconic acid
(d)	Glucose $\xrightarrow[H^{\oplus}]{3Ph-NH-NH_2}$	(s)	Saccharic acid

(1) a – q, b – s, c – p, d - r
(2) a – q, b – p, c – r, d - s
(3) a – q, b – s, c – r, d - p
(4) a – q, b – r, c – s, d - p

CBM095

2. Which of the following reactions of glucose can be explained only by its cyclic structure.
(1) Glucose forms penta acetate
(2) Glucose reacts with hydroxylamine to form an oxime
(3) Penta acetate of glucose does not react with hydroxylamine
(4) Glucose is oxidised by nitric acid to gluconic acid

CBM085

3. When glucose was crystallized from a concentrated solution at 30°C & 98°C. It gave α & β form of glucose respectively what are the angle of rotation [α_D] for both forms –
(1) (+) 111° & (+)19.2°
(2) (+)19.2° & (–) 111°
(3) (+) 111° & (–)19.2°
(4) (–) 111° & (–)19.2°

CBM077

4. Which statement is incorrect in following –
(1) Sucrose is dextrorotatory
(2) After hydrolysis of sucrose, dextrorotatory glucose and laevorotatory fructose will obtained
(3) Laevorotation of fructose is more than dextrorotation of glucose
(4) Cane sugar gives nonequimolar mixture of D- (+)-glucose and D- (–)-fructose

CBM079

5. On hydrolysis of one mole of maltose two moles of D-glucose are obtained. These two glucose units are linked together through a α-glycoside linkage between –
(1) C-2 of one unit and C-4 of another unit
(2) C-1 of one unit and C-2 of another unit
(3) C-1 of one unit and C-4 of another unit
(4) C-2 of one unit and C-3 of another unit

CBM080

6. Which statement is/are incorrect –
(1) Natural starch has approximately 10-20% of amylose and 80-90% of amylopectin.
(2) Amylose is water soluble and gives blue colour with iodine
(3) Amylopectin is a branched chain polysaccharides insoluble in water and does not give blue colour with iodine
(4) Starch is not hydrolysed by enzyme amylase present in saliva

CBM081

7. Which is correct statement –
(1) Starch is polymer of α–glucose
(2) Amylose is a component of cellulose
(3) Proteins are composed of only one type of amino acid
(4) In cyclic structure of fructose, there are four carbons and one oxygen atom

CBM093

8. Match the column.

Column-I (Carbohydrates)		Column-II (Source or name)	
(a)	Sucrose	(p)	Animal starch
(b)	Lactose	(q)	Cereals, roots, tubers
(c)	Glycogen	(r)	Milk sugar
(d)	Starch	(s)	Cane sugar

(1) a – r, b – s, c – q, d - p
(2) a – s, b – r, c – p, d - q
(3) a – s, b – p, c – r, d - q
(4) a – p, b – q, c – r, d - s

CBM094

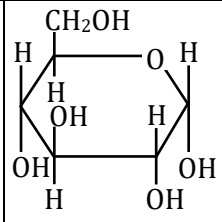
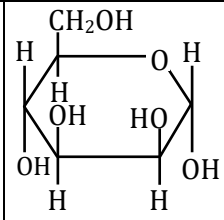
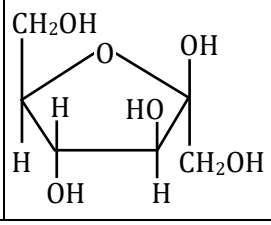
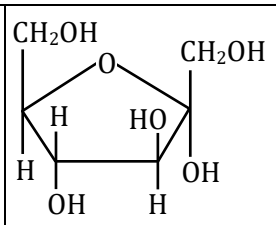
9. Match the column.

Column-I (Carbohydrates)		Column-II (Monosaccharide unit)	
(a)	Maltose	(p)	β-D-Glucose
(b)	Lactose	(q)	Two α-D-Glucose
(c)	Cellulose	(r)	β-D-Galactose & β-D-Glucose
(d)	Sucrose	(s)	α-D-Glucose & β-D-Fructose

(1) a – q, b – s, c – r, d - p
(2) a – q, b – r, c – p, d - s
(3) a – r, b – s, c – p, d - q
(4) a – r, b – p, c – q, d - s

CBM096

10. Match the column.

Column-I (Structure)		Column-II (Name)	
(a)		(p)	α-D-Mannose
(b)		(q)	β-D-Fructose
(c)		(r)	α-D-Glucose
(d)		(s)	α-D-Fructose

(1) a – p, b – r, c – q, d - s
(2) a – r, b – p, c – q, d - s
(3) a – p, b – r, c – s, d - q
(4) a – r, b – p, c – s, d - q

CBM097

11. Which of the following are non-reducing in nature-

(A) Cellulose (B) Sucrose
(C) Lactose (D) Starch

(1) A and B are correct
(2) A, B and C are correct
(3) A, B and D are correct
(4) A, C and D are correct

CBM098

12. In which of the following properties of an open chain structure of glucose could not be explained by Baeyer –

(1) Glucose contain aldehyde group, but does not give schiff's test
(2) Glucose does not react with sodium hydrogen sulphite and ammonia
(3) The pentaacetate of glucose does not react with hydroxy amine indicates absence of –CHO group
(4) All of these

CBM076

13. Which of the following statement is true for proteins –

(1) Proteins are high molecular mass complex biopolymers of amino acids present in all living cells
(2) Protein may contains phosphorous & iodine
(3) Proteins may contains iron, copper, zinc and manganese
(4) All of these

CBM082

14. Which of following are essential amino acids–
(a) Aspartic acid (b) Leucine
(c) Valine (d) Glycine
(e) Alanine
(1) a, b & c (2) a, b, d & e
(3) b & c (4) a, c, d & e

CBM083

15. At a certain hydrogen ion concentration (pH), the dipolar ion exists as a neutral ion and does not migrate to either electrode. What is the name of pH point for amino acids –
(1) Isoelectric point (2) Isoprotonic point
(3) Isotonic point (4) None of these

CBM084

16. Protein found in biological system with definite configuration and biological activity is called –
(1) Amino acids (2) Native protein
(3) Conformer protein (4) Inactive protein

CBM086

17. Read given statements
(A) During denaturation, 2° & 3° structures of proteins are not destroyed.
(B) 1° structure of protein is destroyed during denaturation.
(C) Curdling of milk which is caused due to formation of lactic acid by bacteria present in milk is an example of denaturation.
Which statement(s) is/are incorrect in given options -
(1) A, C only (2) A, B only
(3) A, B, C (4) B, C only

CBM113

18. Which of following statements is incorrect –
(1) Proteins have a polyamide chain while nucleic acids contains a poly phosphate ester chain
(2) Nucleic acids are long chain polymers of nucleotides
(3) RNA is major source of genetic information which is copied into a DNA molecules
(4) Proteins are synthesized in a process involving translation of RNA.

CBM088

19. Complete hydrolysis of DNA or RNA yields following–
(1) Ribose in RNA & deoxyribose in DNA
(2) Hetrocyclic nitrogenous purines base
(3) Hetrocyclic nitrogenous pyrimidines
(4) All of these

CBM089

20. Dinucleotide is obtained by joining two nucleotides together by phosphodiester linkage. Between which carbon atoms of pentose sugar of nucleotides are these linkages presents.
(1) 5' and 3' (2) 1' and 5'
(3) 5' and 5' (4) 3' and 3'

CBM078

21. Nucleosides are –
(1) Base + sugar = Nucleoside
(2) N–glycosides of purine or pyrimidine bases with pentose sugar
(3) Both of these
(4) None of these

CBM090

22. RNA molecules in turn directs the synthesis of specific proteins which are characteristic of each kind of organism. This process is known as –
(1) Translation
(2) Transcription
(3) Replication
(4) None of these

CBM091

23. A single stand of DNA can act as a template on which a molecule of RNA is synthesized in a specific manner. This process is known as –
(1) Replication (2) Transcription
(3) Translation (4) None of these

CBM092

24. Which of following statement is not true for enzyme –
(1) Some enzymes can be non proteins also
(2) Prothetic groups which get attached to enzyme at the time of reaction are known as cofactor.
(3) Enzymes provides lower activation pathways there by increasing the rate of reaction
(4) None of these

CBM087

25. Match the column I & II :-

Column-I (Vitamins)		Column-II (Sources)	
(a)	Vitamin-A	(p)	Exposure to sunlight
(b)	Vitamin-B12	(q)	Yeast, milk
(c)	Vitamin-B6	(r)	Meat
(d)	Vitamin-D	(s)	Fish liver oil

(1) a - s, b - r, c - q, d - p
(2) a - s, b - q, c - p, d - r
(3) a - q, b - s, c - r, d - p
(4) a - r, b - p, c - q, d - s

CBM106

26. Match the column I & II :-

Column-I (Vitamins)		Column-II (Disease)	
(a)	Vitamin-B1	(p)	Scurvy
(b)	Vitamin-B6	(q)	Blood clotting delay
(c)	Vitamin-C	(r)	Beri-Beri
(d)	Vitamin-K	(s)	Convulsions

(1) a - r, b - p, c - q, d - s
(2) a - s, b - q, c - p, d - r
(3) a - r, b - s, c - p, d - q
(4) a - q, b - r, c - s, d - p

CBM107

27. Match the column :-

Column-I		Column-II	
(a)	Fat soluble vitamin	(p)	Fingerprinting
(b)	Water soluble vitamin	(q)	Vitamin A and vitamin D
(c)	DNA	(r)	Uracil
(d)	RNA	(s)	Vitamin B and vitamin C

(1) a - s, b - s, c - r, d - p
(2) a - q, b - s, c - p, d - r
(3) a - q, b - r, c - p, d - s
(4) a - q, b - s, c - r, d - p

CBM108

28. Match the column I & II :-

Column-I		Column-II	
(a)	Heredity	(p)	Proteins
(b)	Chromosomes made up by	(q)	Transmission of inherent characters
(c)	Nucleic Acid	(r)	Increased fragility of RBCs
(d)	Vitamin-E deficiency	(s)	Long chain polymers of Nucleotides

(1) a - q, b - p, c - s, d - r
(2) a - q, b - p, c - r, d - s
(3) a - p, b - q, c - r, d - s
(4) a - p, b - q, c - s, d - r

CBM109

EXERCISE-III (Analytical Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**4**	**3**	**1**	**4**	**3**	**4**	**1**	**2**	**2**	**2**	**3**	**4**	**4**	**3**	**1**
Question	16	17	18	19	20	21	22	23	24	25	26	27	28		
Answer	**2**	**2**	**3**	**4**	**1**	**3**	**1**	**2**	**2**	**1**	**3**	**2**	**1**		