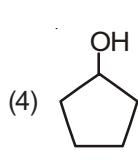
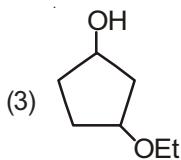
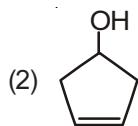
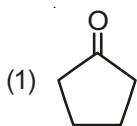


Biomolecules

1. The two functional groups present in a typical carbohydrate are [AIEEE-2009]
- $-\text{CHO}$ and $-\text{COOH}$
 - $>\text{C} = \text{O}$ and $-\text{OH}$
 - $-\text{OH}$ and $-\text{CHO}$
 - $-\text{OH}$ and $-\text{COOH}$
2. Biuret test is not given by [AIEEE-2010]
- Proteins
 - Carbohydrates
 - Polypeptides
 - Urea
3. Which of the following statements is correct? [AIEEE-2012]
- All amino acids are optically active
 - All amino acids except glycine are optically active
 - All amino acids except glutamic acid are optically active
 - All amino acids except lysine are optically active
4. Which of the following compounds can be detected by Molisch's test? [AIEEE-2012]
- Sugars
 - Amines
 - Primary alcohols
 - Nitro compounds
5. Synthesis of each molecule of glucose in photosynthesis involves [JEE (Main)-2013]
- 18 molecules of ATP
 - 10 molecules of ATP
 - 8 molecules of ATP
 - 6 molecules of ATP
6. Which one of the following bases is not present in DNA? [JEE (Main)-2014]
- Quinoline
 - Adenine
 - Cytosine
 - Thymine
7. Which of the vitamins given below is water soluble? [JEE (Main)-2015]
- Vitamin C
 - Vitamin D
 - Vitamin E
 - Vitamin K
8. Thiol group is present in [JEE (Main)-2016]
- Cystine
 - Cysteine
 - Methionine
 - Cytosine
9. Which of the following compounds will behave as a reducing sugar in an aqueous KOH solution? [JEE (Main)-2017]
- (1)
- (2)
- (3)
- (4)
10. Glucose on prolonged heating with HI gives [JEE (Main)-2018]
- n*-Hexane
 - 1-Hexene
 - Hexanoic acid
 - 6-iodohexanal



19. The correct statement(s) among I to III with respect to potassium ions that are abundant within the cell fluids is/are

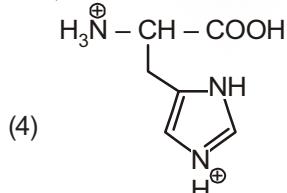
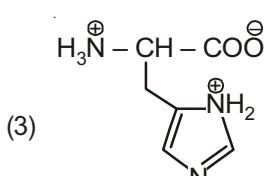
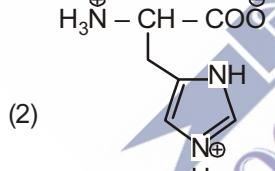
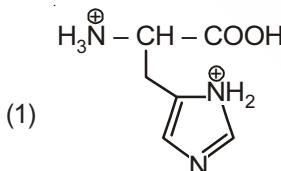
- I. They activate many enzymes
- II. They participate in the oxidation of glucose to produce ATP
- III. Along with sodium ions, they are responsible for the transmission of nerve signals

[JEE (Main)-2019]

- (1) I and III only
- (2) I, II and III
- (3) III only
- (4) I and II only

20. The correct structure of histidine in a strongly acidic solution ($\text{pH} = 2$) is

[JEE (Main)-2019]



21. Maltose on treatment with dilute HCl gives

[JEE (Main)-2019]

- (1) D-Galactose
- (2) D-Glucose and D-Fructose
- (3) D-Glucose
- (4) D-Fructose

22. Fructose and glucose can be distinguished by:

[JEE (Main)-2019]

- (1) Fehling's test
- (2) Seliwanoff's test
- (3) Barfoed's test
- (4) Benedict's test

23. Which of the following statements is not true about sucrose?

[JEE (Main)-2019]

- (1) The glycosidic linkage is present between C_1 of α -glucose and C_1 of β -fructose

- (2) On hydrolysis, it produces glucose and fructose

- (3) It is a non-reducing sugar

- (4) It is also named as invert sugar

24. The peptide that gives positive ceric ammonium nitrate and carbonylamine tests is

[JEE (Main)-2019]

- (1) Ser - Lys
- (2) Lys - Asp
- (3) Gln - Asp
- (4) Asp - Gln

25. Amylopectin is composed of

[JEE (Main)-2019]

- (1) β -D-glucose, $\text{C}_1 - \text{C}_4$ and $\text{C}_2 - \text{C}_6$ linkages
- (2) α -D-glucose, $\text{C}_1 - \text{C}_4$ and $\text{C}_2 - \text{C}_6$ linkages
- (3) β -D-glucose, $\text{C}_1 - \text{C}_4$ and $\text{C}_1 - \text{C}_6$ linkages
- (4) α -D-glucose, $\text{C}_1 - \text{C}_4$ and $\text{C}_1 - \text{C}_6$ linkages

26. Number of stereo centers present in linear and cyclic structures of glucose are respectively :

[JEE (Main)-2019]

- (1) 5 & 5
- (2) 4 & 4
- (3) 5 & 4
- (4) 4 & 5

27. Which of the following statements is not true about RNA?

[JEE (Main)-2019]

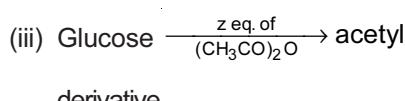
- (1) It usually does not replicate
- (2) It is present in the nucleus of the cell
- (3) It controls the synthesis of protein
- (4) It has always double stranded α -helix structure

28. Glucose and Galactose are having identical configuration in all the positions except position.

[JEE (Main)-2019]

- (1) C – 2
- (2) C – 5
- (3) C – 3
- (4) C – 4

29. Which of the given statements is INCORRECT about glycogen? [JEE (Main)-2019]
- It is present in some yeast and fungi.
 - It is a straight chain polymer similar to amylose.
 - It is present in animal cells.
 - Only α -linkages are present in the molecule.
30. Match the following
- | | |
|--------------------|-----------------|
| (i) Riboflavin | (a) Beriberi |
| (ii) Thiamine | (b) Scurvy |
| (iii) Pyridoxine | (c) Cheilosis |
| (iv) Ascorbic acid | (d) Convulsions |
- [JEE (Main)-2020]
- (i)-(c), (ii)-(d),(iii)-(a), (iv)-(b)
 - (i)-(c), (ii)-(a),(iii)-(d), (iv)-(b)
 - (i)-(d), (ii)-(b),(iii)-(a), (iv)-(c)
 - (i)-(a), (ii)-(d),(iii)-(c), (iv)-(b)
31. Which of the following statements is correct?
- [JEE (Main)-2020]
- Gluconic acid is a dicarboxylic acid
 - Gluconic acid can form cyclic (acetal/hemiacetal) structure
 - Gluconic acid is a partial oxidation product of glucose
 - Gluconic acid is obtained by oxidation of glucose with HNO_3
32. Which of the following statement is not true for glucose? [JEE (Main)-2020]
- Glucose reacts with hydroxylamine to form oxime
 - The pentaacetate of glucose does not react with hydroxylamine to give oxime
 - Glucose exists in two crystalline forms α and β
 - Glucose gives Schiff's test for aldehyde
33. Two monomers in maltose are [JEE (Main)-2020]
- α -D-glucose and α -D-glucose
 - α -D-glucose and β -D-glucose
 - α -D-glucose and α -D-galactose
 - α -D-glucose and α -D-Fructose
34. A chemist has 4 samples of artificial sweetener A, B, C and D. To identify these samples, he performed certain experiments and noted the following observations :
- A and D both form blue-violet colour with ninhydrin.
 - Lassaigne extract of C gives positive AgNO_3 test and negative $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$ test.
 - Lassaigne extract of B and D gives positive sodium nitroprusside test.
- Based on these observations which option is correct? [JEE (Main)-2020]
- A : Aspartame; B : Alitame;
C : Saccharin; D : Sucralose
 - A : Saccharin; B : Alitame;
C : Sucralose; D : Aspartame
 - A : Alitame; B : Saccharin;
C : Aspartame; D : Sucralose
 - A : Aspartame; B : Saccharin;
C : Sucralose; D : Alitame
35. A, B and C are three biomolecules. The results of the tests performed on them are given below
- | | Molisch's Test | Barfoed Test | Biuret Test |
|---|----------------|--------------|-------------|
| A | Positive | Negative | Negative |
| B | Positive | Positive | Negative |
| C | Negative | Negative | Positive |
- A, B and C are respectively [JEE (Main)-2020]
- $A = \text{Lactose}$, $B = \text{Fructose}$, $C = \text{Alanine}$
 - $A = \text{Lactose}$, $B = \text{Glucose}$, $C = \text{Alanine}$
 - $A = \text{Glucose}$, $B = \text{Fructose}$, $C = \text{Albumin}$
 - $A = \text{Lactose}$, $B = \text{Glucose}$, $C = \text{Albumin}$
36. Consider the following reactions:
- $\text{Glucose} + \text{ROH} \xrightarrow{\text{dry HCl}} \text{Acetal}$
 $\xrightarrow{x \text{ eq. of } (\text{CH}_3\text{CO})_2\text{O}} \text{acetyl derivative}$
 - Glucose
 $\xrightarrow{\text{Ni/H}_2} A \xrightarrow{y \text{ eq. of } (\text{CH}_3\text{CO})_2\text{O}} \text{acetyl derivative}$

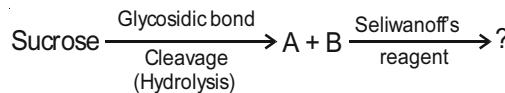


'x', 'y' and 'z' in these reactions are respectively.

[JEE (Main)-2020]

- (1) 4, 5 & 5
- (2) 4, 6 & 5
- (3) 5, 4 & 5
- (4) 5, 6 & 5

37. The correct observation in the following reactions is



[JEE (Main)-2020]

- (1) Gives no colour
- (2) Formation of red colour
- (3) Formation of violet colour
- (4) Formation of blue colour

38. Which of the following will react with $\text{CHCl}_3 + \text{alc. KOH}$? [JEE (Main)-2020]

- (1) Adenine and thymine
- (2) Thymine and proline
- (3) Adenine and lysine
- (4) Adenine and proline

39. What are the functional groups present in the structure of maltose? [JEE (Main)-2020]

- (1) One acetal and one ketal
- (2) One ketal and one hemiketal
- (3) Two acetals
- (4) One acetal and one hemiacetal

40. Which of the following is not an essential amino acid? [JEE (Main)-2020]

- (1) Tyrosine
- (2) Valine
- (3) Lysine
- (4) Leucine

41. Which one of the following statements is not true? [JEE (Main)-2020]

- (1) Lactose contains α -glycosidic linkage between C_1 of galactose and C_4 of glucose
- (2) Lactose is a reducing sugar and it gives Fehling's test
- (3) On acid hydrolysis, lactose gives one molecule of D(+)-glucose and one molecule of D(+)-galactose
- (4) Lactose ($\text{C}_{11}\text{H}_{22}\text{O}_{11}$) is a disaccharide and it contains 8 hydroxyl groups

42. The number of sp^2 hybridised carbons present in "Aspartame" is _____. [JEE (Main)-2020]

43. The mass percentage of nitrogen in histamine is _____. [JEE (Main)-2020]

44. The number of $\text{C}=\text{O}$ groups present in a tripeptide Asp – Glu – Lys is _____. [JEE (Main)-2020]

45. The number of chiral centres present in threonine is _____. [JEE (Main)-2020]

46. The number of chiral carbon(s) present in peptide, Ile-Arg-Pro, is _____. [JEE (Main)-2020]

47. The number of chiral carbons present in sucrose is _____. [JEE (Main)-2020]

