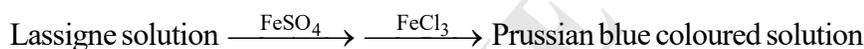


**Single Correct**

- Q.1 A white crystalline solid 'X' give following chemical test :
- (i) it liberates  $\text{CO}_2$  with  $\text{NaHCO}_3$
  - (ii) it form a coloured dye on diazotisation and coupling with  $\beta$ -naphthol
  - (iii) with  $\text{Br}_2$  water it forms white precipitate of 2, 4, 6-tribromo aniline.
- 'X' can be identified as :



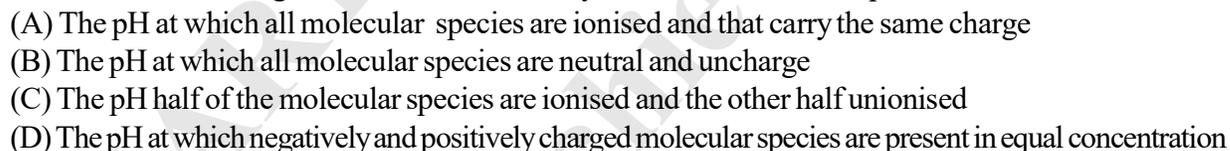
- Q.2 Which compound can not give following test.



- Q.3 Which pairing is found in DNA ?



- Q.4 Which of the following statements most correctly defines the isoelectric point ?



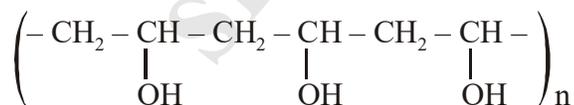
- Q.5 Which of the following is fully fluorinated polymer-



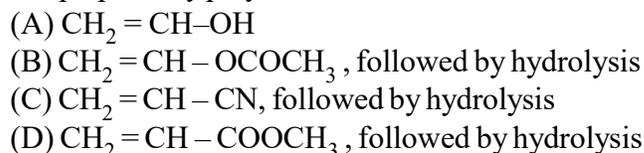
- Q.6 Which one is classified as a condensation polymer?



- Q.7 Polyvinyl alcohol is an important polymer. The structure is given below:



It is prepared by polymerization of :



- Q.8 (i) Chlorobenzene is mono-nitrated to M  
 (ii) nitrobenzene is mono-chlorinated to N  
 (iii) anisole is mono-nitrated to P  
 (iv) 2-nitrochlorobenzene is mono-nitrated to Q  
 Out of M, N, P and Q the compound that undergoes reaction with aq. NaOH fastest is :  
 (A) M (B) N (C) P (D) Q

- Q.9 In both DNA and RNA, heterocyclic base and phosphate ester linkages are at –  
 (A) C<sub>2</sub>' and C<sub>5</sub>' respectively of the sugar molecule  
 (B) C<sub>5</sub>' and C<sub>2</sub>' respectively of the sugar molecule  
 (C) C<sub>5</sub>' and C<sub>1</sub>' respectively of the sugar molecule  
 (D) C<sub>1</sub>' and C<sub>5</sub>' respectively of the sugar molecule

**More than one**

- Q.10 Which of the following carbohydrate will give the same osazone ?  
 (A) Glucose (B) Fructose (C) Cane sugar (D) Lactose
- Q.11 Which of the following reagents cannot be used for differentiation between glucose and fructose ?  
 (A) Lucas reagent (B) Br<sub>2</sub> – H<sub>2</sub>O (C) Tollen's reagent (D) 2, 4-DNP
- Q.12 Which of the following test can be used for identification of 1° amine ?  
 (A) Carbylamine test (B) Hofmann mustard oil reaction  
 (C) NaNO<sub>2</sub>/HCl (D) Fehling's solution

**Match the column**

- Q.13
- | Column-I   | Column-II  |
|--|------------|
| (A) $\text{H}_3\text{C}-\text{C}_6\text{H}_4-\text{CHO} + 2, 4\text{-DNP}$   | (P) Yellow |
| (B) $\text{Ph}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3 + \text{I}_2 / \overset{\ominus}{\text{O}}\text{H}$ | (Q) Orange |
| (C) $\text{>NO}_2 + \text{HNO}_2$  | (R) Violet |
| (D) $\text{>C}(\text{OH})=\text{C} + \text{FeCl}_3$  | (S) Blue   |
- Q.14
- | Column-I      | Column-II                   |
|---------------|-----------------------------|
| (A) Sucrose   | (P) 1, 2-glycosidic linkage |
| (B) Cellulose | (Q) 1, 4-glycosidic linkage |
| (C) Maltose   | (R) Polysaccharide          |
| (D) Starch    | (S) Disaccharide            |

- Q.15
- | Column-I         | Column-II                |
|------------------|--------------------------|
| (A) Cellulose    | (P) Polymer              |
| (B) Protein      | (Q) Nitrogen containing  |
| (C) Lipid        | (R) Stored food in human |
| (D) Nucleic acid | (S) Ester                |

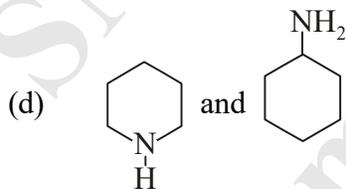
- Q.16
- | Column-I        | Column-II   |
|-----------------|---|
| (A) m-rna       | (P) Adenine, Guanine                                  |
| (B) t-rna       | (Q) Carries information of DNA for protein synthesis. |
| (C) Purine base | (R) Thymine, Uracil                                   |
| (D) Pyrimidine  | (S) Direct amino acid for protein synthesis           |

**Subjective**

- Q.17 Glycine has the structural formula  $\text{NH}_2 - \text{CH}_2 - \text{COOH}$ . Glycine has two dissociation constant for which  $K_a$  is  $1.6 \times 10^{-10}$  and  $K_b$  is  $2.5 \times 10^{-12}$ . Calculate the isoelectric point of glycine. [Given :  $\log 1.6 = 0.2041$ ,  $\log 2.5 = 0.3979$ ]

**[Hint : If your answer is 5.12 then fill 0512 in OMR sheet  
If your answer is 8.02 then fill 0802 in OMR sheet]**

- Q.18 Number of dipeptide which can be formed by : Glycine, Alanine, Leucine, Phenylalanine are
- Q.19 Identify the reagent which can differentiate the given pair of compounds.
- (a) Acetone and ethanol  
(b) Phenol and 1-propanol  
(c) 1-butyne and 2-butyne



- |                                  |                        |
|----------------------------------|------------------------|
| (1) $\text{NaOH}$ , $\text{I}_2$ | (2) Tollen's reagent   |
| (3) Fehling solution             | (4) Hinsberg's reagent |
| (5) Neutral $\text{FeCl}_3$      | (6) 2,4-DNP            |
| (7) $\text{NaHCO}_3$             | (8) Schiff's reagent   |

**Hint : If pair (a) is differentiate by 1, (b) by 2, (c) by 3 & (d) by 4 then fill 1234 in OMR sheet.**

Q.20 Select the given code of reagents for following conversion and write your answer as **abcd**. If reagent is used once then you need not to take it again.



- |   |  |
|---|--|
| (1) $\text{H}_2\text{SO}_4$   | (2) $\text{Zn(Hg) / HCl}$                              |
| (3) $\text{HNO}_3 / \text{H}_2\text{SO}_4$  | (4) $\text{NaNO}_2 / \text{HCl } 0-5^\circ\text{C}$    |
| (5) $\text{N}_2\text{H}_4 / \text{H}_2\text{O}_2$                                 | (6) NBS  |
| (7) $\text{Me}-\overset{\text{O}}{\parallel}{\text{C}}-\text{Cl} / \text{AlCl}_3$ | (8) $\text{Me}_3\text{CO}^+ \text{Na}^\oplus / \Delta$ |

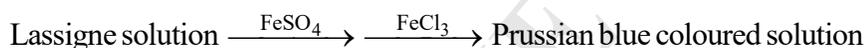
Q.21 Consider following polymers  
 Polythene, PVC, Bekelite, Nylon-6,6, Dacron, Buna-N, Buna-S,  
 Neoprene, Teflon, Metaaldehyde  
 Number of homopolymer = **X**  
 Number of copolymer = **Y**  
 Number of addition polymer = **J**  
 Number of condensation polymer = **K**  
 'XYJK' will be :

**Single Correct**

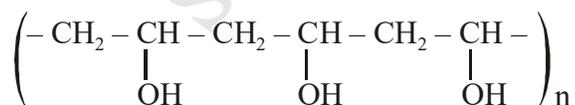
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 (iii) with  $\text{Br}_2$  water it forms white precipitate of 2, 4, 6-tribromo aniline.  
 'X' can be identified as :



- Q.2 Which compound can not give following test.



- Q.3 Which pairing is found in DNA ?  
 (A\*) Adenine with thymine (B) Thymine with guanine  
 (C) Guanine with adenine (D) Uracil with adenine
- Q.4 Which of the following statements most correctly defines the isoelectric point ?  
 (A) The pH at which all molecular species are ionised and that carry the same charge  
 (B) The pH at which all molecular species are neutral and uncharge  
 (C) The pH half of the molecular species are ionised and the other half unionised  
 (D\*) The pH at which negatively and positively charged molecular species are present in equal concentration
- Q.5 Which of the following is fully fluorinated polymer-  
 (A\*) Teflon (B) Neoprene (C) PVC (D) Thiokol
- Q.6 Which one is classified as a condensation polymer?  
 (A) Neoprene (B) Teflon (C) Acrylonitrile (D\*) Dacron
- Q.7 Polyvinyl alcohol is an important polymer. The structure is given below:



It is prepared by polymerization of :

- (A\*)  $\text{CH}_2 = \text{CH} - \text{OH}$   
 (B)  $\text{CH}_2 = \text{CH} - \text{OCOCH}_3$ , followed by hydrolysis  
 (C)  $\text{CH}_2 = \text{CH} - \text{CN}$ , followed by hydrolysis  
 (D)  $\text{CH}_2 = \text{CH} - \text{COOCH}_3$ , followed by hydrolysis

- Q.8 (i) Chlorobenzene is mono-nitrated to M  
 (ii) nitrobenzene is mono-chlorinated to N  
 (iii) anisole is mono-nitrated to P  
 (iv) 2-nitrochlorobenzene is mono-nitrated to Q  
 Out of M,N,P and Q the compound that undergoes reaction with aq. NaOH fastest is :  
 (A) M (B) N (C) P (D\*) Q

- Q.9 In both DNA and RNA, heterocyclic base and phosphate ester linkages are at –  
 (A) C<sub>2</sub>' and C<sub>5</sub>' respectively of the sugar molecule  
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 (C) C<sub>5</sub>' and C<sub>1</sub>' respectively of the sugar molecule  
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**More than one**

- Q.10 Which of the following carbohydrate will give the same osazone ?  
 (A\*) Glucose (B\*) Fructose (C) Cane sugar (D\*) Lactose
- Q.11 Which of the following reagents cannot be used for differentiation between glucose and fructose ?  
 (A\*) Lucas reagent (B) Br<sub>2</sub> – H<sub>2</sub>O (C\*) Tollen's reagent (D) 2, 4-DNP
- Q.12 Which of the following test can be used for identification of 1° amine ?  
 (A\*) Carbylamine test (B\*) Hofmann mustard oil reaction  
 (C\*) NaNO<sub>2</sub>/HCl (D) Fehling's solution

**Match the column**

- | Q.13 | Column-I   | Column-II  |
|------|--|------------|
| (A)  | $\text{H}_3\text{C}-\text{C}_6\text{H}_4-\text{CHO} + 2, 4\text{-DNP}$   | (P) Yellow |
| (B)  | $\text{Ph}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3 + \text{I}_2 / \overset{\ominus}{\text{O}}\text{H}$ | (Q) Orange |
| (C)  | $\text{>NO}_2 + \text{HNO}_2$  | (R) Violet |
| (D)  | $\text{>C}(\text{OH})=\text{C} + \text{FeCl}_3$  | (S) Blue   |

Ans. (A) → Q; (B) → P; (C) → S; (D) → R

- | Q.14 | Column-I  | Column-II                   |
|------|-----------|-----------------------------|
| (A)  | Sucrose   | (P) 1, 2-glycosidic linkage |
| (B)  | Cellulose | (Q) 1, 4-glycosidic linkage |
| (C)  | Maltose   | (R) Polysaccharide          |
| (D)  | Starch    | (S) Disaccharide            |

[Ans. (A) → P, S; (B) → Q, R; (C) → Q, S (D) → Q, R]

- Q.15
- | Column-I         | Column-II                |
|------------------|--------------------------|
| (A) Cellulose    | (P) Polymer              |
| (B) Protein      | (Q) Nitrogen containing  |
| (C) Lipid        | (R) Stored food in human |
| (D) Nucleic acid | (S) Ester                |

[Ans.(A) → P; (B) → P, Q; (C) → R, S; (D) → P, Q]

- Q.16
- | Column-I        | Column-II   |
|-----------------|---|
| (A) m-rna       | (P) Adenine, Guanine                                  |
| (B) t-rna       | (Q) Carries information of DNA for protein synthesis. |
| (C) Purine base | (R) Thymine, Uracil                                   |
| (D) Pyrimidine  | (S) Direct amino acid for protein synthesis           |

[Ans. (A) → Q; (B) → S; (C) → P; (D) → R]

### Subjective

- Q.17 Glycine has the structural formula  $\text{NH}_2 - \text{CH}_2 - \text{COOH}$ . Glycine has two dissociation constant for which  $K_a$  is  $1.6 \times 10^{-10}$  and  $K_b$  is  $2.5 \times 10^{-12}$ . Calculate the isoelectric point of glycine.  
[Given :  $\log 1.6 = 0.2041$ ,  $\log 2.5 = 0.3979$ ]

**[Hint : If your answer is 5.12 then fill 0512 in OMR sheet  
If your answer is 8.02 then fill 0802 in OMR sheet ]**

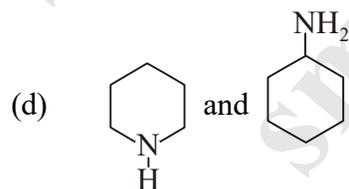
[Ans.0609]

- Q.18 Number of dipeptide which can be formed by :  
Glycine, Alanine, Leucine, Phenylalanine are

[Ans. 0016]

- Q.19 Identify the reagent which can differentiate the given pair of compounds.

- (a) Acetone and ethanol  
(b) Phenol and 1-propanol  
(c) 1-butyne and 2-butyne



- |                             |                        |
|-----------------------------|------------------------|
| (1) NaOH, $\text{I}_2$      | (2) Tollen's reagent   |
| (3) Fehling solution        | (4) Hinsberg's reagent |
| (5) Neutral $\text{FeCl}_3$ | (6) 2,4-DNP            |
| (7) $\text{NaHCO}_3$        | (8) Schiff's reagent   |

**Hint : If pair (a) is differentiate by 1, (b) by 2, (c) by 3 & (d) by 4 then fill 1234 in OMR sheet.**

[Ans. 6524]

Q.20 Select the given code of reagents for following conversion and write your answer as **abcd**. If reagent is used once then you need not to take it again.



- |   |  |
|---|--|
| (1) $\text{H}_2\text{SO}_4$   | (2) $\text{Zn(Hg) / HCl}$                              |
| (3) $\text{HNO}_3 / \text{H}_2\text{SO}_4$  | (4) $\text{NaNO}_2 / \text{HCl } 0-5^\circ\text{C}$    |
| (5) $\text{N}_2\text{H}_4 / \text{H}_2\text{O}_2$                                 | (6) NBS  |
| (7) $\text{Me}-\overset{\text{O}}{\parallel}{\text{C}}-\text{Cl} / \text{AlCl}_3$ | (8) $\text{Me}_3\text{CO}^+ \text{Na}^\oplus / \Delta$ |

[Ans. 7268]

Q.21 Consider following polymers  
 Polythene, PVC, Bekelite, Nylon-6,6, Dacron, Buna-N, Buna-S,  
 Neoprene, Teflon, Metaaldehyde  
 Number of homopolymer = **X**  
 Number of copolymer = **Y**  
 Number of addition polymer = **J**  
 Number of condensation polymer = **K**  
 'XYJK' will be :

[Ans. 5573]