



**Question Paper Name:** 5231 Online Refresher Course in Chemistry for Higher Education Faculty 30th June 2019 Shift 1  
**Subject Name:** Online Refresher Course in Chemistry for Higher Education Faculty  
**Creation Date:** 2019-06-30 13:01:46  
**Duration:** 180  
**Total Marks:** 100  
**Display Marks:** Yes

Online Refresher Course in Chemistry for Higher Education Faculty

**Group Number :** 1  
**Group Id :** 489994177  
**Group Maximum Duration :** 0  
**Group Minimum Duration :** 120  
**Revisit allowed for view? :** No  
**Revisit allowed for edit? :** No  
**Break time:** 0  
**Group Marks:** 100

Online Refresher Course in Chemistry for Higher Education Faculty

**Section Id :** 489994233  
**Section Number :** 1  
**Section type :** Online  
**Mandatory or Optional:** Mandatory  
**Number of Questions:** 100  
**Number of Questions to be attempted:** 100  
**Section Marks:** 100  
**Display Number Panel:** Yes  
**Group All Questions:** No

**Sub-Section Number:** 1  
**Sub-Section Id:** 489994250  
**Question Shuffling Allowed :** Yes

**Question Number : 1 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

**Which of the following is one of the goals of OPCW?**

- a. Preparation of safe chemical weapons
- b. Prevention on usage of plastics
- c. Destruction of all existing chemical weapons
- d. Taking measures to stop the depletion of ozone layer

**Options :**

- 1. 1
- 2. 2
- 3. 3

Question Number : 2 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Who won the first Nobel Prize in Organic Chemistry?

- a. Otto Wallach
- b. Victor Grignard
- c. Richard Willstätter
- d. Emil Fischer

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 3 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Who is considered to be the Father of Chemistry?

- a. Ernest Rutherford
- b. Antoine-Laurent de Lavoisier
- c. Dmitri Ivanovich Mendeleev
- d. John Dalton FRS

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 4 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Alfred Nobel commercialized the use of dynamite as an explosive shaped into

- a. Grannular form
- b. Rod form
- c. Sheet form
- d. Liquid form

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 5 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

- a. Emil Nobel
- b. Alfred Bernhard Nobel
- c. Immanuel Nobel
- d. Ludwig Nobel

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 6 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Name the chemical irritant that leads to tears when onions are chopped:

- a. Syn-propanethial-S-Oxide
- b. Sulphuric Acid
- c. Acetic Acid
- d. Hydrochloric Acid

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 7 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is false about e-learning?

- a. e-learning means Electronic Learning
- b. ICT enabled education
- c. Chalk and Talk learning
- d. Multimedia enriched learning

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 8 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

MOOC stands for

- a. Massive Open Online Course
- b. Massive Online Open Course
- c. Mass Open Online Course
- d. Massive Online Open Credit

Options :

- 1. 1

3. 3

4. 4

Question Number : 9 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not a characteristic of chalk and talk method?

- a. Learner centric approach
- b. Presumes that all the students learn in identical fashion
- c. Monologue method
- d. Slow and time consuming

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 10 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Red list compounds are those

- a. Which are red in color
- b. Which should not be drained out directly in sink
- c. Which have low melting point
- d. Which are soluble in water and hence environment friendly

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 11 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following combination should not be stored as waste together in the same container?

- a. Chloroform and Acetone
- b. Ethyl alcohol and Benzyl alcohol
- c. Ethanol and Acetone
- d. Benzaldehyde and Benzophenone

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 12 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

- a. Two
- b. Three
- c. Four
- d. Five

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 13 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How is pH expressed?

- a.  $pH = \log_{10}(C_{H^+})$
- b.  $pH = -1/\log_{10}(C_{H^+})$
- c.  $pH = -2\log_{10}(C_{H^+})$
- d.  $pH = -\log_{10}(a_{H^+})$

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 14 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For dilute solutions, which of the following is true about activity coefficient?

- a.  $\gamma \approx 1$
- b.  $\gamma > 0$
- c.  $\gamma < 1$
- d.  $\gamma = 0$

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 15 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The reaction constant rho in the Hammett equation represents

- a. The rate of the reaction
- b. The equilibrium constant of the reaction
- c. The sensitivity of the reaction to the substituents
- d. The activation energy of the reaction

Options :

2. 2  
3. 3  
4. 4

Question Number : 16 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Who of the following was not awarded Nobel Prize "for the discovery and development of Conductive Polymers" in the year 2000?

- a. Alan Heeger
- b. Jack S Kilby
- c. Hideki Shirakawa
- d. Alan MacDiarmid

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 17 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is true about doping in polymers?

- a. Doping in polymers is a redox process
- b. Doping results in decreased conductivity
- c. Doping results in electrons and holes as charge carriers
- d. Doping results in increased stability in polyacetylene

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 18 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Partially visible fingerprints are called –

- a. Latent fingerprints
- b. Plastic fingerprints
- c. Patent fingerprints
- d. Inked fingerprints

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 19 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

- a. Core and delta
- b. Fingerprint characters
- c. Shape of sweat pores
- d. Outer pattern

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 20 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The second Nobel Prize was awarded to Madam Marie Curie in 1911 for her contribution in

- a. the extraction of Radium from pitchblende
- b. the extraction of Polonium from Uranium ore
- c. the advancement of chemistry by the discovery of Radium and Polonium
- d. the advancement of chemistry by the discovery of Radium and Actinium

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 21 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following describes the effects of Ocean Stratification most accurately?

- a. Changes in ocean acidity
- b. Changes in deep ocean water density
- c. Changes in surface ocean water density and further depletion of the oxygen
- d. Changes in only the surface ocean water density

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 22 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Pick out the best domestic fuel amongst the following:

- a. CNG
- b. PNG
- c. Kerosene oil
- d. Diesel

Options :

- 1. 1
- 2. 2

Question Number : 23 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The magnitude of kinetic isotope effect will

- Decrease with decrease in temperature
- Increase with decrease in the temperature
- Will not change with temperature
- Can increase or decrease with decrease in the temperature

Options :

- 1
- 2
- 3
- 4

Question Number : 24 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following statements is correct?

- 4-nitrophenol is less acidic than ethanol
- Phenol is more acidic than 2,2-dimethylpropan-1-ol
- Phenol is more acidic than benzoic acid
- $\text{CH}_3\text{COOH}$  is less acidic than phenol

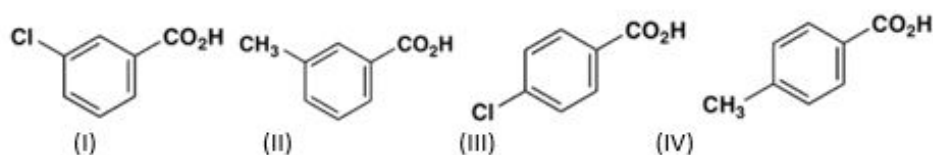
Options :

- 1
- 2
- 3
- 4

Question Number : 25 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which is the correct order of increasing  $\text{pK}_a$  values for following acids?



- $\text{II} < \text{I} < \text{III} < \text{IV}$
- $\text{III} < \text{I} < \text{II} < \text{IV}$
- $\text{I} < \text{III} < \text{II} < \text{IV}$
- $\text{III} < \text{IV} < \text{I} < \text{II}$

Options :

- 1
- 2
- 3
- 4



Correct Marks : 1 Wrong Marks : 0

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In brown ring test, the oxidation state of Fe changes from two to

- a. Three
- b. One
- c. Four
- d. Remains same

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 27 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following compounds will not give dark colouration with neutral ferric chloride solution?

- a. 1-naphthol
- b. o-Cresol
- c. Benzyl alcohol
- d. Phloroglucinol

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 28 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which ionophore is highly selective for  $K^+$  ion?

- a. Valinomycin
- b. Nonactin
- c. Vancomycin
- d. Nigericin

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 29 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

According to the modified Bloom's taxonomy, which of the following category is considered to be the highest for the learner:

- a. Create
- b. Evaluate
- c. Apply
- d. Analyze

1. 1
2. 2
3. 3
4. 4

Question Number : 30 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which pedagogy for teaching has been exemplified in the Friedel Crafts reaction module?

- a. Flip-classroom model
- b. Virtual classroom model
- c. MOOCs model
- d. Face to face teaching model

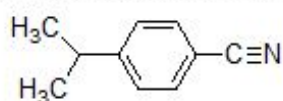
Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 31 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which sequence best represents the synthesis of the following compound?



4-isopropylbenzonitrile

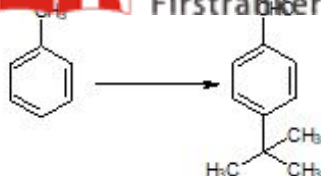
- a. 1. Benzene +  $\text{HNO}_3 + \text{H}_2\text{SO}_4$  2.  $(\text{CH}_3)_2\text{CHCl}$ ,  $\text{AlCl}_3$  3.  $\text{Fe}$ ,  $\text{HCl}$  4.  $\text{NaNO}_2/\text{HCl}$  5.  $\text{CuCN}$
- b. 1. Benzene +  $(\text{CH}_3)_2\text{CHCl}$ ,  $\text{AlCl}_3$  2.  $\text{Br}_2$ ,  $\text{FeBr}_3$  3.  $\text{KCN}$
- c. 1. Benzene +  $(\text{CH}_3)_2\text{CHCl}$ ,  $\text{AlCl}_3$  2.  $\text{HNO}_3$ ,  $\text{H}_2\text{SO}_4$  3.  $\text{Fe}$ ,  $\text{HCl}$  4.  $\text{NaNO}_2/\text{HCl}$  5.  $\text{KCN}$
- d. 1. Benzene +  $(\text{CH}_3)_2\text{CHCl}$ ,  $\text{AlCl}_3$  2.  $\text{HNO}_3$ ,  $\text{H}_2\text{SO}_4$  3.  $\text{Fe}$ ,  $\text{HCl}$  4.  $\text{NaOH}$  5.  $\text{NaNO}_2$ ,  $\text{HCl}$ ,  $\text{H}_2\text{O}$

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 32 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0



1. alk.  $\text{KMnO}_4$     2. Friedel Crafts reaction with  $(\text{CH}_3)_3\text{CCl}$
1.  $\text{CrO}_2\text{Cl}_2/\text{H}^+$     2. Friedel Crafts reaction with  $(\text{CH}_3)_3\text{CCl}$
1. Friedel Crafts reaction with  $(\text{CH}_3)_3\text{CCl}$     2.  $\text{CrO}_2\text{Cl}_2/\text{H}^+$
1. Friedel Crafts reaction with  $(\text{CH}_3)_3\text{CCl}$     2. alk.  $\text{KMnO}_4$

Options :

- 1
- 2
- 3
- 4

Question Number : 33 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is true about 3D printing?

- 3D printers can print limited materials
- 3D printers can print within limited size scale
- 3D printing has multifaceted applications like in food industries, medicines, automation etc.
- 3D printing cannot be used to print big objects like houses

Options :

- 1
- 2
- 3
- 4

Question Number : 34 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Give the correct order when the following are arranged in the increasing order of their  $\text{pK}_a$  values.

A: Cyclohexyl amine, B: phenylurea, C: aniline, D: diphenylamine

- $\text{A} > \text{C} > \text{D} > \text{B}$
- $\text{C} > \text{A} > \text{D} > \text{B}$
- $\text{C} > \text{B} > \text{D} > \text{A}$
- $\text{D} > \text{C} > \text{A} > \text{B}$

Options :

- 1
- 2
- 3
- 4

Question Number : 35 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The following is not a correct sequence for basic strength of compounds in aqueous medium?

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- $(\text{CH}_3)_2\text{NH} > \text{CH}_3\text{NH}_2 > (\text{CH}_3)_3\text{N}$
- $(\text{C}_2\text{H}_5)_2\text{NH} > (\text{C}_2\text{H}_5)_3\text{N} > \text{C}_2\text{H}_5\text{NH}_2$
- $\text{CH}_3\text{NH}_2 > \text{pyridine} > \text{aniline}$
- $\text{aniline} > \text{pyrrole} > \text{pyridine}$

Options :

- 1
- 2
- 3
- 4

Question Number : 36 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Silver nitrate method of fingerprint detection fixes which of the following constituent of sweat?

- Amino acids
- Water
- Carbohydrates
- Chloride ions

Options :

- 1
- 2
- 3
- 4

Question Number : 37 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which method is used for detecting fingerprint on duct tape?

- Powder method
- Ninhydrin method
- Phase transfer catalysis
- Silver nitrate method

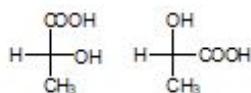
Options :

- 1
- 2
- 3
- 4

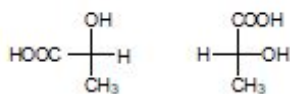
Question Number : 38 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

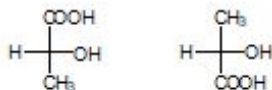
a.



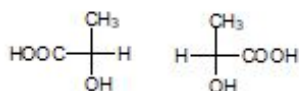
b.



c.



d.



Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 39 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not an odd electron species?

- a. Radical-anion
- b. Radical
- c. Triplet carbene
- d. Radical-cation

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 40 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The radical-anion generated by transfer of electron to XY does not undergo following reaction?

- a. Coupling to give  $[\text{XY}]_2^{2-}$
- b. Disproportionation to give  $\frac{1}{2}[\text{XY}]^{2-}$
- c. Oxidation to give  $[\text{XY}]$
- d. Coupling to give  $\text{XX}$

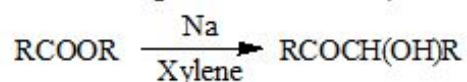
Options :

1. 1
2. 2
3. 3

Question Number : 41 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The following reaction is an example of



- a. Benzoin condensation
- b. Reduction of ester
- c. Acyloin condensation
- d. Oxidative coupling

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 42 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the correct order of calorific values for ethane, ethanol and ethanoic acid?

- a) Ethane > Ethanoic acid > Ethanol
- b) Ethane > Ethanol > Ethanoic acid
- c) Ethanoic acid > Ethane > Ethanol
- d) Ethane = Ethanol = Ethanoic acid

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 43 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The main contributor to global warming is:

- a) Nitrogen, as it is a major constituent in air.
- b) Carbon dioxide, because it stays in the atmosphere for a long time
- c) Water vapour, because of has a long life time
- d) Nitrous oxide, because of its high percentage in atmosphere

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Correct Marks : 1 Wrong Marks : 0

Pick out the correct option.

Calorific value of ethane is the amount of energy released when:

- a) One gram of ethane undergoes combustion.
- b) One kilogram of ethane undergoes combustion
- c) One mole of ethane undergoes combustion
- d) One gram equivalent of ethane undergoes combustion

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 45 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following can be drained down safely?

- a. Mineral oils
- b. Hypochlorite solution
- c. Cyanides
- d. Biocides

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 46 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Substituent constant sigma ( $\sigma$ ) in the Hammett equation

- a. is a dimensionless quantity
- b. has units of temperature
- c. has units of molarity
- d. has units of dipole moment

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 47 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A non-linear Hammett plot may imply

- a. Lack of correlation with the substituent constants
- b. Temperature dependence of the reaction
- c. Hydrogen bonding with the solvent
- d. A change in the rate determining step

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 48 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What was the theme of 30<sup>th</sup> anniversary of National Chemistry Week of American Chemical Society?

- a. Chemistry Rocks
- b. Chemistry for all
- c. Chemistry and Society
- d. Chemistry and development

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 49 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A new class of stereoisomerism has been found in which of the following complex?

- a. Porphyrin – Boron
- b. Porphyrin – Nitrogen
- c. Porphyrin – Sulphur
- d. Porphyrin – Phosphorus

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 50 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0





- FirstRanker's choice
- a. Plastic
  - b. Degradable polymers
  - c. Silk
  - d. Nitrogen

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Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 51 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is a traditional teaching - learning method?

- a. Chalk and Talk
- b. Power Point Presentation
- c. MOOCs
- d. e-learning

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 52 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which Indian got Nobel Prize in the year 1930?

- a. Sir C V Raman
- b. Prof. Hargobind Khorana
- c. Prof. Chandrasekhar
- d. Prof. Venkataraman Ramakrishnan

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 53 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What does not fall under the category of Static Content?

- a. Text
- b. Value additions
- c. Images
- d. Videos

Options :

- 1. 1

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3. 3  
4. 4

Question Number : 54 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What SWAYAM stands for?

- a. Study Webs of Active Learning for Young Aspiring Minds
- b. Study Webs of Active Young Aspiring Minds
- c. Study Webs of Active Learning for Youth and Aspiring Minds
- d. Study Webs of Active Learning for Young Aspirational Minds

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 55 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following MOOCs are available on SWAYAM portal?

- I. Self – paced courses
- II. Certificate courses
- III. Credit courses

- a. I and II
- b. I and III
- c. II and III
- d. I, II and III

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 56 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The activity coefficient of ions in an aqueous solution does not depend on:

- a. Concentration of ions
- b. Charge of the ions
- c. Diameter of the ions
- d. pH of the solution

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 57 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

How does the pH of pure water vary with increase in temperature?

- a. Increases
- b. Decreases
- c. No change
- d. Fluctuates

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 58 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The accidental discovery in 1977 of conductivity in polymers was reported from doping of

- a. Polypyrrole
- b. Polythiophene
- c. Polyfuran
- d. Polyacetylene

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 59 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is false?

- a. Neutral solitons have spin
- b. Charged solitons carry no spin
- c. Solitons can be positively or negatively charged
- d. Bipolarons have spin

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 60 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Type III copolymer is the one where

- a. Energy gap of one component lies below the energy gap of another component
- b. Energy gap of one component lies above the energy gap of another component
- c. Energy gap of both components is same
- d. One component is semi-metallic and the other is a normal semi-conductor

Options :

- 1. 1

3. 3  
4. 4

Question Number : 61 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The spreadsheet cannot be used in which of the following:

- a. Document drafting
- b. Plotting
- c. Calculation
- d. Data Handling

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 62 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following skills must not be a part of teacher's personality?

- a. Time management
- b. Ignoring formative assessment in teaching
- c. Leadership skills
- d. Problem solving

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 63 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How to dilute a concentrated acid safely?

- a. Take acid in a beaker and pour water in it
- b. Add both acid and water together simultaneously in the container
- c. Take water in the beaker and then add acid in less amounts and correspondingly do the dilution.
- d. Take acid, heat it and add water.

Options :

1. 1  
2. 2  
3. 3  
4. 4

Correct Marks : 1 Wrong Marks : 0

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When placed in a magnetic field, all the random spins of the nuclei

- stop
- align in the reverse direction
- align with the magnetic field in parallel and anti-parallel direction
- rotate to  $90^\circ$  away from the induced field

Options :

- 1
- 2
- 3
- 4

Question Number : 65 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How to read the burette reading for colored and colorless solutions with concave meniscus?

- Lower meniscus for colored solutions and upper meniscus for colorless solutions
- Average of upper meniscus and lower meniscus in both the cases
- Upper meniscus for colored solutions and lower meniscus for colorless solutions
- Both upper meniscus.

Options :

- 1
- 2
- 3
- 4

Question Number : 66 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The correct structure of the compound based on the following characteristic spectral data is

IR:  $1736\text{ cm}^{-1}$

$^1\text{H NMR}$ :  $\delta$  3.39 (s, 3H), 3.32 (t, 2H), 2.25 (t, 2H), 1.85-1.75 (m, 2H), 1.73-1.62 (m, 2H)

$^{13}\text{C NMR}$ :  $\delta$  174.0, 51.0, 32.9, 32.8, 31.0, 23.0

- 
- 
- 
- 

Options :

- 1
- 2
- 3
- 4

Question Number : 67 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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- states that:
- An even molecular mass compound should contain even number of Nitrogen atoms
  - An even molecular mass compound should contain odd number of Nitrogen atoms
  - An odd molecular mass compound should contain even number of Nitrogen atoms
  - An odd molecular mass compound should contain odd number of Nitrogen atoms

Options :

- 1
- 2
- 3
- 4

Question Number : 68 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

IR spectra shows peak at  $2125\text{ cm}^{-1}$  of weak intensity. Assign the functional group;

- $\text{-C}\equiv\text{C-}$
- $\text{-C}\equiv\text{N}$
- $\text{R}_2\text{C=CR}_2$
- $\text{R}_2\text{C=O}$

Options :

- 1
- 2
- 3
- 4

Question Number : 69 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The reason for Graphene to be transparent is:

- It's ability to absorb 2-3% of the white light and transmit the rest
- It's ability to emit 2-3% of the white light and absorb the rest
- Interband optical transition
- Intraband optical transition

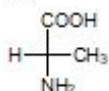
Options :

- 1
- 2
- 3
- 4

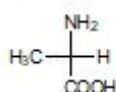
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Correct Marks : 1 Wrong Marks : 0

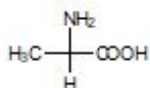
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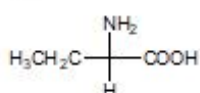
b.



c.



d.



Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 71 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following reactions does not proceed through radical- anions?

- a. Birch reduction
- b. Acyloin condensation
- c. Wurtz reaction
- d. Meerwein-Ponndorf-Verley reduction

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 72 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The reduction of dialkyl acetylenes with sodium in liquid ammonia gives

- a. Only cis-alkenes
- b. Only trans-alkenes
- c. Equimolar mixture of cis- and trans-alkenes
- d. Alkanes

Options :

1. 1
2. 2
3. 3

Question Number : 73 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the order of rotational axis in the benzene molecule?

- a. 4
- b. 5
- c. 6
- d. 2

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 74 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The two hands of a normal human being can be regarded as

- a. Diastereomers
- b. Geometrical isomers
- c. Conformers
- d. Enantiomers

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 75 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The first Nobel Prize awarded to Marie Curie in 1903 was shared with

- a. Antoine Henry Becquerel
- b. Neil Bohr
- c. Pierre Curie
- d. Antoine Henry Becquerel

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 76 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0



Correct option which gives the correct relation between the following statements.

**Assertion:** 2-Methylbenzoic acid is more acidic than benzoic acid.

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**Reason:** Groups present at the ortho position in benzoic acid, whether electron releasing or withdrawing, always lower the  $pK_a$  value.

- Both assertion and reason statements are true and reason is the correct explanation of assertion
- Both assertion and reason statements are true but the reason is not correct explanation of assertion
- Assertion statement is true but the reason is a false statement
- Assertion statement is false but the reason is a true statement

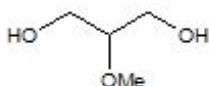
Options :

- 1
- 2
- 3
- 4

Question Number : 77 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Number of non-equivalent protons in the following compound is



- 6
- 8
- 5
- 3

Options :

- 1
- 2
- 3
- 4

Question Number : 78 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The amount of energy available in radio frequency radiation is sufficient for which of the following?

- Excite an atom
- Vibrate an atom
- Vibrate a molecule
- Affect the nuclear spin of an atom

Options :

- 1
- 2
- 3
- 4

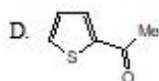
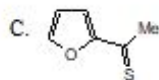
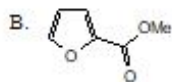
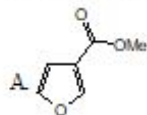
Question Number : 79 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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IR ( $\text{cm}^{-1}$ ): 1680.  $^1\text{H}$ NMR ( $\text{CDCl}_3$ ): 7.66 (m, 1H), 7.60 (m, 1H), 7.10 (m, 1H), 2.50 (s, 3H).  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ ): 190, 144, 134, 132, 128, 28. EI-MS ( $m/z$ ): 126 ( $\text{M}^+$ , 100%), 128 ( $\text{M}+2$ , 4.8%).

The structure of the compound is



Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 80 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The scientists who received Nobel Prize for the discovery of graphene are

- a. Simonio and Lyndiana Bernacotti
- b. John Desmond Bernal and Philip Wallace
- c. J. W. McClure and S. Mouras
- d. Andre Geim and Konstantin Novoselov

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 81 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Novoselov and Geim isolated for the first-time graphene from graphite using which of the following technique?

- a. Chemical Vapor deposition
- b. Liquid Exfoliation
- c. Mechanical Exfoliation
- d. Hummer's method

Options :

1. 1
2. 2
3. 3
4. 4

Correct Marks : 1 Wrong Marks : 0

The structure of graphene is

- a. Tetrahedral with fcc lattice structure
- b. Hexagonal with honeycomb lattice structure
- c. Hexagonal with fcc lattice structure
- d. Cubical structure

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 83 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following was the first reaction having 100% atom conservation?

- a. Synthesis of acetaldehyde by Wacker's process
- b. Synthesis of urea
- c. Diels-Alder reaction
- d. Phase transfer catalysis

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 84 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Nitration of benzene-D<sub>6</sub> does not show any primary kinetic isotope effect. This is because

- a. The C-D bond is not broken in course of the reaction
- b. Formation of the sigma complex is rate determining
- c. Decomposition of the sigma complex is rate determining
- d. The reaction goes through a single step process

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 85 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A deuterated drug will be more effective when

- a. Any O-H and/or N-H group in the drug is replaced by O-D and/or N-D bonds
- b. Any C-H group in the molecule is replaced by a C-D group
- c. A C-H bond which is involved in the metabolism of the drug, and showing significant primary kinetic isotope effect, is replaced by a C-D bond
- d. Any amide group in the molecule is replaced by a CD<sub>2</sub>-CD<sub>2</sub> group

Options :

2. 2  
3. 3  
4. 4

Question Number : 86 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The brown ring test can be carried out using which reagents?

- a. aq.  $\text{FeSO}_4$  + conc.  $\text{HCl}$
- b.  $\text{FeSO}_4$  + conc.  $\text{H}_2\text{SO}_4$
- c. aq.  $\text{AgNO}_3$
- d. Dil.  $\text{HCl}$

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 87 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following organic compound will give reddish-orange ppt. on reaction with dil.  $\text{HCl}$  followed by aq.  $\text{NaNO}_2$  and  $\beta$ -naphthol?

- a. Benzophenone
- b. Benzaldehyde
- c. Aniline
- d. Diphenylamine

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 88 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How to transfer a solid chemical from a solid weighing bottle to a volumetric flask?

- a. Transfer directly to the volumetric flask
- b. Transfer using a beaker
- c. Transfer using a pipette
- d. Transfer solid with the help of funnel and distilled water

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 89 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

- a. Biodiesel
- b. Bioethanol
- c. Solar energy
- d. Nuclear energy

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 90 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What was the reason for Marie Curie's death?

- a. Cancer
- b. Anemia
- c. Tuberculosis
- d. Heart attack

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 91 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following was used as obituary statement for Alfred Nobel in a leading newspaper?

- a. "Merchant of death has died today"
- b. "Merchant of Dynamite has died today"
- c. "A man with wisdom died today"
- d. "Dynamite business man died"

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 92 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not a characteristic of Lariat Ethers?

- a. Pseudo 3-D
- b. Crown ethers are better binder than Lariat ether
- c. Can accommodate non-spherical cations
- d. Lariat ether are formed by crown ether and one appended arm

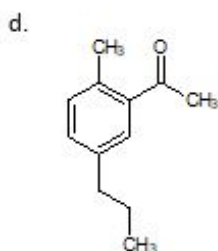
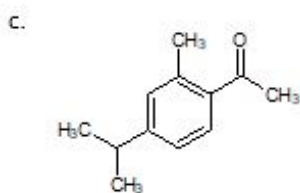
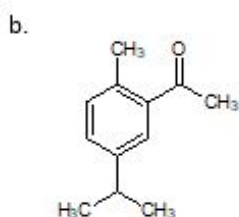
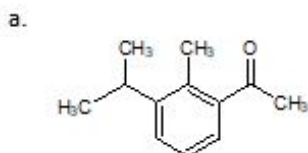
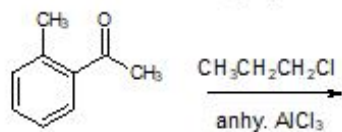
Options :

- 1. 1
- 2. 2

Question Number : 93 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which will be the major product for the following reaction?



Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 94 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following has been found useful for the filtration of sea water?

- a. Graphite
- b. Graphene
- c. Diamond
- d. Fullerene

Options :

1. 1

3. 3

4. 4

Question Number : 95 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is true about spreadsheet?

- a. Time consuming
- b. Difficult calculations
- c. Easy organization and computation of data
- d. Difficulty in multiple problem solving

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 96 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The use of spot test is not feasible for the experiments for

- a. Qualitative Anion analysis
- b. Qualitative Cation analysis
- c. Functional group analysis
- d. Preparation of acid from amide

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 97 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Fingerprints found at the scene of crime are usually

- a. Plastic print
- b. Inked print
- c. Patent print
- d. Latent print

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 98 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

- Intermolecular hydrogen bonding
- Formation of dimers
- Highly acidic hydrogen
- Resonance stabilization of their conjugate base

Options :

- 1
- 2
- 3
- 4

Question Number : 99 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An important electronic parameter which dictates the electrochemical, optical and charge transport properties of Electrically Conducting Polymers is

- Bond length
- Potential energy
- Refractivity
- Band gap

Options :

- 1
- 2
- 3
- 4

Question Number : 100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The ammonium ion in the salt can be confirmed by which one of the following reagent?

- aq. NaOH
- Ammonium thiocyanate
- Potassium ferrocyanide
- Nessler's reagent

Options :

- 1
- 2
- 3
- 4