DE-2921

First Year B. Sc. (Sem. I) Examination

March / April – 2016

Chemistry : Paper - II

Time : 2 Hours] [Total Marks : 50

सूचनाएँ/Instructions :

(1) Fill up strictly the details of signs on your answer book.

Name of the Examination :
First Year B. Sc. (Sem. I)
Name of the Subject :
Chemistry : Paper - II

Subject Code No. : 2 9 2 1
Section No. (1, 2,.....) : 1, 2

Seat No. :

(2) अंक प्रश्नपत्रमा कुल आफ्नो तिनाई A अथवा B गरिएको ३५ प्रश्नहरू छ।
There are two sections A and B in the question paper having 35 questions.

(3) हरेक प्रश्नमा केही अेक ज उत्तर छ।
There is only one correct answer for each question.

(4) कालीन अङ्कामा सबै सायो विकल्प पस्तका प्रत्येक प्रश्नमा खोज्ने लाग्दौ।
Select the proper option to make the statement correct.

(5) अफ्नो उत्तर पत्रमा 0.25 भूल अेक अेक भागामा छन्।
For wrong answer 0.25 mark will be deducted per one mark.

SECTION - A : Q. 1 to 20 Multiple choice questions : (1 mark)
SECTION - B : Q. 21 to 35 Multiple Choice Questions : (2 marks)

O.M.R. Sheet भएका अंगेन्त्र अन्तर्गत सूचनाहरू आफ्नो आफ्नो भएका O.M.R. Sheet-ली पात्र हारिएको छ।

Important instructions to fillup O.M.R. Sheet are given on back side of the provided O.M.R. Sheet.
1. IUPAC name of Furan is ________.
   (A) Azine
   (B) Oxole
   (C) Azole
   (D) Thirole

2. The number of possible resonance structure for Pyridine are ________.
   (A) 10
   (B) 5
   (C) 4
   (D) 7

3. The reduction of furan is carried out in the presence of Ni catalyst with H₂ gas at 200°C temperature, the product is ________.
   (A) NBR
   (B) SBR
   (C) THF
   (D) TNT

4. Angle of deviation in cyclo butane is ________.
   (A) 24° 44′
   (B) 5° 44′
   (C) 0° 44′
   (D) 9° 44′
5. The simplest formula which expresses the relative number of atoms of constituents elements present in the molecule is called _______.
(A) Structural formula
(B) Stereo formula
(C) Empirical formula
(D) Molecular formula

6. The general formula for chloroplatinate salt of the diacidic base is _______.
(A) B₂H₂PtCl₆
(B) B₃H₂PtCl₆
(C) BH₂PtCl₆
(D) B₂H₂PtCl₄

7. Which of the following organic acid's molecular formula is determined by silver salt method?
(A) Acetic acid
(B) Benzene sulphonic acid
(C) Monochloro acetic acid
(D) Dibromo acetic acid
8. Which of the following compound is an example of angular polynuclear aromatic hydrocarbon?
(A) Anthracene
(B) Naphthalene
(C) Carbazol
(D) Phenanthrene

9. Phenanthrene is oxidised with sodium dichromate and conc. sulphuric acid, the product is ________.
(A) Decaline
(B) 9-Nitro phenanthroquinone
(C) 9,10-Phenanthroquinone
(D) Anthraquinone

10. Tetraline is obtained by the reduction of naphthalene with ________.
(A) sodium/Amyl alcohol
(B) Barium/Ethanol
(C) sodium/Ethanol
(D) sodium/Acetone
11 Which of the following reagents are used for the Howarth synthesis of anthracene?

(A) Naphthelene and succinic anhydried
(B) Naphthelene and phthalic anhydride
(C) Benzene and phthalic anhydride
(D) Benzene and succinic anhydride

12 Which of the following acid compound exhibit optical activity?

(A) Phenyl acetic acid
(B) Butanoic acid
(C) Lactic acid
(D) Oxalic acid
Optical isomers that are not the mirror images of each other are called______

(A) Diastereoisomers
(B) Enantiomers
(C) Racemates
(D) Meso compound

Which of the following instrument is used to measure the optical activity of the organic substance?

(A) Polarimeter
(B) Potentiometer
(C) pH-meter
(D) Spectrometer
15. The process for separation of both enantiomers (d- & l-) from racemic mixture is known as_______
   (A) Inversion
   (B) Elimination
   (C) Dehydrogination
   (D) Resolution

16. Which of the following compound shows E-Z configuration ?
   (A) 1-Chloro-1-bromo-but-1-ene
   (B) 2-Chloro-3-Bromo-pentane
   (C) Formic acid
   (D) 2-Chlorobutane

17. From which latin word symbol S has come in nomenclature of optically active isomers ?
   (A) Zuzmen
   (B) Sinsiter
   (C) Rectus
   (D) Erythro
Saturated hydrocarbons mainly undergo _____ reaction.
(A) Substitution reaction
(B) Polymerisation reaction
(C) Addition reaction
(D) Elimination reaction

The reaction of trialkyne boren with silver nitrate in the presence of NaOH at normal temperature the product is ________.
(A) Long chain alkyne
(B) Cyclo alkane
(C) Long chain alkane
(D) Long chain alkene

The reduction of cyclo butane is carried out in the presence of Ni catalyst with H₂ at 120° C the product is ________.
(A) 2-Butene
(B) 2-Pentene
(C) n-Pentane
(D) n-Butane
21 नैवेदीय प्रतिक्रियाएँ मध्ये मजकूरी नीप्शे A अनेक B आणि B अवशेष असतात.

\[ CH_3Br + 2Na + CH_3Br \xrightarrow{\text{Dry ether}\, \text{Wurtz Reaction}} A \xrightarrow{\text{HNO}_3\, \text{475}^\circ\text{C}} B \]

(A) \( A = \text{मिथेन}, \ B = \text{क्लोरो मिथेन} \)
(B) \( A = \text{थाॅथेन}, \ B = \text{ब्रोमो थाॅथेन} \)
(C) \( A = \text{थाॅथेन}, \ B = \text{नायक्लो थाॅथेन} \)
(D) \( A = \text{मिथेन}, \ B = \text{नायक्लो मिथेन} \)

Identify the product A and B from the following reaction:

\[ CH_3Br + 2Na + CH_3Br \xrightarrow{\text{Dry ether}\, \text{Wurtz Reaction}} A \xrightarrow{\text{HNO}_3\, \text{475}^\circ\text{C}} B \]

(A) \( A = \text{Methane, B = Chloromethane} \)
(B) \( A = \text{Ethane, B = Bromo ethane} \)
(C) \( A = \text{Ethane, B = Nitro ethane} \)
(D) \( A = \text{Methane, B = Nitro methane} \)

22 क्षुरुण, थायोइन, बेंजिन अनेक पायथॉरिक थायोइनिन विषाडाविणी विज्ञानी का __________ हे ज्ञात करा.

(A) \( \text{क्षुरुण} > \text{पायथॉरिक} > \text{थायोइन} > \text{बेंजिन} \)
(B) \( \text{पायथॉरिक} > \text{क्षुरुण} > \text{थायोइन} > \text{बेंजिन} \)
(C) \( \text{बेंजिन} > \text{थायोइनिन} > \text{पायथॉरिक} > \text{क्षुरुण} \)
(D) \( \text{पायथॉरिक} > \text{क्षुरुण} > \text{बेंजिन} > \text{थायोइन} \)

________ is desending order of reactivity for furan, thiophene, benzene and pyrrol.

(A) \( \text{Furan} > \text{Pyrrol} > \text{Thiophene} > \text{Benzene} \)
(B) \( \text{Pyrrol} > \text{Furan} > \text{Thiophene} > \text{Benzene} \)
(C) \( \text{Benzene} > \text{Thiophene} > \text{Pyrrol} > \text{Furan} \)
(D) \( \text{Pyrrol} > \text{Furan} > \text{Benzene} \? \text{Thiophene} \)

23 नैवेदीय प्रतिक्रिया मध्ये मजकूरी नीप्शे A अनेक B आणि B अवशेष असतात.

\[ 2C_2H_2 + H_2S \xrightarrow{\text{Al}_2O_3/400^\circ\text{C}} A \xrightarrow{\text{Conc. HNO}_3/(CH_3CO)_2O} B \]

(A) \( A = \text{थायोइनिन}, \ B = 2-\text{नायक्लोथायोइनिन} \)
(B) \( A = \text{पायथॉरिक}, \ B = 2-\text{पायथॉरिक सक्लीनिक अक्सिड} \)
(C) \( A = \text{थियोइनिन}, \ B = 2-\text{थायोइनिन सक्लीनिक अक्सिड} \)
(D) \( A = \text{थायोइनिन}, \ B = 2-\text{थायोइनिन सक्लीनिक अक्सिड} \)

Identify the products A and B from the following reaction:

\[ 2C_2H_2 + H_2S \xrightarrow{\text{Al}_2O_3/400^\circ\text{C}} A \xrightarrow{\text{Conc. HNO}_3/(CH_3CO)_2O} B \]

(A) \( A = \text{Thiophene}, \ B = 2\text{-Nitro thiophene} \)
(B) \( A = \text{Pyrrol}, \ B = 2\text{-Pyrrol sulphonic acid} \)
(C) \( A = \text{Pyridine}, \ B = 2\text{-Thiophene sulphonic acid} \)
(D) \( A = \text{Thiophene}, \ B = 2\text{-Thiophene sulphonic acid} \)
24. Identify the product A and B from the following reaction.

$$1,3\text{-dibromo propane, } + \text{Zn} \xrightarrow{\text{Dehalogenation}} A \xrightarrow{\text{Dark at room temp.}} B$$

(A) $A = \text{cyclo butane, } B = 1,3\text{-dibromo butane}$
(B) $A = \text{cyclo propane, } B = 1,3\text{-dibromo propane}$
(C) $A = \text{propane, } B = \text{cyclo propane}$
(D) $A = 2\text{-bromo propane } B = \text{cyclo propane}$

25. Which hetero atom and how many numbers of resonance structures are present in Furan?

(A) Oxygen hetero atom and 5 resonance structures
(B) Sulpher hetero atom and 10 resonance structures
(C) Nitrogen hetero atom and 6 resonance structures
(D) Oxygen hetero atom and 10 resonance structures
0.2505 gram of the silver salt of monobasic acid on ignition in crucible gave 0.162 gram of silver. What is the molecular weight of acid?

(A) 51  
(B) 60  
(C) 102  
(D) 202

0.984 gram of the chloroplatinate salt of organic diacidic base on ignition gave 0.390 gram of platinum, what is the molecular weight of the base?

(A) 92  
(B) 64  
(C) 82  
(D) 41
10 ml. gaseous hydrocarbon was exploded with 100 ml oxygen in a udiometer tube. After cooling the tube, the residual gas occupied 75 ml. After the absorption of residual gas mixture by a strong solution of KOH, the volume was further reduced to 35 ml. What is the molecular formula of hydrocarbon?

(A) \( \text{C}_2\text{H}_6 \)

(B) \( \text{C}_4\text{H}_{10} \)

(C) \( \text{C}_3\text{H}_8 \)

(D) \( \text{C}_2\text{H}_4 \)

Identify the product A and B from the following reaction:

\[
\text{Phaliclandryd} \text{ined } \text{t} \text{h} \text{e } \text{following } \text{reaction}.
\]

\[
\text{Product: } A = \text{Anthraquinone}, \quad B = \text{Anthracene}
\]

\( A = \text{O-}_{\text{m}}\text{-Benzoyl benzoic acid}, \quad B = \text{Naphthalene} \)

\( A = \text{O-}_{\text{m}}\text{-Benzoyl benzoic acid}, \quad B = \text{Anthraquinone} \)

\( A = \text{O-}_{\text{m}}\text{-Benzoyl propanoic acid}, \quad B = \text{Anthraquinone} \)
Identify the product A and B from the following reaction

$$\alpha-Naphthol \xrightarrow{\text{Zn dust, \Delta-H}_2\text{O, Oxidation}} A \xrightarrow{\text{O}_2\text{V}_2\text{O}_5} B.$$  

(A) A = Naphthalene, B = Phthalic anhydride  
(B) A = Naphthalene, B = 1,4-Naphthaquinone  
(C) A = Anthrecene, B = Phthalic anhydride  
(D) A = Naphthalene, B = Phthalic acid

Which is the correct order of priority of atoms/groups attached to the chiral carbon in the compound given below while assigning R or S configuration?

```
  COOH  
 / 
 H --C--NH_2  
 |   |   
 |  CH_3
```

(A) CH_3 > NH_2 > COH > H  
(B) NH_2 > COOH > CH_3 > H  
(C) H > NH_2 > COOH > CH_3  
(D) COOH > NH_2 > CH_3 > H
Which of the following compound will show optical isomerism and geometrical isomerism?

(A) CH₂-CH₂-CH= -CH-COOH
(B) CH₃-CH(OH)-COOH
(C) CH₃-CH=CH-CH₃
(D) CH₃-CH₂-CHBr-CH=CH-CH₃

Which of the following is correct for structures A, B and C?

(A) A and C are enantiomers
(B) A and B are enantiomers
(C) A and B are diastereomers
(D) A and C are identical
34. Which of the following compounds show E and Z configuration?

(A) Maleic acid and fumaric acid
(B) Crotonic acid and iso crotonic acid
(C) 2-Chloro-pent-2-ene and 1-chloro-1-bromo-but-1-ene.
(D) 1-Chloro-2-iodo-2-bromo-propane and 1-chloro-1-bromo-butane

35. Identify the product A and B from the following reaction.

Barium Adipate $\xrightarrow{\text{Dry distillation}}$ BaCO$_3$ $\rightarrow$ A $\xrightarrow{\text{Zn-Hg/HCl}}$ B

(A) A = cyclo butanone, B = cyclo butane
(B) A = cyclo pentanone, B = cyclo pentane
(C) A = cyclo hexane, B = cyclo hexanone
(D) A = cyclo propanone, B = cyclo heptanone