(Part-A Part-B)

Sl.No. 0801259

052 (E)

(MARCH/APRIL, 2022)
SCIENCE STREAM
(CLASS - XII)

Part - A : Time : 1 Hour / Marks : 50

Part - B : Time : 2 Hours / Marks : 50

સામેનું વર્તુળ OMR શીટમાં ઘટ્ટ કરવાનું રહે છે.
Set No. of Question Paper, circle against which is to be darken in OMR sheet.
08

(Part - A)

Time : 1 Hour] *[Maximum Marks : 50*

Instructions :

1) **There are 50 objective type (M.C.Q.) questions in Part - A and all questions are compulsory.**
2) **The questions are serially numbered from 1 to 50 and each carries 1 mark.**
3) **Read each question carefully, select proper alternative and answer in the O.M.R. sheet.**
4) **The OMR sheet is given for answering the questions. The answer of each question is represented by (A) O, (B) O, (C) O, (D) O. Darken the circle ● of the correct answer with ball-pen.**
5) **Rough work is to be done in the space provided for this purpose in the Test Booklet only.**
6) **Set No. of Question Paper printed on the upper-most right side of the Question Paper is to be written in the column provided in the OMR sheet.**
7) **Use of Simple Calculator and log table is allowed, if required.**
8) **Signs used in question paper have usual meaning.**

1) Which is biodegradable polymer?

(A) Nylon-6

(B) Nylon-2, Nylon-6

(C) Nylon 6,6

(D) Malamine

Rough Work

Rough Work

2) Monomer of Teflon is _____.

(A) $CH_2 = CH - CN$

(B) $CH_2 = \underset{\underset{Cl}{|}}{C} - CH = CH_2$

(C) $CF_2 = CF_2$

(D) $CH_2 = CH - Cl$

3) Which compound has highest sweetness value?

(A) Alitame

(B) Aspartame

(C) Saccharin

(D) Sucralose

4) Diamond is which type of solid?

(A) Metallic

(B) Molecular

(C) Covalent

(D) Ionic

5) Which is ferromagnetic substance?

(A) CrO_2

(B) MnO

(C) Fe_3O_4

(D) NaCl

6) Which impurity is not added to prepared P-type semiconductor?

(A) Al

(B) B

(C) As

(D) Ga

7) Which compound shows Frenkel and Schottky both defects?

(A) AgBr

(B) AgCl

(C) AgI

(D) ZnS

8) What will be the molality of 10% w/w aqueous solution of NaOH?

(Molecular mass of NaOH=40g mol^{-1})

(A) 2.5 m

(B) 2.78 m

(C) 2.87 m

(D) 2.05 m

9) What will be the boiling point of 1M urea solution in k unit?
(kb = 0.52 k kg mol^{-1})

(A) 100.52

(B) 373.67

(C) 378.35

(D) 105.2

Rough Work

10g NaOH in 90g H_2O

$m = \frac{10 \times 1000}{40 \times 90}$

60g in 1000g

1M in 1L sol^n

NH_2CONH_2

$M = 60$

$\Delta T_b = K_b \times m \times a$

$= 0.52 \times \frac{60 \times}{60 \times}$

$= 0.5532$

Rough Work

10) Which mixture shows positive deviation from Raoult's law?

(A) Phenol + Aniline

(B) Ethanol + Acetone

(C) Chloroform + Acetone

(D) Nitric acid + Water

11) Under identical condition which solution has highest osmetic pressure?

(A) 1 M $BaCl_2$

(B) 1 M NaCl

(C) 1 M $FeCl_3$

(D) 1 M glucose

12) What is the potential of hydrogen electrode in contact with a solution whose pH is one?

(A) 0.59v

(B) 0.059v

(C) 0.0059v

(D) 5.9v

13) How much electricity in terms of Faraday is required to reduced 2 mol of MnO^-_4 into Mn^{2+}?

(A) 10

(B) 5

(C) 3

(D) 6

14) On which of the following factor electronic conductance does not depend?

(A) The number of valence electrons per atom

(B) The nature and structure of metal

(C) Temperature

(D) Pressure

15) Which is unit of rate constant for the second order reaction?

(A) $Mol^{-1} LS^{-1}$

(B) $Mol\ L^{-1}S^{-1}$

(C) S^{-1}

(D) $Mol^{-2}L^{+2}S^{-1}$

16) What is the slope of graph $ln\ k \rightarrow \frac{1}{T}$?

(A) $\frac{-2.303Ea}{R}$

(B) $-\frac{Ea}{R}$

(C) $-\frac{R}{Ea}$

(D) $\frac{-2.303R}{Ea}$

Rough Work

Rough Work

17) Which is incorrect statement for physical adsorption?

(A) It is reversible in nature

(B) It is not specific in nature

(C) Enthalpy of adsorption is low

(D) It results into unimolecular layer

18) $CO + H_2 \xrightarrow{[X]} CH_3OH$ what [X] here?

(A) $Cu/ZnO\text{-}Cr_2O_3$

(B) Ni

(C) Cu

(D) Pt

19) Which is negatively charged sol?

(A) TiO_2 sol

(B) Methylene blue

(C) Haemoglobin

(D) As_2S_3 sol

20) Which is dispersed phase and dispersion medium in fog colloid respectively?

(A) Gas-solid

(B) Solid-gas

(C) Liquid-gas

(D) Gas-liquid

21) Which is ores of iron?

(A) Malachite

(B) Siderite

(C) Calamine

(D) Bauxite

Rough Work

22) Which metal is not refined by zone refining method?

(A) Si

(B) Ge

(C) Ga

(D) Sn

23) Which compound has highest basicity?

(A) SbH_3

(B) BiH_3

(C) NH_3

(D) PH_3

24) Which compound has pyramidal geometry?

(A) XeO_3

(B) $XeOF_4$

(C) XeF_4

(D) XeF_6

Rough Work

25) Correct formula of mustard gas is _____

(A) CCl_3NH_3

(B) CCl_3NO_2

(C) $ClCH_2CH_2SCH_2CH_2Cl$

(D) $COCl_2$

26) _____ is use for bleaching of flour.

(A) O_3

(B) SO_2

(C) Cl_2

(D) $KMnO_4$

27) Which of the following compound has highest magnetic moment?

(A) $Ni(NO_3)_2$

(B) $MnSO_4$

(C) $CrCl_3$

(D) $FeSO_4$

28) Which is transition element?

(A) Cd

(B) Zn

(C) Hg

(D) Cu

29) Colour of K_2MnO_4 is _____.

(A) Green

(B) Violet

(C) Blue

(D) Red

30) What is the primary and secondary valency of central metal in complex. $[Co(C_2O_4)_2(H_2O)_2]^-$?

(A) 3 and 4

(B) 2 and 4

(C) 3 and 6

(D) 1 and 6

31) $[Pt\ Cl_2(en)_2]$ possess which type of isomerism?

(A) Ionisation

(B) Geometrical

(C) Optical

(D) Geometrical and optical both

Rough Work

Rough Work

32) Which is correct relation for high spin complex?

(A) $\Delta_0 > P$

(B) $\Delta_0 < P$

(C) $\Delta_0 = P$

(D) $\Delta_0 \geq P$

33)  this is which kind of halide?

(A) Vinylic halide

(B) Aryl halide

(C) Benzylic halide

(D) Allylic halide

34) Which of the following is Wurtz reaction?

(A) $C_2H_5Cl + C_6H_5Cl \xrightarrow{Na/dry\ ether}$

(B) $C_2H_5Cl + C_2H_5Cl \xrightarrow{Na/dry\ ether}$

(C) $C_6H_5Cl + C_6H_5Cl \xrightarrow{Na/dry\ ether}$

(D) $C_2H_5Cl + C_3H_7Cl \xrightarrow{Na/dry\ ether}$

35) How many chiral carbon are in pentan 2,3,4 triol?

(A) 4

(B) 3

(C) 1

(D) 2

36) How many sigma and pi bonds are present in DDT respectively?

(A) 27,6

(B) 29,6

(C) 28,5

(D) 27,5

37) Reduction of which compound gives 2° alcohol?

(A) Acetic acid

(B) Acetaldehyde

(C) Acetone

(D) Ethyl Acetate

38) Which product is obtained by oxidation of phenol with chromic acid?

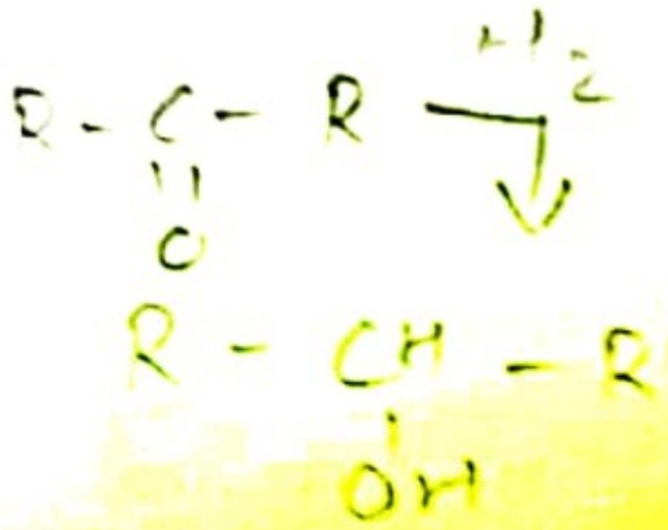
(A) Benzoic acid

(B) Benzene

(C) Benzoquinone

(D) Acetophenone

Rough Work



Rough Work

39) Under identical condition which one has highest boiling point?

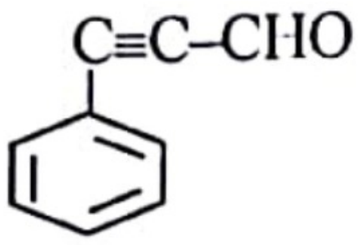
(A) Butan-1-ol

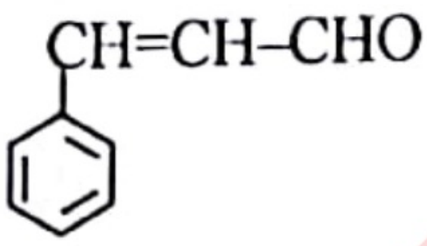
(B) Propan-1-ol

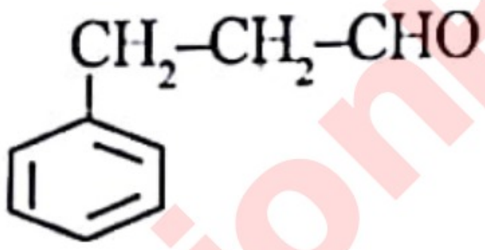
(C) 2-methyl propan -2-ol

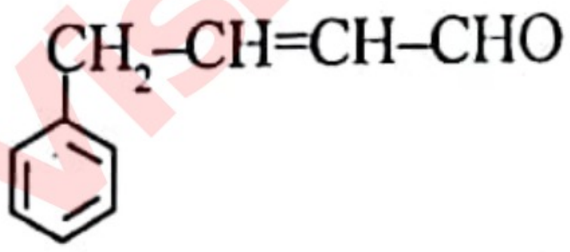
(D) Butan-2-ol

40) Correct formula of cinnamaldehyde is _____.

(A) 

(B) 

(C) 

(D) 

41) Which acid has lowest pKa?

(A) C_6H_5COOH

(B) CH_3COOH

(C) $C_6H_5CH_2COOH$

(D) CH_3CH_2COOH

42) Which compound give propanamine product by Hoffman bromamide reaction?

(A) CH_3CONH_2

(B) $HCONH_2$

(C) $CH_3CH_2CONH_2$

(D) $CH_3CH_2CH_2CONH_2$

Rough Work

43) Hinsberg's reagent react with which amine?

(A) CH_3NH_2

(B) $(CH_3)_2NH$

(C) $(CH_3)_3N$

(D) A and B both

44) Which reagent is used in Gatterman reaction?

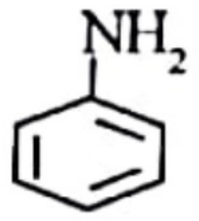
(A) Cu_2X_2/HX

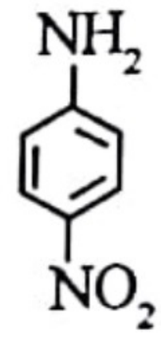
(B) Cu/HX

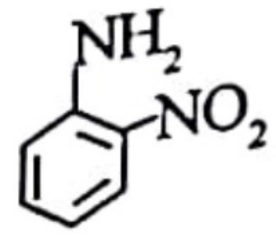
(C) $CHCl_3 + NaOH$

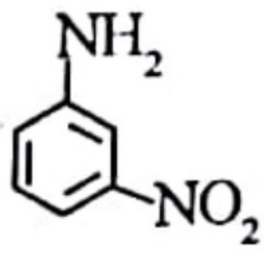
(D) $Zn - Hg / HCl$

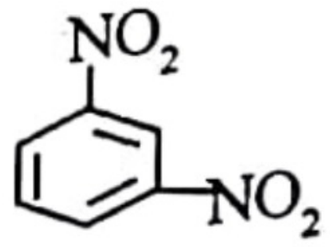
Rough Work

45)  $\xrightarrow[H_2SO_4, 288K]{HNO_3}$ _____ is major product.

(A) 

(B) 

(C) 

(D) 

46) Which one is not polysaccharide?

(A) Cellulose

(B) Starch

(C) Glycogen

(D) Sucrose

47) What is the chemical name of B_6 vitamin?

(A) Riboflavin

(B) Thiamine

(C) Pyridoxine

(D) Ascorbic acid

48) Which is bicyclic base?

(A) C

(B) A

(C) T

(D) U

49) Which protein present in muscles?

(A) Myosin

(B) Keratin

(C) Insulin

(D) Albumins

50) Which polymer is used for manufacturing conveyor belts?

(A) Bakelite

(B) Neoprene

(C) Malamine

(D) Teflon

052 (E)

(MARCH/APRIL, 2022)
SCIENCE STREAM
(CLASS - XII)

(Part - B)

Time : 2 Hours] *[Maximum Marks : 50*

Instructions :

1) Write in a clear legible handwriting.
2) There are three sections in Part - B of the question paper and total 1 to 27 questions are there.
3) All the questions are compulsory. Internal options are given.
4) The numbers at right side represent the marks of the question.
5) Start new section on new page.
6) Maintain sequence.
7) Use of Simple Calculator and log table is allowed, if required.

SECTION - A

■ **Give answer of any 8 questions out of following question no. 1 to 12 as required. [16]**
(Each question has 2 marks)

1) Write any four characteristics of crystalline solid.

2) A solution of $Ni(NO_3)_2$ is electrolysed between platinum electrodes using a current of 5 amperes for 20 minutes. What mass of Ni is deposited at the cathode? (Atomic mass of Ni=58.7 u)

3) State two differences between molecularity and order of reaction.

4) Explain purification of Zr metal.

5) Explain calcination with illustration.

6) Draw the isomers of $[Co(NH_3)_3 (NO_2)_3]$ complex.

7) Give conversion: Benzene into diphenyl.

8) Write carbyl amine test.

9) State the reactions which prove the presence of $-\overset{\overset{O}{\|}}{C}-$ and primary – OH group in glucose.

10) Write preparation and use of Bakelite.

11) Give IUPAC name of monomer of Nylon 6,6.

12) What is anionic detergents? Give its uses.

SECTION - B

■ **Give answer of any 6 questions out of following question no. 13 to 21 as required. (Each question has 3 marks)** **[18]**

13) Calculate packing efficiency in CCP structure.

14) Derive equation of rate constant and half reaction time for zeroth order reaction.

15) Explain mechanism of micelle formation.

16) Draw the structure of orthophosphoric acid, sulphuric acid and perchloric acid.

17) Explain anomalous properties of nitrogen.

18) What is interstitial compound? Write its characteristics.

19) Write the reactions of formaldehyde, acetaldehyde and acetone with methyl magnesium bromide.

20) Complete the reactions:

i) $C_6H_5COOH + SOCl_2 \rightarrow$

ii) $CH_3COOH \xrightarrow[(ii)\ H_2O]{(i)\ X_2/Red\ P}$

iii) $CH_3CH_2COOH + NH_3 \xrightarrow{\Delta}$

21) Give conversion in three steps:
Nitrobenzene into chlorobenzene

SECTION - C

■ **Give answer of any 4 questions out of following question no. 22 to 27 as required. (Each question has 4 marks)** **[16]**

22) 0.6 mL of CH_3COOH having density 1.06 g mL^{-1} is dissolved in 1 litre of water. The depression in freezing point observed for this strength of acid was 0.0205 °C. Calculate the Van't Hoff factor and the dissociation constant of acid (k_f = 1.86 k kg mol^{-1} and molecular mass of CH_3COOH = 60 g mol^{-1})

23) Write reactions occurring at anode and cathode in dry cell and lead storage cell.

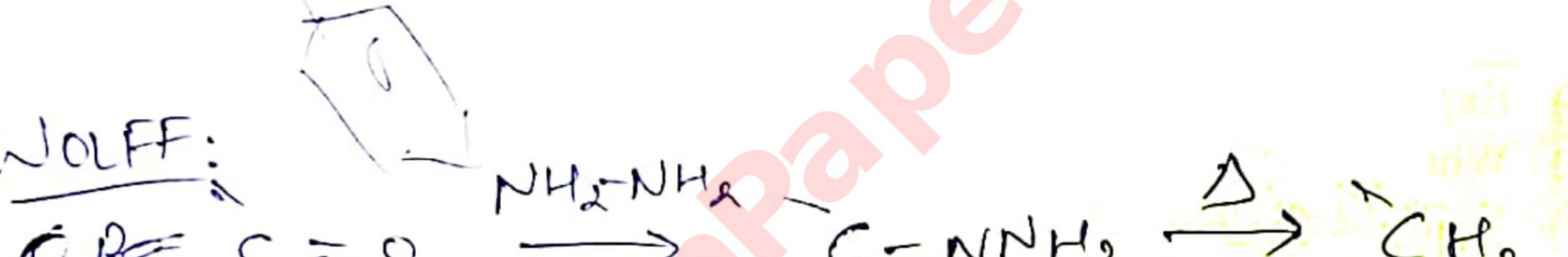
24) The half life period for radioactive decay of ^{14}C is 5730 years. An archaeological artifact containing wood had only 60% of the ^{14}C found in a living tree. Estimate the age of the sample.

25) Explain on the basis of valence bond theory that $[Fe(H_2O)_6]^{3+}$ is paramagnetic where as $[Fe(CN)_6]^{4-}$ is diamagnetic.

26) Write the reactions to prepared phenol from Aniline and Cumine.

27) Write Wolff-Kishner and Clemmensen reduction of aldehyde and ketone.

WOLFF:



CLEMMEN: