This Question Paper contains 20 printed pages.
(Part - A & Part - B)

Sl.No. 0200353

052 (E)

(JULY, 2019)
SCIENCE STREAM
(CLASS - XII)

પ્રશ્ન પેપરનો સેટ નંબર જેની સામેનું વર્તુળ OMR શીટમાં ઘટ્ટ કરવાનું રહે છે. Set No. of Question Paper, circle against which is to be darken in OMR sheet.
02

Part - A : Time : 1 Hour / Marks : 50
Part - B : Time : 2 Hours / Marks : 50

(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 the 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.**

Rough Work

1) Steel containing _____ is used in machines for cutting and grinding.

(A) Chromium

(B) Copper

(C) Nickel

(D) Tin

2) Which is the correct order of acidic strength of hydrohalic acid?

(A) $HCl > HBr > HI > HF$

(B) $HF > HCl = HBr > HI$

(C) $HF > HCl > HBr > HI$

(D) $HF < HCl < HBr < HI$

3) 'Ring test' is useful in confirming presence of which of the following ions.

(A) NO_2

(B) NO^-

(C) NO_3^-

(D) N_2O

4) Which promoter is used in manufacture of ammonia gas by Haber's process.

(A) V_2O_5

(B) K_2O and Al_2O_3

(C) FeO

(D) Pt + Rh

5) Which of the following is used as antiseptic medicines

(A) Carbon tetrachloride

(B) Chloroform

(C) Iodoform

(D) DDT

6) $2C_6H_5-X+2Na \xrightarrow{\text{dry ether}} \textcircled{A}+2\,NaX$

What is product Ⓐ?

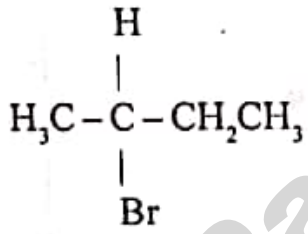
(A) $C_6H_5-C_6H_5$

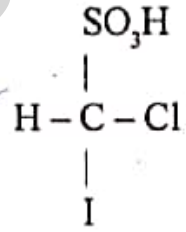
(B) $C_{12}H_{10}$

(C) C_6H_5Cl

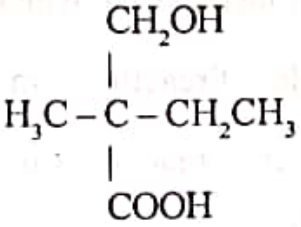
(D) C_6H_5Na

7) Which of the following compound possess R-configuration?

(A) 

(B) 

(C) 

(D) 

8) IUPAC name of 1,4 - Benzoquinone is

(A) quinol

(B) cyclohexa - 1,4 -diene - 3,6 - dione

(C) 1,4 - benzoquinone

(D) cyclohexa - 2,5 - diene -1,4 - dione

9) What will be the C – O – C bond angle in ethoxy ethane?

(A) 109°

(B) 111.7°

(C) 108°

(D) 108.5°

10) Which product is obtained when 2-methyl propane - 2 - ol is reacted with copper catalyst at 573 K temperature followed by dehydration.

(A) Acetone (B) Ethanal

(C) Diethyl ether (D) 2-methyl propene

11) In the reaction A → B if the concentration of A is doubled then the reaction rate increases by 1.59 times then what will be the order of reaction?

(A) $(1.59)^2$ (B) $3/2$

(C) $2/3$ (D) 1.59

12) For an initial reaction, which of the following is correct

(A) Order of reaction = molecularity

(B) Order of reaction ≠ molecularity

(C) Order of reaction > molecularity

(D) Order of reaction < molecularity

13) If the relation between half reaction time and $[R]_0$ is $t_{1/2} \propto \frac{1}{[R]_0^{n-1}}$ then what will be the order of reaction

(A) $\frac{1}{n-1}$ (B) $n-1$

(C) $\frac{n-2}{2}$ (D) n

14) Which of the following is water/oil (water in oil) emulsion?

(A) Milk

(B) Butter milk

(C) Cold cream

(D) Vanishing cream

15) What is the correct effective coagulating order of ions for positively charged colloid for $Fe(OH)_3$?

(A) $Cl^- > SO_4^{2-} > PO_4^{3-}$

(B) $PO_4^{3-} > SO_4^{2-} > Cl^-$

(C) $PO_4^{3-} > Cl^- > SO_4^{2-}$

(D) $SO_4^{2-} > PO_4^{3-} > Cl^-$

16) Which type of catalyst is used in obtaining SO_3 gas required in the manufacture of sulphuric acid by contact process?

(A) Catalyst is not used

(B) Heterogenous Catalyst

(C) Homogenous Catalyst

(D) Enzyme catalyst

17) What is general formula for electronic configuration of actinide series.

(A) $[Rn]\ 5f^{0-14}\ 5d^{0-2}\ 6s^2$

(B) $[Xe]\ 4f^{0-14}\ 5d^{0-10}\ 6s^2$

(C) $[Xe]\ 4f^{0-14}\ 5d^{0-1}\ 6s^2$

(D) $[Rn]\ 5f^{0-14}\ 6d^{0-2}\ 7s^2$

18) Which alloy used in riveting?

(A) Brass

(B) Bronze

(C) Nitinol

(D) Nichrome

19) What is the value of magnetic moment of Co^{2+}?

(A) 3.87 Bm

(B) 2.83 Bm

(C) 1.73 Bm

(D) 4.90 Bm

20) The aqueous solution of which of the following ion is colourless.

(A) Ni^{2+} (B) Co^{2+}

(C) Zn^{2+} (D) Cr^{2+}

21) Which transition of electron will be observed in the following, when Ti^{3+} ion having complex absorbs visible light of certain wavelength?

(A) $t_{2g}^{1}e_{g}^{1} \rightarrow t_{2g}^{0}e_{g}^{2}$

(B) $t_{2g}^{2}e_{g}^{0} \rightarrow t_{2g}^{1}e_{g}^{1}$

(C) $t_{2g}^{0}e_{g}^{1} \rightarrow t_{2g}^{1}e_{g}^{0}$

(D) $t_{2g}^{1}e_{g}^{0} \rightarrow t_{2g}^{0}e_{g}^{1}$

22) Which one of the following complex ion possess ionisation isomerism?

(A) $[Pt(NH_3)_4Cl_2]Br_2$

(B) $[Pt{\cdot}Cl_2{\cdot}(en)_2]^{2+}$

(C) $[Cr(C_2O_4)_3]^{3-}$

(D) $[Cr{\cdot}Cl_2{\cdot}(NH_3)_2{\cdot}(en)]^{+}$

23) The co-ordination number, oxidation number, number of electrons in d-orbital and number of unpaired electrons respectively in complex $[Co(NH_3)_4{\cdot}CO_3]ClO_4$ are

(A) 5,2,6,4

(B) 7,2,7,1

(C) 6,3,6,0

(D) 6,2,7,3

24) Which substance used in leather industry?

(A) Benzoic acid

(B) Acetic acid

(C) Methanoic acid

(D) Pentanoic acid

25) $CH_3COCH_2CH_2CH_3 \xrightarrow[\text{Main product}]{\text{Conc.}HNO_3,\ 0^{\circ}} A + CH_3CH_2COOH$

What will be A?

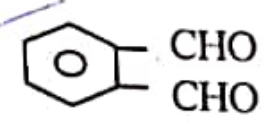
(A) $CH_3CH_2CH_2COOH$

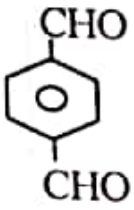
(B) CH_3COOH

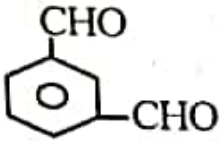
(C) HCOOH

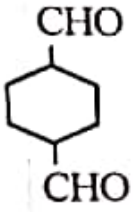
(D) CH_3CH_2COOH

26) Which is the correct structural formula of phthaldehyde from the following.

(A) 

(B) 

(C) 

(D) 

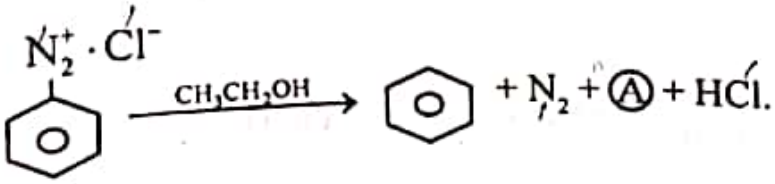
27) Tertbutyl benzene $\xrightarrow[\text{(ii) dil } H_2SO_4]{\text{(i) } KMnO_4/KOH,\ \Delta}$?

(A) Benzoic acid

(B) No reaction

(C) Tertbutyl benzoic acid

(D) Tertbutanol

28) 

What is Ⓐ in the given reaction?

(A) CH_3CH_2OH

(B) CH_3COOH

(C) CH_3CHO

(D) $CH_3CH_2NH_2$

29) What is the correct IUPAC name of phenyl cyanide?

(A) Phenyl cyanide

(B) Benzene carbonitrile

(C) Cyanobenzene

(D) Benzyl nitrile

30) Identify X in given reaction

$$CH_3-C\equiv N + CH_3CH_2OH + H_2O \xrightarrow[\Delta]{Conc.H_2SO_4} X + NH_3$$

(A) $CH_3COOCH_2CH_3$

(B) CH_3CONH_2

(C) CH_3COOH

(D) CH_3COOCH_3

31) Out of following which substance will not give diazotisation reaction?

(A) p-Aminophenol

(B) Methanamine

(C) Benzenamine

(D) o-Aminophenol

32) Which is the General formula of Trisaccharide?

(A) $C_nH_{2n-6}O_{n-3}$

(B) $C_nH_{2n-2}O_{n-1}$

(C) $C_nH_{2n-4}O_{n-2}$

(D) $C_nH_{2n-3}O_{n-1}$

33) Which disease is caused by deficiency of Vitamin H?

(A) Scurvy

(B) Paralysis

(C) Beriberi

(D) Sterility

34) Which of the following statement is incorrect?

(A) 'A' and 'C' are purine bases

(B) A and T are joined together by two hydrogen bond in DNA

(C) A, G, C and T bases are present in DNA

(D) T and U are pyrimidine bases

35) Which catalyst is used in manufacture of orlon from acrylonitrile monomer?

(A) Alkyl mercaptan

(B) Ziegler-Natta

(C) Peroxide

(D) Water

36) Which of the following is monomer of natural rubber?

(A) Ethelene

(B) Isoprene

(C) Chloroprene

(D) Acrylonitrile

37) Out of the following substance which is not an antioxidant.

(A) Butylated hydroxyanisole

(B) Citric acid

(C) Ascorbic acid

(D) Sorbic acid salt

38) Activity of disinfectants is expressed by _____.

(A) Phenol co-efficient

(B) Alcoholic co-efficient

(C) Ketone co-efficient

(D) Phenone co-efficient

39) Which type of solid is carborundum?

(A) Ionic solid

(B) Metallic solid

(C) Molecular solid

(D) Network solid

40) The atoms of element 'Y' form hexagonal close packing and the atoms of element 'X' occupies $\frac{1}{3}$ portion of the number of tetrahedral voids. Write the formula of the compound formed by 'X' and 'Y'.

(A) X_2Y

(B) X_2Y_3

(C) XY

(D) XY_2

41) What is percentage of empty space in hexagonal close packing (hcp) solid?

(A) 52%

(B) 74%

(C) 26%

(D) 68%

42) Which of the following will be paramagnetic

(A) Cr^{3+}

(B) Na^{+}

(C) O_2^{2-}

(D) Cu^{+}

43) Temperature increases, the value of K_H increases, thus the value of solubility of gaseous solute will be _____.

(A) Remains constant

(B) Decreases

(C) Increases

(D) Cannot say

44) Which of the following solution shows positive deviation from Raoult's Law?

(A) $C_6H_6 + C_6H_5CH_3$

(B) $CH_3COCH_3 + CHCl_3$

(C) $C_6H_5OH + C_6H_5NH_2$

(D) $C_2H_5OH + CH_3COCH_3$

45) Which of the following aqueous solution has highest boiling point, under identical condition having concentration 0.03 m?

(A) $K_4[Fe(CN)_6]$

(B) Na_2SO_4

(C) Urea

(D) NaCl

46) Which unit of concentration value does not change with change in temperature?

(A) Normality

(B) Molarity

(C) Molality

(D) %V/V

47) Which of the following mixture is used as electrical paste in mercury cell?

(A) Zn–Hg + KOH

(B) KOH + ZnO

(C) HgO + C

(D) $NH_4Cl + ZnCl_2$

48) If l = length, R = Resistance and A = Area of crosssection, then

(A) $R \propto \frac{1}{Al}$

(B) $R \propto \frac{A}{l}$

(C) $R \propto \frac{l}{A}$

(D) $R \propto lA$

49) Which cell differs from fundamental principle point of view?

(A) Electrolytic cell

(B) Leclanche cell

(C) Storage cell

(D) Fuel cell

50) Which is the Zinc ore?

(A) Copper pyrite

(B) Haematite

(C) Bauxite

(D) Calamine

052 (E)

(JULY, 2019)
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 18 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

■ **Answer the following Q. No. 1 to 8 in brief. 2 marks for each question.** **[16]**

1) Write short note on Frenkel defect.

OR

Explain in short the Band theory in Metals.

2) State the principle of zone refining method and which metal can be refined by this method.

3) Complete the following reactions and balance it

a) $Cu_{(s)} + H_2SO_{4(conc)(l)} \rightarrow$

b) $P_{4(s)} + NaOH_{(aq)} + H_2O_{(l)} \rightarrow$

4) Explain lanthanide contraction.

5) Explain denaturation of protein.

OR

Give classification of amino acids.

6) Give reactions for the preparation of Bakelite.

7) Give preparation and two properties of PHBV.

8) Give classification of synthetic detergents with example.

SECTION - B

Answer the following 9-14 questions in details. Each question carries 3 marks. [18]

9) Find the degree of association (X) when 1.0 gm benzoic acid, dissolved in 25 gm benzene is having depression in freezing point 0.81 K. The molal depression constant for solvent is 4.9 K kg mol^{-1}.

10) Give preparation of xenon-fluorine compounds. Support your answer with chemical reaction equation and conditions necessary.

OR

Write the molecular formula and structural formula of following substances.

a) Trimetaphosphoric acid

b) Peroxodisulphuric acid

c) Chloric acid

11) Explain mechanism of S_N^2 reaction.

12) Describe Langmuir Adsorption isotherm.

13) Write the following reactions.

a) Wolff Kishner reaction

b) Cannizzaro reaction

c) Hell-Volhard-Zolinsky reaction

14) Explain the reaction of arylamine with

a) Acylation in presence of pyridine catalyst

b) Ethyl Iodide

c) $CHCl_3/KOH$

SECTION - C

■ **Answer the following 15 -18 essay type questions in details. Each question carries 4 marks.** **[16]**

15) The potential of the given following cell is 0.53 volt at 298K temperature. Calculate the ionic product (K_w) of water.

$$^{\ominus}Pt \mid H_2(1bar) \mid KOH_{(0.002M)} \parallel HCl_{(0.005M)} \mid H_2(1bar) \mid Pt^{\oplus}$$

OR

How many grams of Cu and what volume of O_2 gas will be obtained if 18.4 ampere electric current is passed through the electrolytic cell of $CuSO_4$ for 1 hour and 42 minutes between graphite electrodes at 298K temperature and 1 bar pressure? Efficiency of cell is 75%. (Cu = 63.5 u, O = 16 u)

16) Write equation of chemical conversions for following organic compounds

a) Acetaldehyde to butan-2-ol

b) Aniline to phenol

17) Derive the equation of rate constant and Half reaction time for first order reaction.

18) What is meant by Ligands? Describe its classification.

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