Time: 3.00 Hours
Marks: 70
Part - I

## Note: Answer all the questions. Choose the best answer.

1) Titanium is purified by
a) Mond process
b) Van-Arkel method
c) Zone refining
d) Electrolytic refining
2) General empirical formula of silicone is
a) $\left(\mathrm{R}_{2} \mathrm{SiO}\right)$
b) ( RSIO )
c) $\left(\mathrm{R}_{2} \mathrm{CO}\right)$
d) $(\mathrm{RSiH})$
3) Shape of $\mathrm{XeOFe}_{4}$ is
a) square pyramidal
b) pryramidal
c) linear
d) T-shaped
4) Assertion : In any transition series the magnetic moment of $\mathrm{M}^{2+}$ ions first increases and then decreases.
Reason : In a transition series, the number of unpaired electrons increases and then decreases.
a) If both assertion and reason are true and reason is the correct explantion of the assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true, but reason is false,
d) If both assertion and reason are false
5) 

a) Sodium thio sulphate
b) Ca-EDTA
c) Cis-platin
d) Nickel chloride
6) An example of covalent crystal is
a) graphite
b) Sulphur
c) Diamond
d) rock salt
7) If $[A]$ is the concentration of $A$ at any time $t$ and $\left[A_{0}\right]$ is the concentration at $t=0$, then for the first order reaction, the rate equation can be written as .......
a) $k=\frac{2.303}{t} \log \left[\frac{A}{A_{0}}\right]$
b) $k_{t}=\frac{2.303}{t} \log \left[\frac{A_{0}}{A}\right]$.
c) $k_{t}=\frac{2.303}{t} \log \left[\frac{A_{0}}{\left[A_{0}\right]-[A]}\right]$
d) $k_{t}=\frac{2.303}{t} \log \left[\frac{A_{0}}{[A]}\right]$
8) $\mathrm{Cl}^{-}$is the conjugate base of
a) $\mathrm{HClO}_{4}$
b) HCl
c) $\mathrm{ClO}_{4}^{-}$
d) $\mathrm{HClO}_{3}$
9) When one coulomb of electricity is passed through an electrolytic solution, the mass deposited on the
a) equivalent weight
b) molecular weight
c) electrochemical equivalent
d) one gram
10) Dispersion of a solid in a liquid, a liquid in a gas and liquid in a liquid are
a) aerosol, emulsion, sol
b) Emulsion, sol, aerosol
c) Aerosol, sol, emulsion
d) Sol, aerosol, emulsion
11) The preparation of glycerol and soap from oils and fats is known as
a) esterification
b) saponification
c) hydroboration
d) trans esterification
12) The acid which reduces Tollen's reagent is
a) acetic acid
b) benzoic acid
c) formic acid
d) oxalic acid
13) When aqueous solution of benzene diazonium chloride is boiled the product formed is
a) benzyl alcohol
b) phenol
c) benzene $+\mathrm{N}_{2}$
d) Phenyl hydroxylamine

Kindly send me your answer keys to us - padasalai.net@gmail.com
14) Among the following the achiral amino acid is
a) 2-ethlyalanine
b) 2 - methylglycine
c) 2-hydroxymethylserine
d) Tryptophan
15) If one strand of the DNA has the sequence 'ATGCTTGA', then the sequence of complementary strand would be
a) TACGAACT
b) TCCGAACT
c) TACGTACT
d) TACGRAGT

## Part - II

Part - II
Answer any 6 Questions in short. Q. No. 24 Is compulsory.
16) Name some common methods of ore concentration
17) What re silicons?
18) $\mathrm{Mn}^{2+}, \mathrm{Fe}^{3+}$ have high magnetic moment. Prove it.
19) Write the IUPAC name of the complex. a) $\left[\mathrm{Fe}\left(\mathrm{NH}_{3}\right)_{2}(\mathrm{CN})_{4}\right]$
b) $\left[\mathrm{Cr}\left(\mathrm{NH}_{3}\right)_{3}(\mathrm{NC})_{2}\left(\mathrm{H}_{2} \mathrm{O}\right)\right]^{+}$
20) What is Schottky defect?
21) The reaction $\mathrm{A}+2 \mathrm{~B} \rightarrow \mathrm{C}$ obeys the rate equation. Rate $=\mathrm{K}[\mathrm{A}]^{1 / 2}[\mathrm{~B}]^{3 / 2}$ what
is the order of the reaction?
22) Write the Henderson equation for Acidic and Basic buffer
23) Write Short note on SHE
24) How tereylene is prepared.

## Part - III

Answer any 6 Questions in short. Q. No. 30 is compulsory.
$6 \times 3=18$
25) Explain the following terms with suitable examples. i) Gangue ii) Slag
26) Differentiate lanthanides and actinides
27) What are interstitial compounds? Give their properties.
28) What are the limitations of VB Theory.
29) Sketch the (a) Simple cubic (b) face-centred cubic and (c) body centred cubic lattices.
30) A first order reaction is $20 \%$ completed in 10 minutes

Calculate the time taken for the reaction to go to $80 \%$ completion
31) Explain Lucas test with examples.
32) Write short notes on Gomberg reaction. SIVAKUMAR, M,
33) What are Lipids? How is it classified?

Part - IV

## Answer allthe questions in brief.

34) a) i) Explain froath flotation process?
ii) Explain mong's process Sri Rammatric Hts, Vallam-622 809 Tenleasi Di $_{5 \times 5=25}^{3 t}$
b) i) Write note on structure of diborane.
(3)
(2)
(OR)
ii) Explain Fisher - Tropch synthesis.
(3)
35) a) i) How will you prepare chlorine using Decon's process. (3)
ii) Give the uses of helium.
(2)
(OR)
b) i) Calculate the packing efficiency of B.C.C
(3)
ii) Write short note on solvate isomerism
36) a) i) Based onVB theory explain why $\left[\mathrm{Cr}\left(\mathrm{NH}_{3}\right)_{6}\right]^{3+}$ is paramagnetic, while
$\left[\mathrm{Ni}(\mathrm{CN})_{4}\right]^{2-}$ diamagnetic

(3)
ii) What is anisotropy
(2)

## (OR)

b) i) Derive the relationship between half life period and first order reaction.
(3)
ii) What is arhenius equation?
(2)
37) a) i) Derive ostawld diution law
ii) Explain buffer asction with examples.
b) Explain the difference between physical and chemical adsorption
38) a) What is esterification reaction. Write the mechanism
b) Discuss the structure of Fructose.

