Code No.	V – 2382

Common Entrance Examination for Admission to Four Year Under Graduate Programmes in the Teaching Departments of the University of Kerala, 2025

CSS

CHEMISTRY

For office use only

General Instructions

1. The Question Paper is having **40 Objective Questions**, each carrying **Four marks**.
2. The answers are to be (✓) 'tick marked' only in the "Response Sheet" provided.
3. **Negative marking** : **1 mark will be deducted for each wrong answer.**

Time : 1 Hour **Max. Marks : 160**

To be filled in by the Candidate											
Register Number	in Figures										
	in words										

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Choose appropriate answer from the options in the questions.

(40 × 4 = 160 marks)

1. pH of 0.01 M sodium acetate solution will be (Given K_a of acetic acid = 10^{-5})

   A. 2

   B. 8.5

   C. 7

   D. 10.5

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2. Calculate the standard EMF (E^0) for the cell Zn, Zn^{2+} (1M)/Fe^{2+} (1M), Fe^{3+} (1M); Pt, if E^0 of Zn^{2+}, Zn is – 0.76 and E^0 of Fe^{3+}, Fe^{2+} is + 0.77 V

   A. 0.01 V
   B. 1.53 V
   C. –1.53 V
   D. – 0.01 V

3. Which of the following is a Lewis base?

   A. Chloride ion
   B. Sulfur trioxide
   C. Aluminium chloride
   D. Sodium ion

4. The suitable indicator that can be used for the titration between Na_2CO_3 and HCl is

   A. Methyl orange

   B. Phenolphthalein

   C. Eriochrome Black T

   D. Both A and B

5. Galena is the ore of

   A. Zn B. Ge

   C. Pb D. Mg

6. Chemical formula of gypsum is

   A. $CaSO_4.2H_2O$ B. $CaSO_4.½H_2O$

   C. $CaSO_4.3H_2O$ D. $CaSO_4.H_2O$

7. 6.022×10^{20} molecules of glucose are present in 100 mL of its solution. The concentration of the solution is _____.

   A. 0.1 mol L^{-1}

   B. 0.01 mol L^{-1}

   C. 0.001 mol L^{-1}

   D. 0.0001 mol L^{-1}

8. Which of the following has maximum number of molecules?

   A. 7 g of N_2 B. 27 g of water

   C. 4 g of H_2 D. 16 g of O_2

9. The element that shows inert pair effect is _____.

   A. Si B. P

   C. Ar D. Pb

10. The most common oxidation state of lanthanides is _____.

A. +2 B. +3

C. +4 D. +5

11. Which one of the elements with given outer orbital configuration exhibit maximum number of oxidation states?

A. $3d^3 4s^2$ B. $3d^4 4s^2$

C. $3d^5 4s^1$ D. $3d^5 4s^2$

12. Among the following ions, maximum number of unpaired electrons are present in _____.

A. Tb^{4+} B. Eu^{3+}

C. Ce^{3+} D. Sm^{2+}

13. Which of the following molecule/species has highest bond order?

A. O_2 B. O_2^+

C. O_2^- D. O_2^{2-}

14. The molecule exhibits sp^3d hybridisation is _____.

A. BCl_3 B. ClF_3

C. XeF_4 D. SF_6

15. Select the molecule having largest bond angle

A. H_2Se B. H_2S

C. H_2O D. H_2Te

16. Which is the correct statement for second law of thermodynamics?

A. The complete conversion of heat into any other form of energy cannot take place without leaving some change in the system

B. The complete conversion of heat into any other form of energy is possible

C. Entropy of the universe remains constant

D. For a spontaneous process $\Delta S_{total} < 0$

17. When an ideal gas undergoes expansion with $\Delta U = w$, where ΔU represents internal energy and w is the work done by the system, then the expansion is

A. Isothermal
B. Cyclic
C. Isobaric
D. Adiabatic

18. Among the following functions, _____ is not a state function?

A. Pressure
B. Temperature
C. Internal energy
D. Work

19. The rate constant for the reaction $A \rightarrow B$ is 0.5×10^{-3} mol $L^{-1}s^{-1}$. If the concentration of *A* is 10 M, then concentration of *B* after 10 minutes is

A. 0.005 M
B. 5 M
C. 3 M
D. 0.3 M

20. Name the crystal system for which the cell dimensions $a \neq b \neq c$ and the crystal angles $\alpha = \gamma = 90°$, $\beta \neq 90°$.

A. Tetragonal
B. Triclinic
C. Monoclinic
D. Hexagonal

21. Colloidal system where liquid is dispersed in solid is _____.

A. Sol
B. Gel
C. Emulsion
D. Foam

22. Methods of preparation of colloids by breaking down the coarser aggregates into particles of colloidal size are collectively known as _____.

A. Dispersion
B. Condensation
C. Double decomposition
D. Oxidation

23. Which of the following complexes is paramagnetic?

A. $[Co(NH_3)_6]^{3+}$

B. $[CoF_6]^{3-}$

C. $[Co(H_2O)_6]^{3+}$

D. $[CoCN_6]^{3-}$

24. In salt analysis, Group V radicals $(Ba^{2+}, Ca^{2+}, Sr^{2+})$ are precipitated by adding _____.

A. NH_4Cl and NH_4OH

B. HCl and $(NH_4)_2CO_3$

C. NH_4OH and H_2S

D. NH_4Cl, NH_4OH and $(NH_4)_2CO_3$

25. Blue baby syndrome is due to the presence of excess _____ in blood.

A. Mercury

B. Carbon monoxide

C. Nitrates

D. Sulphates

26. Which one of the following is not a greenhouse gas?

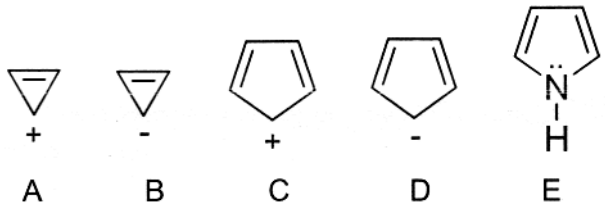
A. O_3

B. H_2O

C. CH_4

D. N_2

27. Which of the following compounds are aromatic?



A. A, C and E

B. A, D and E

C. A, B, C and D

D. All of the above

28. Which alkene among the following on ozonolysis gives acetone and propanal as the products?

A. 2-Methylpent-2-ene
B. 3-Methylpent-2-ene
C. But-2-ene
D. 2-Methylhex-3-ene

29. IUPAC name of $(CH_3)_2CHN(CH_3)_2$ is

A. Dimethylaminopropane
B. N,N-Dimethyl-1-aminopropane
C. N,N-Dimethyl-2-aminopropane
D. N,N-Dimethylpropylamine

30. Lucas reagent is _____.

A. AgCl/HCl
B. $ZnCl_2$/HCl
C. $KMnO_4/H_2SO_4$
D. Zn/CH_3COOH

31. Which one of the following will not show haloform reaction?

A. CH_3COCH_3
B. CH_3CHO
C. C_6H_5CHO
D. $C_6H_5COCH_3$

32. Predict the product of reaction when two molecules of acetaldehyde condense in presence of dilute alkali.

A. $CH_3CH(OH)CH_2CH_2CHO$
B. CH_3COCH_2CHO
C. $CH_3CH(OH)CH_2COOH$
D. $CH_3CH(OH)CH_2CHO$

33. Which among the following does not exhibit mutarotation?

A. Fructose
B. Sucrose
C. Lactose
D. Maltose

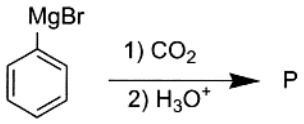
34. The basic amino acid among the following is

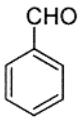
A. Glycine
B. Cystine
C. Alanine
D. Lysine

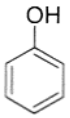
35. Which one of the following is a pyrimidine base?

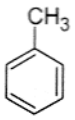
A. Adenine
B. Cytosine
C. Guanine
D. All of the above

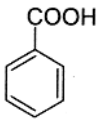
36. Predict the product "P" of the following reaction?



A. 

B. 

C. 

D. 

37. Sugar present in DNA is

A. D-Ribose
B. D-Glucose
C. 2-Deoxy-D-Ribose
D. 3-Deoxy-D-Ribose

38. Soda lime is

A. $NaOH + NaHCO_3$
B. $Na_2CO_3 + NaOH$
C. $NaOH + CaCO_3$
D. $NaOH + CaO$

39. Select a condensation polymer from the given polymers

A. Nylon - 6,6
B. Teflon
C. Buna-S
D. PVC

40. Medicines used to relieve pain is known as _____.

A. Antipyretics
B. Antiseptics
C. Anaesthetics
D. Analgesics

RESPONSE SHEET

1	A	B	C	D	E	11	A	B	C	D	E	21	A	B	C	D	E	31	A	B	C	D	E
2	A	B	C	D	E	12	A	B	C	D	E	22	A	B	C	D	E	32	A	B	C	D	E
3	A	B	C	D	E	13	A	B	C	D	E	23	A	B	C	D	E	33	A	B	C	D	E
4	A	B	C	D	E	14	A	B	C	D	E	24	A	B	C	D	E	34	A	B	C	D	E
5	A	B	C	D	E	15	A	B	C	D	E	25	A	B	C	D	E	35	A	B	C	D	E
6	A	B	C	D	E	16	A	B	C	D	E	26	A	B	C	D	E	36	A	B	C	D	E
7	A	B	C	D	E	17	A	B	C	D	E	27	A	B	C	D	E	37	A	B	C	D	E
8	A	B	C	D	E	18	A	B	C	D	E	28	A	B	C	D	E	38	A	B	C	D	E
9	A	B	C	D	E	19	A	B	C	D	E	29	A	B	C	D	E	39	A	B	C	D	E
10	A	B	C	D	E	20	A	B	C	D	E	30	A	B	C	D	E	40	A	B	C	D	E

ROUGH WORK

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