

SAMPLE PAPER

2019 NEET

CHEMISTRY

SET-2

Roll No.

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General Instructions

- (i) This test consists of 45 question.
- (ii) Each question is allotted 4 marks for correct response.
- (iii) Candidates will be awarded marks as stated above in instruction no. 2 for correct response of each question. 1 mark will be deducted for indicating incorrect response of each question. No deduction from the total score will be made if no response is indicated for an item in the answer sheet.
- (iv) There is only one correct response for each question. Filling up more than one response in any question will be treated as wrong response and marks for wrong response will be deducted according as per instructions.

1. Boron has two stable isotopes, ^{10}B (19%) and ^{11}B (81%). Calculate average atomic weight of boron in the periodic table.
(a) 10.8
(b) 10.2
(c) 11.2
(d) 10.0
2. Given, the mass of electron is 9.11×10^{-31} kg. Planck's constant is 6.626×10^{-34} Js, the uncertainty involved in the measurement of velocity within a distance of 0.1 Å is
(a) $5.79 \times 10^6 \text{ms}^{-1}$
(b) $5.79 \times 10^8 \text{ms}^{-1}$
(c) $5.79 \times 10^7 \text{ms}^{-1}$
(d) $5.79 \times 10^5 \text{ms}^{-1}$



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3. The pair of species with the same bond order is
- (a) O_2^{2-}, B_2 (c) NO, CO
 (b) O_2^+, NO^+ (d) N_2, O_2
4. A compound contains atoms of three elements A, B and C , If the oxidation number of A is +2, B is +5 and that of C is -2, the possible formula of the compound is
- (a) $A_2(BC_3)_2$ (c) $A_3(B_4C)_2$
 (b) $A_3(BC_4)_2$ (d) ABC_2
5. A 0.0020 m aqueous solution of an ionic compound $Co[(NH_3)_5(NO_2)]Cl$ freeze at $-0.00732^\circ C$. Number of moles of ions which 1 mole of ionic compound produces on being dissolved in water will be ($K_f = -1.86^\circ C/m$)
- (a) 2 (c) 4
 (b) 3 (d) 1
6. The pyknometric density of sodium chloride crystal is $2.165 \times 10^3 \text{ kg m}^{-3}$ while its X-ray density is $2.178 \times 10^3 \text{ kg m}^{-3}$. The fraction of unoccupied sites in sodium chloride crystal is
- (a) 5.96×10^{-1} (c) 5.96
 (b) 5.96×10^{-3} (d) 5.96×10^{-2}
7. In van der Waals' equation of state for a non-ideal gas, the term that accounts for inter molecular forces is
- (a) $(V-b)$ (c) $\left(P + \frac{a}{V^2}\right)$
 (b) $(RT)^{-1}$ (d) RT
8. In the following radioactive decay, ${}_{92}X^{232} \rightarrow {}_{89}Y^{220}$, how many α and β -particles are ejected from X to Y ?
- (a) 3α and 2β (c) 3α and 3β
 (b) 5α and 3β (d) 5α and 5β
9. Using the Gibbs energy changes, $\Delta G^\circ = +63.3 \text{ kJ}$ for the following reaction, $Ag_2CO_3(s) \rightleftharpoons 2Ag^+(aq) + CO_3^{2-}(aq)$ the k_{sp} of $Ag_2CO_3(s)$ in water at $25^\circ C$ is ($R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)
- (a) 3.2×10^{-26} (c) 2.9×10^{-3}
 (b) 8.0×10^{-12} (d) 7.9×10^{-2}



10. Reaction, $\text{BaO}_2(s) \rightleftharpoons \text{BaO}(s) + \text{O}_2(g)$, $\Delta H = +ve$
 In equilibrium condition, pressure of O_2 depends on
 (a) increased mass of BaO_2
 (b) increased mass of BaO
 (c) increased temperature of equilibrium
 (d) increased mass of BaO_2 and BaO both
11. For the reaction, $\text{X}_2\text{O}_4(l) \rightarrow 2\text{XO}_2(g)$. $\Delta U = 2.1 \text{ kcal}$, $\Delta S = 20 \text{ cal K}^{-1}$ at 300 K.
 Hence, ΔG is
 (a) 2.7 kcal
 (b) -2.7 kcal
 (c) 9.3 kcal
 (d) -9.3 kcal
12. In a first order reaction, $A \rightarrow B$, if k is rate constant and initial concentration of the reactant A is 0.5 M, then the half-life is
 (a) $\frac{0.693}{0.5k}$
 (b) $\frac{\log 2}{k}$
 (c) $\frac{\log 2}{k\sqrt{0.5}}$
 (d) $\frac{\ln 2}{k}$
13. The standard EMF of a galvanic cell involving cell reaction with $n = 2$ is found to be 0.295 V at 25°C. The equilibrium constant of the reaction would be
 (Given $F = 96500 \text{ C mol}^{-1}$,
 $R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)
 (a) 2.0×10^{11}
 (b) 4.0×10^{12}
 (c) 1.0×10^2
 (d) 1.0×10^{10}
14. The ability of anion to bring about coagulation of a given colloid depends upon
 (a) Its charge
 (b) the sign of the charge alone
 (c) the magnitude of its charge
 (d) both magnitude and sign of its charge
15. A Solid compound X on heating gives CO_2 gas and a residue. The residue mixed with water forms Y . On passing an excess of CO_2 through Y in water, a clear solution Z is obtained. On boiling Z , compound X is obtained. The compound X is
 (a) $\text{Ca}(\text{HCO}_3)_2$
 (b) CaCO_3
 (c) Na_2CO_3
 (d) K_2CO_3
16. Which of the following represents the correct order of increasing electron gain enthalpy with negative sign for the elements O, S, F and Cl?
 (a) $\text{Cl} < \text{F} < \text{O} < \text{S}$
 (b) $\text{O} < \text{S} < \text{F} < \text{Cl}$
 (c) $\text{F} < \text{S} < \text{O} < \text{Cl}$
 (d) $\text{S} < \text{O} < \text{Cl} < \text{F}$



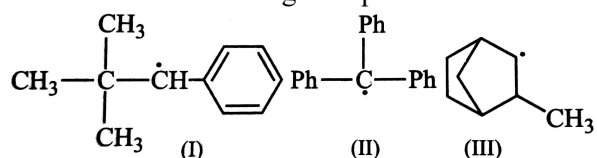
17. The substance used as a smoke screen in warfare is
- (a) SiCl_4 (c) PCl_5
 (b) PH_3 (d) acetylene
18. The d -electron configuration of Cr^{2+} , Mn^{2+} , Fe^{2+} and Co^{2+} are d^4 , d^5 , d^6 and d^7 respectively. Which one of the following will exhibit minimum paramagnetic behaviour?
 (At. no. Cr = 24, Mn = 25, Fe = 26, CO = 27)
- (a) $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$ (c) $[\text{Cr}(\text{H}_2\text{O})_6]^{2+}$
 (b) $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$ (d) $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$
19. Which of the following has longest C—O bond length? (free in C—O bond length in CO is 1.128 Å.)
- (a) $[\text{Co}(\text{CO})_4]^-$ (c) $[\text{Mn}(\text{CO})_6]^+$
 (b) $[\text{Fe}(\text{CO})_4]^{2-}$ (d) $\text{Ni}(\text{CO})_4$
20. Which of the following does not show optical isomerism? (en = ethylenediamine)
- (a) $[\text{Co}(\text{en})_2\text{Cl}_2]^+$ (c) $[\text{Co}(\text{en})\text{Cl}_2(\text{NH}_3)_2]^+$
 (b) $[\text{Co}(\text{NH}_3)_3\text{Cl}_3]^0$ (d) $[\text{Co}(\text{en})_3]^{3+}$
21. The number of geometrical isomers of the complex $[\text{Co}(\text{NO}_2)_3(\text{NH}_3)_3]$ is
- (a) 4 (c) 2
 (b) 0 (d) 3
22. Zinc can be coated on iron to produce galvanized iron but the reverse is not possible. It is because
- (a) zinc is lighter than iron
 (b) zinc has lower melting point than iron
 (c) zinc has lower negative electrode potential than iron
 (d) zinc has higher negative electrode potential than iron
23. Which of the following compound is a peroxide?
- (a) KO_2 (c) MnO_2
 (b) BaO_2 (d) NO_2
24. Ionic mobility of which of the following alkali metal ions is lowest when aqueous solution of their salts are put under an electric field?
- (a) K (c) Li
 (b) Rb (d) Na



25. In which of the following arrangement, the given sequence is not strictly according to the property indicated against it?
- HF < HCl < HBr < HI : increasing acidic strength
 - H₂O < H₂S < H₂Se < H₂Te: increasing *pKa* values
 - NH₃ < PH₃ < AsH₃ < SbH₃: increasing acidic character
 - CO₂ < SiO₂ < SnO₂ < PbO₂: increasing oxidising power
26. It is because of inability of *ns*² electrons of the valence shell to participate in bonding that
- Sn²⁺ is oxidising while Pb⁴⁺ is reducing
 - Sn²⁺ and Pb²⁺ are both oxidising and reducing
 - Sn⁴⁺ is reducing while Pb⁴⁺ is oxidising
 - Sn²⁺ is reducing while Pb⁴⁺ is oxidising
27. The correct statement regarding a carbonyl compound with a hydrogen atom on its alpha carbon is
- a carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as carbonylation
 - the carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as keto-enol and this process is known as keto-enol tautomerism
 - a carbonyl compound with a hydrogen atom on its alpha-carbon never equilibrates with its corresponding enol
 - a carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as aldehyde-ketone equilibrium
28. The IUPAC name of the compound, CH₃CH = CHC ≡ CH is
- | | |
|---------------------|---------------------|
| (a) pent-4-yn-2-ene | (c) pent-2-en-4-yne |
| (b) pent-3-en-1-yne | (d) pent-1-yn-3-ene |
29. The correct statement regarding electrophile is
- electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from another electrophile
 - electrophiles are generally neutral species and can form a bond by accepting a pair of electrons from a nucleophile
 - electrophile can be either neutral or positively charged species and can form a bond by accepting a pair of electrons from a nucleophile
 - electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from a nucleophile.



30. Consider the following compounds:



Hyperconjugation occurs in

- (a) III only
 (b) I and II
 (c) I only
 (d) II only

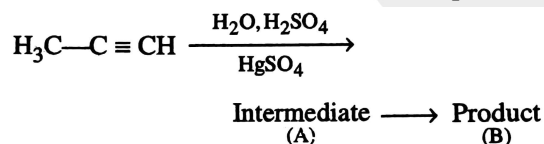
31. The most suitable method of separation of 1 : 1 mixture of *ortho*- and *para*-nitrophenols is

- (a) chromatography
 (b) crystallisation
 (c) steam distillation
 (d) sublimation

32. Which of the following is a sink for CO?

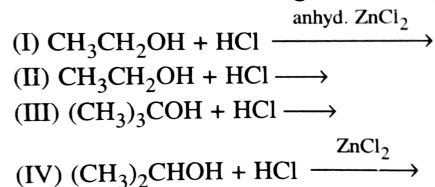
- (a) Haemoglobin
 (b) Microorganism present in the soil
 (c) Oceans
 (d) Plants

33. Predict the correct intermediate and product in the following reaction:



- (a) A : $\text{H}_3\text{C}-\underset{\text{OH}}{\text{C}}=\text{CH}_2$ B : $\text{H}_3\text{C}-\underset{\text{SO}_4}{\text{C}}=\text{CH}_2$
 (b) A : $\text{H}_3\text{C}-\underset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$ B : $\text{H}_3\text{C}-\text{C}\equiv\text{CH}$
 (c) A : $\text{H}_3\text{C}-\underset{\text{OH}}{\text{C}}=\text{CH}_2$ B : $\text{H}_3\text{C}-\underset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$
 (d) A : $\text{H}_3\text{C}-\underset{\text{SO}_4}{\text{C}}=\text{CH}_2$ B : $\text{H}_3\text{C}-\underset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$

34. Which of the following reactions(s) can be used for the preparation of alkyl halides?



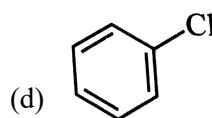
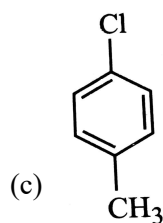
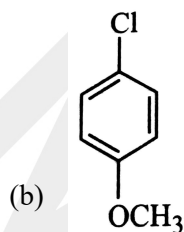
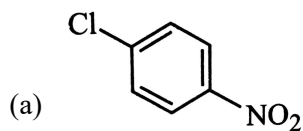
- (a) (I) and (II) only
 (b) (IV) only
 (c) (III) and (IV) only
 (d) (I), (III) and (IV) only



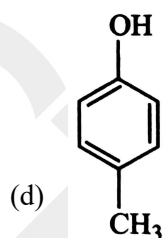
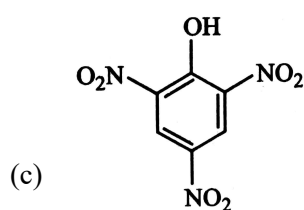
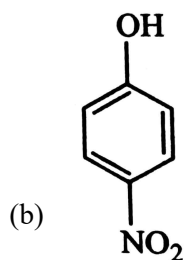
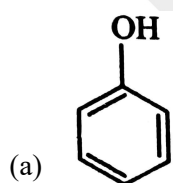
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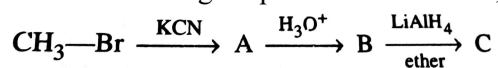
35. Which of the following compounds undergo nucleophilic substitution reaction most easily?



36. Which one is the most acidic compound?



37. In the following sequence of reactions,



the end product (C) is

- (a) acetone
(b) methane

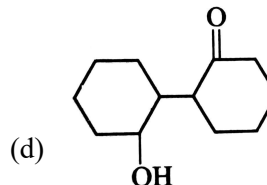
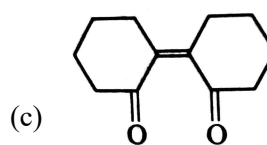
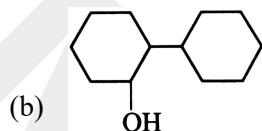
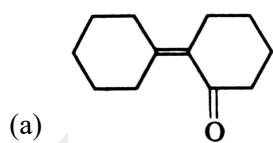
- (c) acetaldehyde
(d) ethyl alcohol



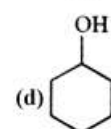
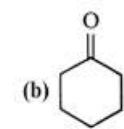
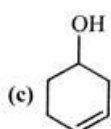
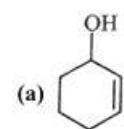
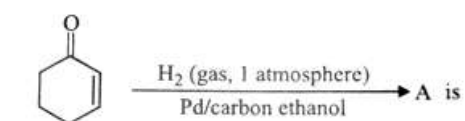
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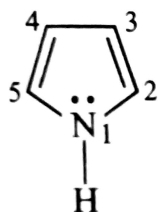
38. Of the following, which is the product formed when cyclohexanone undergoes aldol condensation followed by heating?



39. The correct structure of the product 'A' formed in the reaction



40. In pyrrole the electron density is maximum on



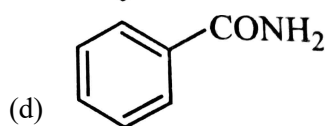
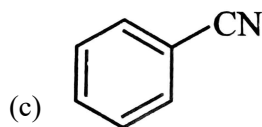
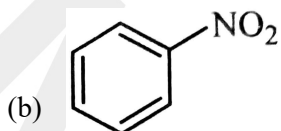
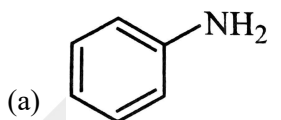
(a) 2 and 3

(b) 3 and 4

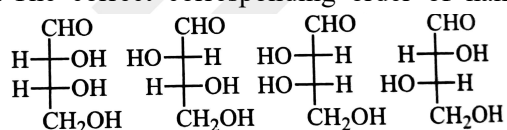
(c) 2 and 4

(d) 2 and 5

41. A given nitrogen containing aromatic compound 'A' reacts with Sn/HCl, followed by HNO₂ to give an unstable compound 'B', 'B', on treatment with phenol, forms a beautiful coloured compound 'C' with the molecular formula C₁₂H₁₀N₂O. The structure of compound 'A' is



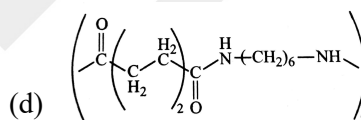
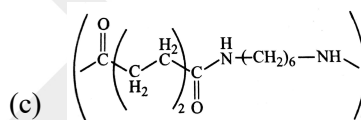
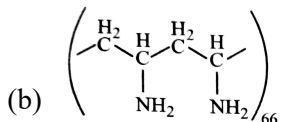
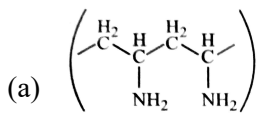
42. The correct corresponding order of names of four aldoses with configuration given below



respectively, is

- (a) L-erythrose, L-threose, L-erythrose, D-threose
 (b) D-threose, D-erythrose, L-threose, L-erythrose
 (c) L-erythrose, L-threose, D-erythrose, D-threose
 (d) D-erythrose, D-threose, L-erythrose, L-threose

43. Which one of the following structures represents nylon 6, 6 polymer?



44. Natural rubber has

- (a) alternate *cis*-and *trans*-configuration
 (b) random *cis*-and *trans*-configuration
 (c) all *cis*-configuration
 (d) all *trans*-configuration

45. Bithional is generally added to the soaps as an additive to function as a/an

- (a) buffering agent
 (b) softner
 (c) antiseptic
 (d) dryer