

TEST PAPER OF JEE(MAIN) EXAMINATION – 2019
(Held On Wednesday 09th JANUARY, 2019) TIME : 2 : 30 PM To 05 : 30 PM
CHEMISTRY

1. Good reducing nature of H_3PO_2 attributed to the presence of:

- (1) One P-OH bond (2) One P-H bond
 (3) Two P-H bonds (4) Two P-OH bonds

Ans. (3)

2. The complex that has highest crystal field splitting energy (Δ), is :

- (1) $K_3[Co(CN)_6]$
 (2) $[Co(NH_3)_5(H_2O)]Cl_3$
 (3) $K_2[CoCl_4]$
 (4) $[Co(NH_3)_5Cl]Cl_2$

Ans. (1)

3. The metal that forms nitride by reacting directly with N_2 of air, is :

- (1) K (2) Cs (3) Li (4) Rb

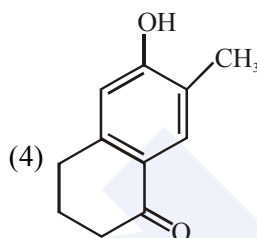
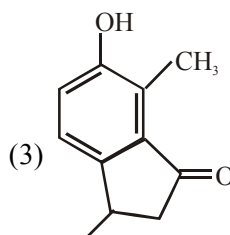
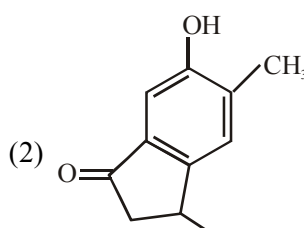
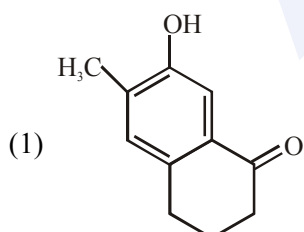
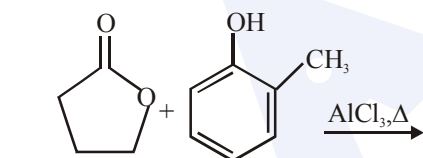
Ans. (3)

4. In which of the following processes, the bond order has increased and paramagnetic character has changed to diamagnetic ?

- (1) $N_2 \rightarrow N_2^+$ (2) $NO \rightarrow NO^+$
 (3) $O_2 \rightarrow O_2^{2-}$ (4) $O_2 \rightarrow O_2^+$

Ans. (2)

5. The major product of the following reaction is:



Ans. (1)

6. The transition element that has lowest enthalpy of atomisation, is :

- (1) Zn (2) Cu (3) V (4) Fe

Ans. (2)

7. Which of the following combination of statements is true regarding the interpretation of the atomic orbitals ?

- (a) An electron in an orbital of high angular momentum stays away from the nucleus than an electron in the orbital of lower angular momentum.
 (b) For a given value of the principal quantum number, the size of the orbit is inversely proportional to the azimuthal quantum number.
 (c) According to wave mechanics, the ground state angular momentum is equal to $\frac{h}{2\pi}$.
 (d) The plot of ψ Vs r for various azimuthal quantum numbers, shows peak shifting towards higher r value.

- (1) (b), (c) (2) (a), (d)
 (3) (a), (b) (4) (a), (c)

Ans. (Bonus)

8. The tests performed on compound X and their inferences are:

Test	Inference
(a) 2,4 - DNP test	Coloured precipitate
(b) Iodoform test	Yellow precipitate
(c) Azo-dye test	No dye formation

Compound 'X' is:

- (1)
- (2)
- (3)
- (4)

Ans. (2)

9. The major product formed in the following reaction is:

-
- (1)
- (2)
- (3)
- (4)

Ans. (1)

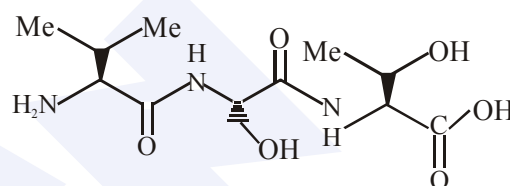
10. For the reaction, $2A + B \rightarrow \text{products}$, when the concentrations of A and B both were doubled, the rate of the reaction increased from $0.3 \text{ mol L}^{-1}\text{s}^{-1}$ to $2.4 \text{ mol L}^{-1}\text{s}^{-1}$. When the concentration of A alone is doubled, the rate increased from $0.3 \text{ mol L}^{-1}\text{s}^{-1}$ to $0.6 \text{ mol L}^{-1}\text{s}^{-1}$

Which one of the following statements is correct ?

- (1) Order of the reaction with respect to B is 2
 (2) Order of the reaction with respect to A is 2
 (3) Total order of the reaction is 4
 (4) Order of the reaction with respect to B is 1

Ans. (1)

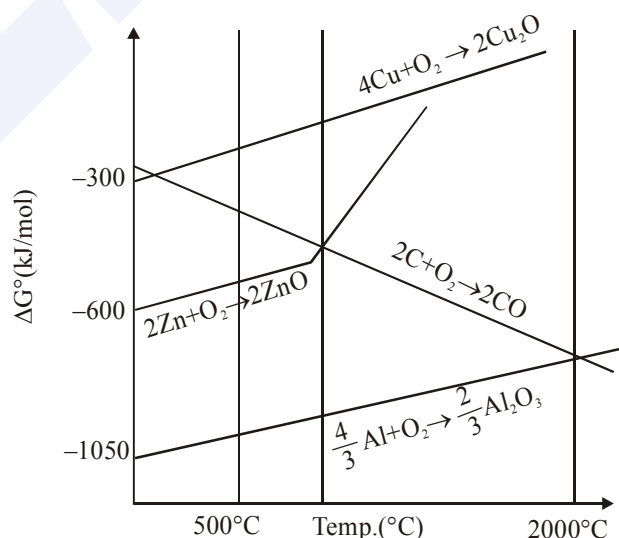
11. The correct sequence of amino acids present in the tripeptide given below is :



- (1) Leu - Ser - Thr (2) Thr - Ser - Leu
 (3) Thr - Ser - Val (4) Val - Ser - Thr

Ans. (4)

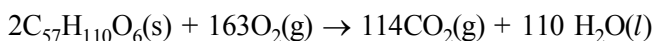
12. The correct statement regarding the given Ellingham diagram is:



- (1) At 800°C , Cu can be used for the extraction of Zn from ZnO
 (2) At 500°C , coke can be used for the extraction of Zn from ZnO
 (3) Coke cannot be used for the extraction of Cu from Cu_2O .
 (4) At 1400°C , Al can be used for the extraction of Zn from ZnO

Ans. (4)

13. For the following reaction, the mass of water produced from 445 g of $C_{57}H_{110}O_6$ is :



- (1) 495 g (2) 490 g
(3) 890 g (4) 445 g

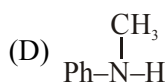
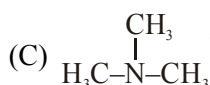
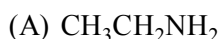
Ans. (1)

14. The correct match between Item I and Item II is :

- | Item I | Item II |
|------------------|------------------|
| (A) Benzaldehyde | (P) Mobile phase |
| (B) Alumina | (Q) Adsorbent |
| (C) Acetonitrile | (R) Adsorbate |
- (1) (A) → (Q); (B) → (R); (C) → (P)
(2) (A) → (P); (B) → (R); (C) → (Q)
(3) (A) → (Q); (B) → (P); (C) → (R)
(4) (A) → (R); (B) → (Q); (C) → (P)

Ans. (4)

15. The increasing basicity order of the following compounds is :



- (1) (D) < (C) < (A) < (B)
(2) (A) < (B) < (D) < (C)
(3) (A) < (B) < (C) < (D)
(4) (D) < (C) < (B) < (A)

Ans. (1)

16. For coagulation of arsenious sulphide sol, which one of the following salt solution will be most effective ?

- (1) $AlCl_3$ (2) $NaCl$
(3) $BaCl_2$ (4) Na_3PO_4

Ans. (1)

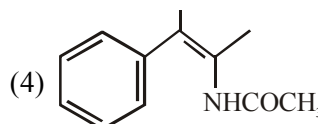
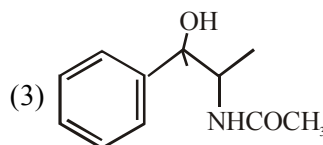
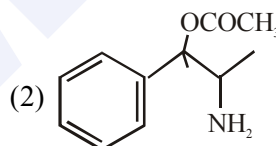
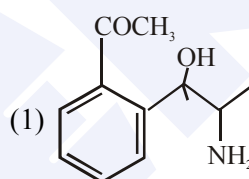
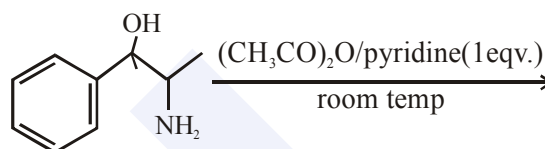
17. At $100^\circ C$, copper (Cu) has FCC unit cell structure with cell edge length of $x \text{ \AA}$. What is the approximate density of Cu (in $g \text{ cm}^{-3}$) at this temperature ?

[Atomic Mass of Cu = 63.55u]

- (1) $\frac{105}{x^3}$ (2) $\frac{211}{x^3}$ (3) $\frac{205}{x^3}$ (4) $\frac{422}{x^3}$

Ans. (4)

18. The major product obtained in the following reaction is :



Ans. (3)

19. Which of the following conditions in drinking water causes methemoglobinemia ?

- (1) > 50ppm of lead
(2) > 100 ppm of sulphate
(3) > 50 ppm of chloride
(4) > 50 ppm of nitrate

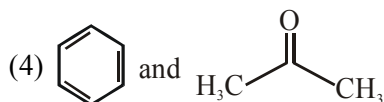
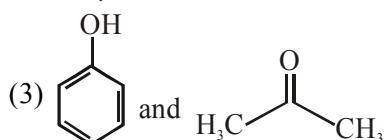
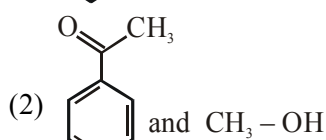
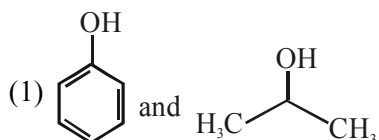
Ans. (4)

20. Homoleptic octahedral complexes of a metal ion M^{3+} with three monodentate ligands and L_1 , L_2 , L_3 absorb wavelengths in the region of green, blue and red respectively. The increasing order of the ligand strength is :

- (1) $L_2 < L_1 < L_3$ (2) $L_3 < L_2 < L_1$
(3) $L_3 < L_1 < L_2$ (4) $L_1 < L_2 < L_3$

Ans. (3)

21. The product formed in the reaction of cumene with O_2 followed by treatment with dil. HCl are :



Ans. (3)

22. The temporary hardness of water is due to :-

- (1) $Ca(HCO_3)_2$ (2) NaCl
(3) Na_2SO_4 (4) $CaCl_2$

Ans. (1)

23. The entropy change associated with the conversion of 1 kg of ice at 273 K to water vapours at 383 K is :

(Specific heat of water liquid and water vapour are $4.2 \text{ kJ K}^{-1} \text{ kg}^{-1}$ and $2.0 \text{ kJ K}^{-1} \text{ kg}^{-1}$; heat of liquid fusion and vapourisation of water are 344 kJ kg^{-1} and 2491 kJ kg^{-1} , respectively).
($\log 273 = 2.436$, $\log 373 = 2.572$, $\log 383 = 2.583$)

- (1) $7.90 \text{ kJ kg}^{-1} \text{ K}^{-1}$ (2) $2.64 \text{ kJ kg}^{-1} \text{ K}^{-1}$
(3) $8.49 \text{ kJ kg}^{-1} \text{ K}^{-1}$ (4) $9.26 \text{ kJ kg}^{-1} \text{ K}^{-1}$

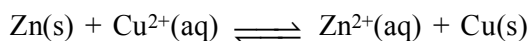
Ans. (4)

24. The pH of rain water, is approximately :

- (1) 6.5 (2) 7.5 (3) 5.6 (4) 7.0

Ans. (3)

25. If the standard electrode potential for a cell is 2 V at 300 K, the equilibrium constant (K) for the reaction



at 300 K is approximately.

($R = 8 \text{ JK}^{-1} \text{ mol}^{-1}$, $F = 96000 \text{ C mol}^{-1}$)

- (1) e^{160} (2) e^{320} (3) e^{-160} (4) e^{-80}

Ans. (1)

26. A solution containing 62 g ethylene glycol in 250 g water is cooled to -10°C . If K_f for water is $1.86 \text{ K kg mol}^{-1}$, the amount of water (in g) separated as ice is :

- (1) 32 (2) 48 (3) 16 (4) 64

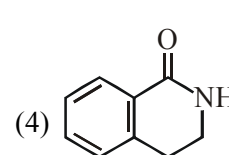
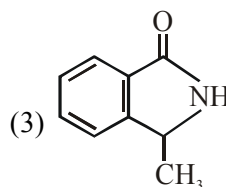
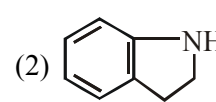
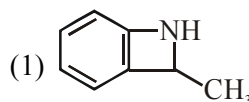
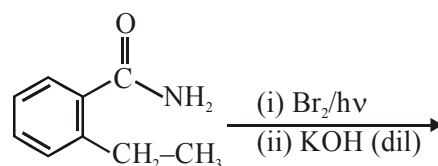
Ans. (4)

27. When the first electron gain enthalpy ($\Delta_{eg}H$) of oxygen is -141 kJ/mol , its second electron gain enthalpy is :

- (1) almost the same as that of the first
(2) negative, but less negative than the first
(3) a positive value
(4) a more negative value than the first

Ans. (3)

28. The major product of the following reaction is :



MAJOR COMPUTER BASED TEST (CBT) SERIES

JEE (Advanced)- Target 2019

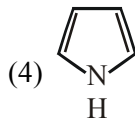
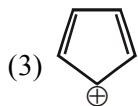
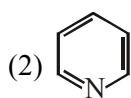
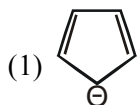
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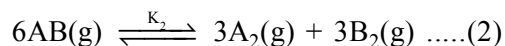
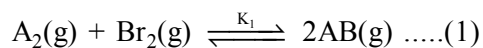
Ans. (3)

29. Which of the following compounds is not aromatic ?



Ans. (3)

30. Consider the following reversible chemical reactions :



The relation between K_1 and K_2 is :

(1) $K_2 = K_1^3$ (2) $K_2 = K_1^{-3}$

(3) $K_1K_2 = 3$ (4) $K_1K_2 = \frac{1}{3}$

Ans. (2)

MAJOR COMPUTER BASED TEST (CBT) SERIES

JEE (Main)- Target 2019

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