

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)

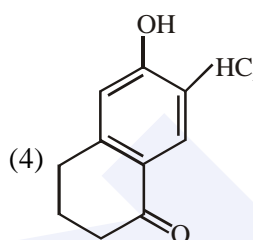
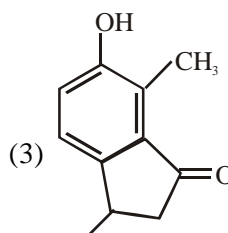
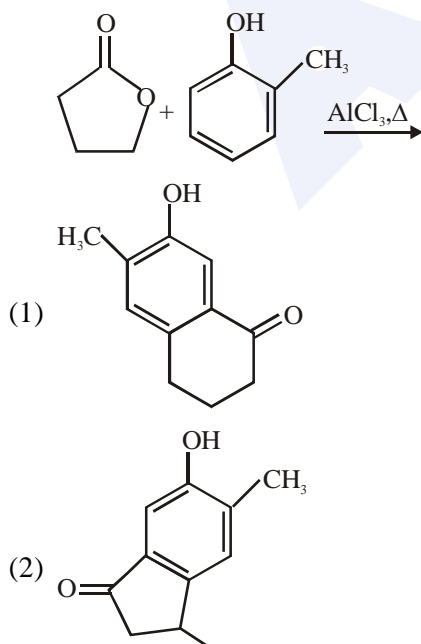
3. The metal that forms nitride by reacting directly with N_2 of air, is :
- (1) K (2) Cs (3) Li (4) Rb

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. (4)

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 h 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. (4)

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)

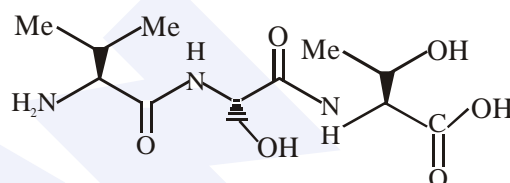
10. For the reaction, $2A + B \rightarrow \text{products}$, when the concentrations of A and B both were doubled, the rate of the reaction increased from $0.3 \text{ mol L}^{-1}\text{s}^{-1}$ to $2.4 \text{ mol L}^{-1}\text{s}^{-1}$. When the concentration of A alone is doubled, the rate increased from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

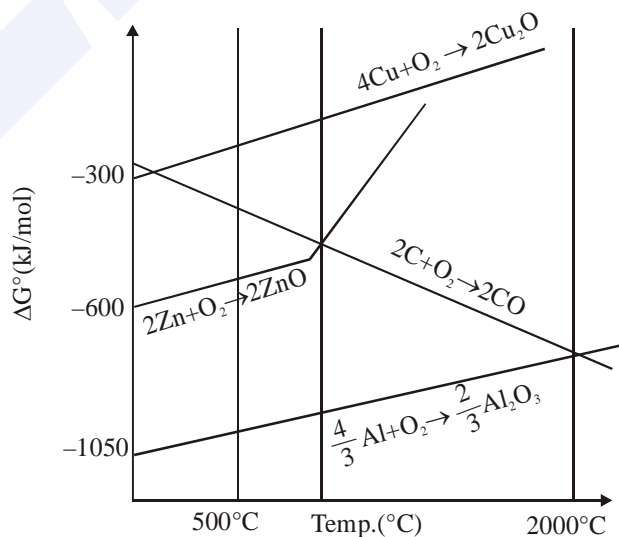
11. The correct sequence of amino acids present in the tripeptide given below is :



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

Ans. (4)

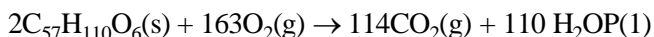
12. The correct statement regarding the given Ellingham diagram is:



- (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 Ca_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

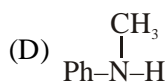
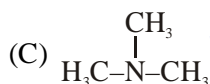
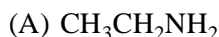
Ans. (1)

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) \rightarrow (Q); (B) \rightarrow (R); (C) \rightarrow (P)
 (2) (A) \rightarrow (P); (B) \rightarrow (R); (C) \rightarrow (Q)
 (3) (A) \rightarrow (Q); (B) \rightarrow (P); (C) \rightarrow (R)
 (4) (A) \rightarrow (R); (B) \rightarrow (Q); (C) \rightarrow (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)

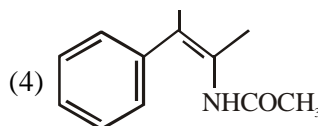
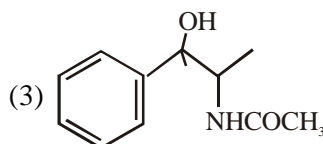
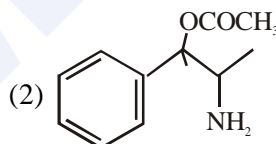
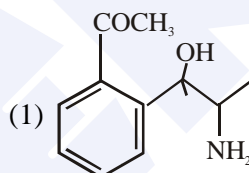
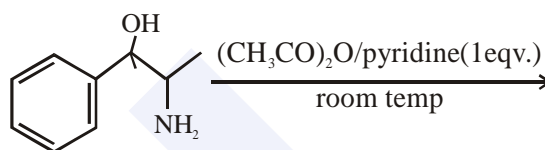
17. At $100^\circ C$, copper (Cu) has FCC unit cell structure with cell edge length of $x \text{ \AA}$. What is the approximate density of Cu (in $g \text{ cm}^{-3}$) at this temperature ?

[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

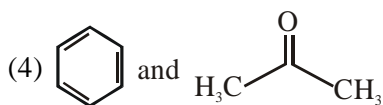
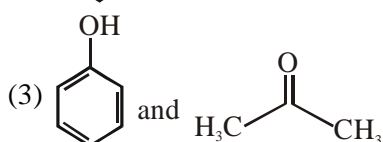
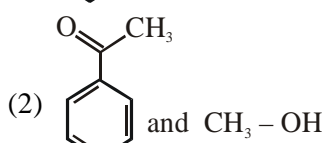
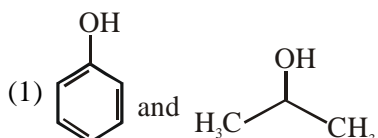
Ans. (4)

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) $4.26 \text{ kJ kg}^{-1} \text{ K}^{-1}$

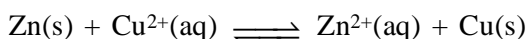
Ans. (4)

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

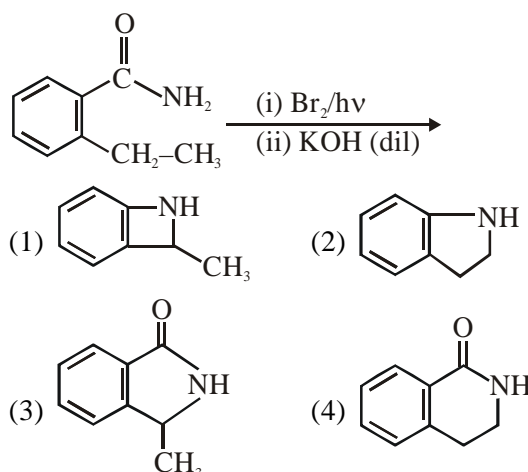
Ans. (4)

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 :



Ans. (3)

MAJOR COMPUTER BASED TEST (CBT) SERIES

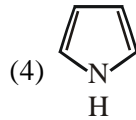
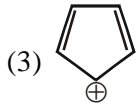
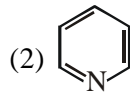
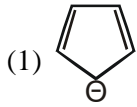
JEE (Advanced)- Target 2019

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Test Dates: 3rd Feb, 21st & 28th April, 12th May

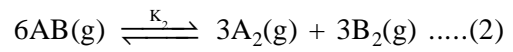
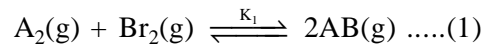
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29. Which of the following compounds is not aromatic ?



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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Test Dates: 24th & 31st March

0744-2750275