JEE Main 2024 Chemistry Question Paper Feb 1 Shift 2 (B.E./B.Tech)

JEE Main Chemistry Questions

Ques 1. Number of radial nodes present in 3p are

- **A. 0**
- **B. 1**
- **C. 2**
- **D. 4**

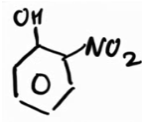
Ans. B

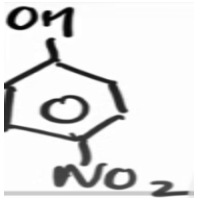
Ques 2. Which of the following compounds have colour due to d-d transition?

- **A. KMnO4**
- **B. K2Cr2O7**
- **C. K2CrO4**
- **D. CuSO4.5H2O**

Ans. D

Ques 3. Which of the following compounds has intramolecular hydrogen bonding in it?

- **A. NH3**
- **B. H20**
- **C.** 

D. 

Ans. B

Ques 4. Which of the following has the highest 3rd ionization energy?

A. **Mn**
B. **V**
C. **Cr**
D. **Fe**

Ans. A

Ques 5. A 10 mL hydrocarbon (C_2H_4) on combustion give 40 mL CO_2 and 50 mL H20. Calculate the value of x+y

Ans. 14

Ques 6. Solubility of $Ca_3(PO_4)_2$ in 100 mL of pure water is W gm. Find out K_{sp} of $Ca_3(PO_4)_2$ is:
(M: Molecular mass of $Ca_3(PO_4)_2$)

A. **$108 * (W/M)^5$**
B. **$108 * 10^5 * [W/M]^5$**
C. **$108 * 10^4 * [W/M]^5$**
D. **$108 * 10^6 * [W/M]^5$**

Ans. B

Ques 7. Which of the following sets of elements can be detected by Lassaigne's Test ?

A. **N and S only**
B. **N, P and S only**
C. **P and halogens only**
D. **N, P, S and halogens**

Ans. D

Ques 8. Which of the following compounds in 3d series does not show +3 oxidation state?

A. **V**
B. **Cr**
C. **Mn**
D. **Cu**

Ans. D

Ques 9. What is the order of reducing character for AsH3, NH3, PH3 (group 15 hydrides)?

A. **NH3 > PH3 > AsH3**
B. **PH3> NH3 > AsH3**
C. **AsH3> PH3 > NH3**
D. **NH3 > AsH3 > PH3**

Ans. C

Ques 10. Which of the following compounds has the highest boiling point?

A. **Butanol**
B. **Diethylether**
C. **Butane**
D. **Butanol**

Ans. A

Ques 11. Consider the following two statements
Statement I: π 2p bonding molecular orbital has low electron density above & below internuclear axis
Statement II: π*2p antibonding molecular orbital has only one nodal plane

A. **Both Statement I and Statement II are correct**
B. **Both Statement I and Statement II are incorrect**
C. **Statement I is incorrect, but Statement II is correct**
D. **Statement I is correct, but Statement II is incorrect**

Ans. B

Ques 12. Consider the following two statements
Statement I: SiO_2 and GeO_2 are acidic, SnO and PbO are amphoteric
Statement II: Allotropes of carbon are formed due to catenation and dπ - ρπ bond

A. **Both Statement I and Statement II are correct**
B. **Both Statement I and Statement II are incorrect**
C. **Statement I is correct, but Statement II is incorrect**
D. **Statement I is incorrect, but Statement II is correct**

Ans. C

Ques 13. Consider the following two statements
Statement I: In p and d block both metals and non - metals are present
Statement II: Electronegativity and ionisation enthalpy of metals is greater than non - metals

A. **Both Statement I and Statement II are correct**
B. **Both Statement I and Statement II are incorrect**
C. **Statement I is correct, but Statement II is incorrect**
D. **Statement I is incorrect, but Statement II is correct**

Ans. B

Ques 14. Ethylene glycol of x kg is mixed with 18.6 kg of solvent, 24 °C depression in freezing point takes place.
Calculate value of x.
(Given: K_1 = 1.6 °C/molal M.W. of ethylene glycol = 62 g/mol)

Ans. 17

Ques 15. Find out charge (in C) required for electrolysis of 1 mole of H_2O to produce O_2 on one of the electrodes. (F = 96500 C)

Ans. 193000