

NEET COORDINATION COMPOUNDS — METAL CARBONYLS AND SYNERGIC BONDING — PYQS

Max. Marks: 44

Questions: 11

Section A (MCQ) — 11 questions

- Q.1** $[\text{Mn}_2(\text{CO})_{10}]$ and $[\text{Co}_2(\text{CO})_8]$ structures have
- Metal-Metal linkage
 - Terminal CO groups
 - Bridging CO groups
 - Metal in zero oxidation state
- Choose the correct answer from the options given below

[RE-NEET (UG) 2024]

- | | |
|------------------|------------------|
| (1) Only A, B, C | (2) Only B, C, D |
| (3) Only A, C, D | (4) Only A, B, D |

Scan or tap for the full solution



- Q.2** Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A): The metal carbon bond in metal carbonyls possesses both σ and π character.

Reason (R): The ligand to metal bond is a π bond and metal to ligand bond is a σ bond.

In the light of the above statements, choose the most appropriate answer from the options given below.

[NEET (UG) 2022 (Phase 2)]

- (A) is not correct but (R) is correct
- Both (A) and (R) are correct and (R) is the correct explanation of (A)
- Both (A) and (R) are correct but (R) is not the correct explanation of (A)
- (A) is correct but (R) is not correct

Scan or tap for the full solution



- Q.3** Iron carbonyl, $\text{Fe}(\text{CO})_5$ is
- | | |
|------------------|-----------------|
| (1) tetranuclear | (2) mononuclear |
| (3) trinuclear | (4) dinuclear |

[NEET 2018]

Scan or tap for the full solution



- Q.4** An example of a sigma bonded organometallic compound is

[NEET 2017]

- | | |
|------------------------|------------------|
| (1) Grignard's reagent | (2) ferrocene |
| (3) cobaltocene | (4) ruthenocene. |

Scan or tap for the full solution



- Q.5** Which of the following has longest C – O bond length? (Free C – O bond length in CO is 1.128 Å.)

[NEET 2016 (Phase 1)]

- | | |
|-------------------------------------|----------------------------------|
| (1) $[\text{Fe}(\text{CO})_4]^{2-}$ | (2) $[\text{Mn}(\text{CO})_6]^+$ |
| (3) $\text{Ni}(\text{CO})_4$ | (4) $[\text{Co}(\text{CO})_4]^-$ |

Scan or tap for the full solution



- Q.6** Which of the following carbonyls will have the strongest C–O bond?

[AIPMT 2011 (Mains)]

- | | |
|----------------------------------|---------------------------------|
| (1) $\text{Cr}(\text{CO})_6$ | (2) $\text{Fe}(\text{CO})_5$ |
| (3) $[\text{Mn}(\text{CO})_6]^+$ | (4) $[\text{V}(\text{CO})_6]^-$ |

Scan or tap for the full solution



- Q.7** Which of the following carbonyls will have the strongest C–O bond?

[AIPMT 2011 (Prelims)]

- | | |
|--------------------------------|------------------------------|
| (1) $\text{Mn}(\text{CO})_6^+$ | (2) $\text{Cr}(\text{CO})_6$ |
| (3) $\text{V}(\text{CO})_6^-$ | (4) $\text{Fe}(\text{CO})_5$ |

Scan or tap for the full solution



- Q.8** Which of the following does not have a metal carbon bond?

[AIPMT 2004]

- | | |
|--|---------------------------------------|
| (1) $\text{Al}(\text{OC}_2\text{H}_5)_3$ | (2) $\text{C}_2\text{H}_5\text{MgBr}$ |
| (3) $\text{K}[\text{Pt}(\text{C}_2\text{H}_4)\text{Cl}_3]$ | (4) $\text{Ni}(\text{CO})_4$ |

Scan or tap for the full solution



- Q.9** Among the following which is not the π -bonded organometallic compound?

[AIPMT 2003]

- | | |
|--|--|
| (1) $\text{K}[\text{PtCl}_3(\eta^2-\text{C}_2\text{H}_4)]$ | (2) $\text{Fe}(\eta^5-\text{C}_5\text{H}_5)_2$ |
| (3) $\text{Cr}(\eta^6-\text{C}_6\text{H}_6)_2$ | (4) $(\text{CH}_3)_4\text{Sn}$ |

Scan or tap for the full solution



- Q.10** Which of the following organometallic compounds is σ and π bonded?

[AIPMT 2001]

- | | |
|--|--|
| (1) $[\text{Fe}(\eta^5-\text{C}_5\text{H}_5)_2]$ | (2) $\text{K}[\text{PtCl}_3(\eta^2-\text{C}_2\text{H}_4)]$ |
| (3) $[\text{Co}(\text{CO})_5\text{NH}_3]^{2+}$ | (4) $\text{Fe}(\text{CH}_3)_3$ |

Scan or tap for the full solution



Q.11 Shape of $\text{Fe}(\text{CO})_5$ is [AIPMT 2000]

- (1) octahedral (2) square planar
(3) trigonal bipyramidal (4) square pyramidal

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	4	4	2	1	1	3	1	1	4	3	3