

**BJNP***Learning with the Speed of Mumbai and the Tradition of Kota***Max Marks:60****Date: 11.09.2022****JB 2 MR BATCH  
CHEMISTRY: DCT****Topic: Mole Concept + Till Reaction Mechanism**

- Find the value of oxidation state of Co in  $\text{Ag}[\text{Co}(\text{CO})_4]$ :  
(a) 1 (b) -1 (c) Zero (d) None of these
- Which of the following reactions involve oxidation and reduction?  
(a)  $\text{NaBr} + \text{HCl} \rightarrow \text{NaCl} + \text{HBr}$  (b)  $\text{HBr} + \text{AgNO}_3 \rightarrow \text{AgBr} + \text{HNO}_3$   
(c)  $\text{H}_2 + \text{Br}_2 \rightarrow 2 \text{HBr}$  (d)  $\text{Na}_2\text{O} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
- Manganese achieves its maximum oxidation state in its compound:  
(a)  $\text{MnO}_2$  (b)  $\text{Mn}_3\text{O}_4$  (c)  $\text{KMnO}_4$  (d)  $\text{K}_2\text{MnO}_4$
- Oxidation number of underlined elements are  $\text{N}_2\text{O}_5$ ,  $\text{SO}_3^{2-}$ ,  $\text{NH}_4^+$ :  
(a) +5, +2, -3 (b) +6, -2, +3 (c) +6, +2, -3 (d) +5, +4, -3
- Phosphorous has the oxidation state of +3 in:  
(a) phosphorous acid ( $\text{H}_3\text{PO}_3$ ) (b) ortho phosphoric acid ( $\text{H}_3\text{PO}_4$ )  
(c) meta phosphoric acid ( $\text{HPO}_3$ ) (d) pyro phosphoric acid ( $\text{H}_4\text{P}_2\text{O}_7$ )
- Which statement is wrong?  
(a) Oxidation number of oxygen is +1 in peroxides  
(b) Oxidation number of oxygen is +2 in oxygen difluoride  
(c) Oxidation number of oxygen is  $-\frac{1}{2}$  in superoxides  
(d) Oxidation number of oxygen is (-2) in most of its compounds.
- The incorrect order of decreasing oxidation number of S in compound is :  
(a)  $\text{H}_2\text{S}_2\text{O}_7 > \text{Na}_2\text{S}_4\text{O}_6 > \text{Na}_2\text{S}_2\text{O}_3 > \text{S}_8$  (b)  $\text{H}_2\text{SO}_5 > \text{H}_2\text{SO}_3 > \text{SCl}_2 > \text{H}_2\text{S}$   
(c)  $\text{SO}_3 > \text{SO}_2 > \text{S}_8 > \text{H}_2\text{S}$  (d)  $\text{H}_2\text{SO}_4 > \text{SO}_2 > \text{H}_2\text{S} > \text{H}_2\text{S}_2\text{O}_8$
- The reaction  $3\text{ClO}^-(\text{aq}) \rightarrow \text{ClO}_3^-(\text{aq}) + 2\text{Cl}^-(\text{aq})$  is an example of :  
(a) oxidation (b) reduction  
(c) disproportionation (d) decomposition reaction

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**Space for Rough Work**



9. Oxidizing agents are species which :
- (a) lose electrons (b) gain electrons  
(c) neither lose nor gain electrons (d) take part in solid-state reactions.
10. In which of the following reactions does  $\text{H}_2\text{O}_2$  acts as a reducing agent?
- (a)  $2 \text{FeCl}_2 + 2 \text{HCl} + \text{H}_2\text{O}_2 \rightarrow 2 \text{FeCl}_3 + 2\text{H}_2\text{O}$   
(b)  $\text{Cl}_2 + \text{H}_2\text{O}_2 \rightarrow 2 \text{HCl} + \text{O}_2$   
(c)  $2 \text{HI} + \text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{I}_2$   
(d)  $\text{H}_2\text{SO}_3 + \text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{SO}_4 + \text{H}_2\text{O}$
11. The oxidation number of an atom in a given species (molecule, ion or free atom) is the :
- (a) actual charge of the atom  
(b) valency of the atom  
(c) formal charge of the atom  
(d) actual charge of the atom if the atom exists as a monoatomic ion or the hypothetical charge assigned to the atom in the species by simple rules.
12. The oxidation number of Cr is + 6 in:
- (a)  $\text{FeCr}_2\text{O}_4$  (b)  $\text{Fe}_2(\text{CrO}_4)_2$  (c)  $\text{Cr}_2(\text{SO}_4)_3$  (d)  $[\text{Cr}(\text{OH})_4]^-$
13. Suppose a compound contains atom A, B and C. The oxidation number of A is +2, B is +5 and C is -2. The possible formula of the compound would be :
- (a)  $\text{ABC}_2$  (b)  $\text{A}_2(\text{BC}_3)_2$  (c)  $\text{A}_3(\text{BC}_4)_2$  (d)  $\text{A}_3(\text{B}_4\text{C})_2$
14. Which of the following is not a redox reaction?
- (a)  $\text{Mg} + \text{N}_2 \rightarrow \text{Mg}_3\text{N}_2$   
(b)  $\text{MnO}_4^- + \text{C}_2\text{O}_4^{2-} \rightarrow \text{Mn}^{2+} + \text{CO}_2$   
(c)  $\text{CuSO}_4 + \text{KI} \rightarrow \text{Cu}_2\text{I}_2 + \text{I}_2 + \text{K}_2\text{SO}_4$   
(d)  $\text{AgCl} + \text{NH}_3 \rightarrow [\text{Ag}(\text{NH}_3)_2]\text{Cl}$
15. Select the reaction which describes the existence of  $\text{I}_2\text{O}_5(\text{s})$  as  $(\text{IO}_2^+)(\text{IO}_3^-)$ :
- (a)  $\text{I}_2\text{O}_5 + \text{HF} \rightarrow \text{HIO}_2 + \text{FIO}_3$   
(b)  $\text{I}_2\text{O}_5 + \text{HF} \rightarrow \text{IO}_2\text{F} + \text{HIO}_3$   
(c)  $\text{I}_2\text{O}_5 + \text{HF} \rightarrow \text{HOI} + \text{IO}_4\text{F}$   
(d)  $\text{I}_2\text{O}_5 + \text{HF} \rightarrow \text{IOF} + \text{HIO}_4$

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**Space for Rough Work**



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**JB 2 MR BATCH**  
**MATHEMATICS : DCT**  
**Topics: Sequence and Series**

16. The  $m^{\text{th}}$  term of the series  $3, \sqrt{3}, 1, \dots$  is  $\frac{1}{243}$  then  $m$  is  
(a) 15 (b) 14 (c) 13 (d) 12
17. The sequence  $\frac{6}{\sqrt{7}}, \sqrt{7}, \frac{8}{\sqrt{7}}, \dots$  is  
(a) H.P. (b) A.P. (c) G.P. (d) A.G.P.
18. If  $1^2 + 2^2 + 3^2 + \dots + n^2 = 1015$ . Then the value of  $n$  is  
(a) 14 (b) 15 (c) 13 (d) 16
19. An infinite G.P. has first term 'x' and sum '5', then  $x$  belongs to:  
(a)  $x < -10$  (b)  $-10 < x < 0$  (c)  $0 < x < 10$  (d)  $x > 10$
20. If  $a, b, c$  are in G.P. and  $x, y, z$  are also in G.P. Then  $\frac{a}{z}, \frac{b}{y}, \frac{c}{x}$  are in  
(a) A.P. (b) G.P. (c) H.P. (d) None of these
21. The harmonic mean of  $\frac{a}{1-ab}$  and  $\frac{a}{a+ab}$  is  
(a)  $\frac{a}{\sqrt{1-a^2b^2}}$  (b)  $\frac{a}{1-a^2b^2}$  (c)  $\frac{1}{1-a^2b^2}$  (d)  $a$
22. If  $u, v, w, x, y, z$  are in A.P. Then  $(y-w)$  is equal to  
(a)  $2(w-u)$  (b)  $(x-w)$  (c)  $2(z-x)$  (d)  $2(x-w)$

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23. If  $5 + 5x^2 + 5x^4 + \dots + \infty = \frac{45}{8}$  then the value of  $x$  will be  
(a)  $\frac{1}{4}$  (b)  $\frac{1}{5}$  (c)  $\frac{3}{5}$  (d)  $\frac{1}{3}$
24. The consecutive terms  $\frac{1}{1 + \sqrt{x}}$ ,  $\frac{1}{1 - x}$ ,  $\frac{1}{1 - \sqrt{x}}$  of a sequence are in  
(a) H.P. (b) A.P. and G.P. both (c) A.P. (d) G.P.
25. If  $\frac{3 + 5 + 7 + \dots + n}{5 + 8 + 11 + \dots + 10 \text{ terms}} = 7$  the value of  $n$  is  
(a) 40 (b) 37 (c) 36 (d) 35
26. If  $Z = 1 + r^a + r^{2a} + r^{3a} + \dots \infty$  then the value of  $r$  will be  
(a)  $\left(\frac{Z+1}{Z}\right)^a$  (b)  $\left(\frac{Z-1}{Z}\right)^a$  (c)  $\left(\frac{Z-1}{Z}\right)^{\frac{1}{a}}$  (d) None of these
27. If the sum of  $n$  terms of an A.P. is  $3n^2 + 5n$  then the  $n^{\text{th}}$  term will be  
(a)  $3n + 5$  (b)  $6n + 2$  (c)  $n + 6$  (d)  $8n + 2$
28. If  $a, b, c$  are in A.P. and  $b, c, d$  are in H.P. Then  
(a)  $ac = bd$  (b)  $ad = bc$  (c)  $ab = cd$  (d)  $a^2b = c^2d$
29. If  $a, b, c$  are in A.P.,  $a, mb, c$  are in G.P. Then  $a, m^2b, c$  are in  
(a) A.P. (b) G.P. (c) H.P. (d) None of these
30. If the sum of  $n$  terms of an A.P. is  $n^2P + nQ$ . Where  $P, Q$  are constants, then its common difference will be  
(a)  $2P$  (b)  $2Q$  (c)  $P$  (d)  $Q$

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**Topic: Mole Concept + Till Reaction Mechanism**

1.	(b)	2.	(c)	3.	(c)	4.	(d)	5.	(a)
6.	(a)	7.	(d)	8.	(c)	9.	(b)	10.	(b)
11.	(d)	12.	(b)	13.	(c)	14.	(d)	15.	(b)

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16.	(c)	17.	(b)	18.	(a)	19.	(c)	20.	(b)
21.	(d)	22.	(d)	23.	(d)	24.	(c)	25.	(d)
26.	(c)	27.	(b)	28.	(b)	29.	(c)	30.	(a)