

# JEE EXPERT

## ANSWER KEY

### REGULAR TEST SERIES - (RTS-03)

11<sup>TH</sup> A02 (Zenith)

Date 14.07.2019

#### PHYSICS

1	(D)	2	(A)	3	(B)	4	(B)	5	(B)
6	(C)	7	(D)	8	(B)	9	(A)	10	(C)
11	(B)	12	(A)	13	(B)	14	(C)	15	(A)
16	(D)	17	(A)	18	(B)	19	(A)	20	(B)
21	(B)	22	(B)	23	(B)	24	(C)	25	(B)
26	(B)	27	(B)	28	(B)	29	(D)	30	(A)

#### CHEMISTRY

31	(B)	32	(B)	33	(C)	34	(B)	35	(B)
36	(D)	37	(B)	38	(C)	39	(B)	40	(D)
41	(B)	42	(C)	43	(C)	44	(A)	45	(C)
46	(D)	47	(D)	48	(A)	49	(D)	50	(D)
51	(B)	52	(C)	53	(C)	54	(D)	55	(D)
56	(A)	57	(A)	58	(A)	59	(B)	60	(C)

#### MATHEMATICS

61	(B)	62	(C)	63	(B)	64	(C)	65	(C)
66	(A)	67	(C)	68	(A)	69	(C)	70	(A)
71	(D)	72	(A)	73	(B)	74	(D)	75	(D)
76	(B)	77	(C)	78	(D)	79	(B)	80	(D)
81	(C)	82	(A)	83	(D)	84	(A)	85	(A)
86	(A)	87	(D)	88	(C)	89	(A)	90	(C)

# JEE EXPERT

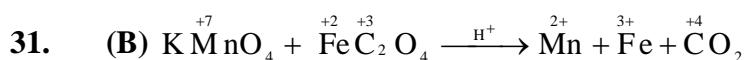
## SOLUTIONS

### REGULAR TEST SERIES - (RTS-03)

11<sup>TH</sup> A02 (Zenith)

Date 14.07.2019

## CHEMISTRY



(n = 5)

(n = 3)

Molar ratio of (KMnO<sub>4</sub> : FeC<sub>2</sub>O<sub>4</sub>) = 3 : 5

∴ Moles of KMnO<sub>4</sub> required to react with one mole of FeC<sub>2</sub>O<sub>4</sub> =  $\frac{3}{5}$ .

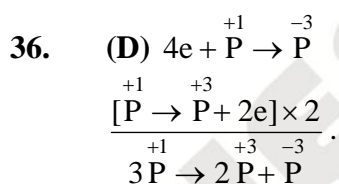
32. (B)

33. (C)

34. (B) X : 50%                      Y : 50%  
X : Y                                = 5 : 2.5 = 2 : 1.

Hence the formula of the compound is X<sub>2</sub>Y.

35. (B)



So the total electrons lost or gained is 4 for 3 moles of H<sub>3</sub>PO<sub>2</sub> so n factor =  $\frac{4}{3}$ .

$$\text{So eq. wt.} = \frac{M}{4/3} = \frac{3M}{4}.$$

37. (B) 2 × moles of KMnO<sub>4</sub> = 5 × moles of oxalic acid

$$\text{mmol of KMnO}_4 = 0.1 \times 20 = 2 \text{ mmol}$$

$$\text{so mmol of H}_2\text{C}_2\text{O}_4 = \frac{5}{2} \times 2 = 5 \text{ mmol}.$$

38. (C)

39. (B)  $1s^2, 2s^2, 2p_x^2, 2p_y^2, 2p_z^2, 3s^2, 3p_x^1, 3p_y^1, 3p_z^1$

40. (D)

41. (B)  $V_n \propto \frac{Z}{n}$

42. (C)

43. (C)  $KE_1 = h\nu_1 - h\nu_0$

$$KE_2 = h\nu_2 - h\nu_0$$

$$\frac{KE_1}{KE_2} = \frac{h(\nu_1 - \nu_0)}{h(\nu_2 - \nu_0)} ; \frac{2}{1} = \frac{\nu_1 - \nu_0}{\nu_2 - \nu_0} ; \nu_0 = \frac{2\nu_2 - \nu_1}{2-1}.$$

44. (A) For the same orbit radius  $\propto \frac{1}{\text{atomic number}}$

45. (C)  $E_2 - E_1 = \left[ \frac{-E_1}{4} + E_1 \right] = \frac{+3E_1}{4}$ ,  $E_4 - E_3 = \frac{-E_1}{16} + \frac{E_1}{9} = \frac{7E_1}{16 \times 9}$

$$\frac{E_2 - E_1}{E_4 - E_3} = \frac{3}{4} \times \frac{144}{7} = \frac{108}{7} = \frac{108}{7} \approx 15.$$

46. (D)  $\lambda = \frac{h}{\sqrt{2m \text{ KE}}}$ ; (K.E. = e.V);  $\lambda = \left[ \frac{h}{\sqrt{2m \cdot e \cdot V}} \right] = \left[ \frac{h^2}{2m \cdot e \cdot V} \times 10^{20} \right]^{\frac{1}{2}} \text{ A}^\circ$   
 $= \left[ \frac{150}{V} \right]^{\frac{1}{2}} \text{ A}^\circ = \frac{12.27}{\sqrt{V}} \text{ A}^\circ$

47. (D) Magnetic moment =  $\sqrt{n(n+2)}$  B.M where n is the number of unpaired electrons.  
For  $\text{Fe}^{3+}$  ion  $n = 5$  so,  $\mu = \sqrt{5(5+2)} = \sqrt{35}$  B.M

48. (A)

49. (D)  $\frac{\lambda_1}{\lambda_2} = \sqrt{\frac{E_2}{E_1}}$  where 'E' is the K.E. of a particle.

As per the above relation, when K.E. is doubled, its wavelength becomes  $\frac{1}{\sqrt{2}}$  times.

- 50.** (D) Energy of single electron system is only depend on the principle quantum number, so that energy of different orbitals of same principle quantum number is same.
- 51.** (B) Atomic number 20  $\longrightarrow$   $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
- 52.** (C)  $r_n = 0.529 \frac{n^2}{Z} \text{ \AA}$   
 $r_2 = 0.529 \times \frac{4}{Z} = R$  (for  $n = 2$ )  
 $r_3 = 0.529 \times \frac{9}{Z} = 9 \times \frac{R}{4}$  (for  $n = 3$ )
- 53.** (C)  $ns^2 np^5$
- 54.** (D)  $\frac{hc}{\lambda} = w_0 + KE$  (but  $KE = 0$ ) ;  $\lambda = \frac{6.626 \times 10^{-34} \times 3 \times 10^8}{4 \times 1.6 \times 10^{-19}} = 3.1 \times 10^{-7} \text{ m} = \mathbf{3100 \text{ \AA}}$ .
- 55.** (D) For (d), the value of  $n + l = 3 + 2 = 5$ . In other cases the value of  $(n + l)$  is less than 5. The orbital having higher  $(n + l)$  value has higher energy.
- 56.** (A)  $BaCl_2 + H_2SO_4 \longrightarrow BaSO_4 + 2HCl$   
Moles taken initially    0.5 mol                      1 mol                      0                      0  
                                        0                      0.5 mol                      0.5 mol 1 mol  
The limiting reagent is  $BaCl_2$ . Hence, a maximum of 0.5 mole of  $BaSO_4$  will be obtained.
- 57.** (A)  $\frac{1}{\lambda} = RZ^2 \left[ \frac{1}{n_1^2} - \frac{1}{n_2^2} \right]$                        $n_1 = 2, n_2 = 3, Z = 1$   
 $\frac{1}{\lambda} = R \left[ \frac{1}{4} - \frac{1}{9} \right]$                        $\frac{1}{\lambda} = \frac{5R}{36} \text{ cm}^{-1}$
- 58.** (A)  $\frac{1}{\lambda} = R_H Z^2 \left( \frac{1}{n_1^2} - \frac{1}{n_2^2} \right) = 109670 \left( \frac{1}{1} - \frac{1}{4} \right) = \frac{3}{4} (109670) \text{ cm}^{-1}$   
 $\lambda = 1215.8 \times 10^{-8} \text{ cm}$  i.e.,  $\lambda = \mathbf{1215.8 \text{ \AA}}$
- 59.** (B)
- 60.** (C)