

| ANSWER KEY (+1) 25.12.2019 NON-MEDICAL | | | |
|---|---------------------------------|---------------------------------|---------------|
| PHYSICS | | CHEMISTRY | |
| Q.No. | Answer | Q.No. | Answer |
| SECTION A Single Correct | | SECTION A Single Correct | |
| 1 | D | 1 | D |
| 2 | A | 2 | D |
| 3 | D | 3 | C |
| 4 | B | 4 | D |
| 5 | C | 5 | A |
| 6 | D | 6 | C |
| 7 | A | 7 | B |
| 8 | B | 8 | C |
| 9 | C | 9 | C |
| 10 | C | 10 | C |
| 11 | C | 11 | A |
| 12 | A | 12 | D |
| 13 | C | 13 | A |
| 14 | D | 14 | A |
| SECTION B Single Correct | | SECTION B Single Correct | |
| 1 | A | 1 | B |
| 2 | D | 2 | A |
| 3 | D | 3 | C |
| 4 | D | 4 | B |
| 5 | B | 5 | C |
| 6 | C | 6 | B |
| 7 | B | 7 | D |
| 8 | D | 8 | C |
| 9 | A | 9 | D |
| 10 | A | 10 | B,C,BC |
| 11 | B | 11 | B |
| SECTION C Integer | | SECTION C Integer | |
| 1 | 11 | 1 | 6 |
| 2 | 3 | 2 | 3 |
| 3 | 525,526,527, 528,529,530,531 | 3 | Cancel |
| 4 | 8 | 4 | 2 |
| 5 | 2 | 5 | 4 |

+1**Grand Test Non-Medical (Answer Key)****CHEMISTRY**

1. D

$$\text{Sol. } \Delta H = \left[-750 - \frac{1}{2} \times \frac{8.314 \times 300}{1000} \right] \times 2 = -1502494 \text{ kJ}$$

2. D

$$\text{Sol. } W = -2.303 \times 10 \times 1 \log \frac{10}{1} \times 101.3 = -2.3 \text{ kJ}$$

$$[W = -q] \text{ so } q = +2.3 \text{ kJ}$$

3. C

Sol. Ratio of two extensive property is intensive.

4. D

5. A

Sol. Only solid are involved on both side so change in entropy is very less.

6. C

7. B

$$\text{Sol. } R.E. = 29 \times 2 - 56 = 2 \text{ kcal/mole}$$

8. C

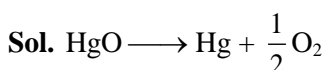
$$\text{Sol. } \Delta G^\circ = -137.15 + 245.12 = +107.97$$

$$\Delta H^\circ = -110.5 + 266.3 = +155.8$$

$$\Delta S^\circ = 27.28 + 197.6 - 5.74 - 57.49 = +161.65$$

$$T = \frac{\Delta H^\circ}{\Delta S^\circ} = \frac{155.8 \times 10^3}{161.65} = 964 \text{ K}$$

9. C



$$\Delta G^\circ = +58.5$$

$$\Delta H^\circ = +90.8$$

Hence, HgO decomposes more easily at a lower temperature than other oxides. It will require lowest energy for decomposition

10. C

11. A

12. D

Sol. Ge (IV) is more stable than Ge(II). Therefore Ge (II) compounds are powerful reducing agent. Pb(IV) is less stable than Pb(II). Therefore, Pb(IV) compounds are powerful oxidising agents. This is due to inert pair effect, due to which the +2 oxidation state becomes more stable as we move down the group

13. A

14. A

15. B

16. A

17. C

Sol. Successive I.E. are higher $M^{+3} > M^{+2} > M^+$; ionic mobility $\text{Rb}_{\text{aq}}^+ > \text{K}_{\text{aq}}^+ > \text{Na}_{\text{aq}}^+ > \text{Li}_{\text{aq}}^+$.

18. B

Sol. Melting is endothermic $\Delta H = +$; $q = +$; On melting volume of ice decreases $w = +$; heat is absorbed $\Delta U = +$

19. C

Sol. Heat is a path function.

20. B

$$\text{Sol. } \Delta U = q + w$$

$$-12 = 7.5 + w$$

$$\Rightarrow w = -19.5 \text{ kJ}$$

21. D

Sol. $\Delta G = \Delta H - T\Delta S$; If $\Delta H > 0$ and $\Delta G < 0 \Rightarrow \Delta S > 0$

22. C

23. D

24. B

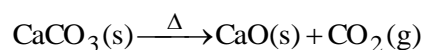
Sol. Size decreases with increase in positive charge.

25. B

$$\text{Sol. } \Delta H^\circ = \Delta H_f^\circ(\text{Product}) - \Delta H_f^\circ(\text{Reactant})$$

Numerical Problems

26. 6

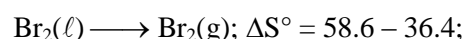


$$w = -\Delta n_g RT = -1 \times 2 \times 300 = -600 \text{ cal}$$

27. 3

a, b, h are intensive properties

28. 7.40 kJ/mol



at Boiling point $\Delta G = 0$

$$T\Delta S = \Delta H$$

$$= 22.2 \text{ J mol}^{-1} \text{ K}^{-1}$$

$$\Delta H^\circ = \frac{332.7 \times 22.2}{1000} = 7.40 \text{ kJ/mol} \quad \boxed{7.4 \text{ kJ}}$$

29. 2; d, h

(a) Ionisation of B < Be

(b) Electron affinity of S > O

(c) Mn^{+2} is $3d^3$

(e) & (d) successive ionization energies are always greater

(f) $\text{F} > \text{O} > \text{Cl} > \text{N}$

(h) Noble gases have positive electron gain enthalpy.

(g) It is the sum of first two ionization energy.

30. (4)

(a) For adiabatic free expansion $\Delta S = +ve$

(b) $\Delta G = -ve$ (for spontaneous process at constant T, P) (correct)

(c) $\Delta H_{\text{vap}} > \Delta H_{\text{fusion}}$

(d) $\text{H}_2 + \frac{1}{2} \text{O}_2 \rightarrow \text{H}_2\text{O}(\ell)$ ($\Delta S = -ve$) or < 0 (correct)

(e) $2\text{CH}_3\text{COOH} \rightarrow (\text{CH}_3\text{COOH})_2$ $\Delta S = -ve$ (correct)

(f) graphite have more entropy.

(g) Entropy will never be zero at 25°C .

(h) Boiling of egg its entropy increases due to change of its compact tertiary structure of random structure