NEET MICRO TEST 5 (15.11.2024) **20x4=80 MARKS**

Botany: Anatomy of flowering plants, **Zoology:** Body fluids & circulation
Chemistry: Thermodynamics, **Physics:** Work, Energy & Power

Solution

1. Answer: **(2)**
2. Answer: **(3)**
3. Answer: **(1)**
4. Answer: **(2)**
5. Answer: **(2)**
6. Answer: **(2)**
7. Answer: **(3)**
8. Answer: **(2)**
9. Answer: **(1)**
10. Answer: **(1)**

11. Answer: **(3)**

In this ease disorder increases so $\Delta S > 0$

12. Answer: **(2)**

Conceptual

13. Answer: **(4)**

$CH_{4(g)} + 2O_{2(g)} \rightarrow CO_{2(g)} + 2H_2O_{(g)}$

$\Delta H = \Delta E + \Delta n_g RT$

$\Delta n_g = 0$, Then $\Delta H = \Delta E$

14. Answer: **(2)**

1 mole H_2SO_4 = 2 equivalents of H_2SO_4

$\Delta H^{\circ}_{neutralization} = -13.7 \times 2$

$= -27.4$ K.cal

15. Answer: **(3)**

Heat of formation means it has to form from its constituent elements so 1 is not formation of CO_2

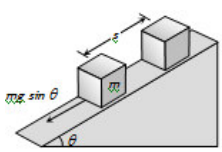
Heat of combustion will give CO_2 only sop 2 in not combustion

16. Answer: **(2)**

$W = mg \sin\theta \times s$

$= 2 \times 10^3 \times \sin 15^{\circ} \times 10$

$= 5.17$ kJ



17. Answer: **(2)**

For equilibrium

$$\frac{dU}{dr} = 0 \Rightarrow \frac{-2A}{r^3} + \frac{B}{r^2} = 0$$

$$r = \frac{2A}{B}$$

For stable equilibrium

$\frac{d^2U}{dr^2}$ should be positive for the value of 'r'.

Here $\frac{d^2U}{dr^2} = \frac{6A}{r^4} - \frac{2B}{r^3}$ is +ve value for $r = \frac{2A}{B}$

18. Answer: **(4)**

Loss in PE of spring = gain in KE of ball

$$\frac{1}{2}Kx^2 = \frac{1}{2}mv^2$$

$$\frac{90}{10^{-2}} \times (12 \times 10^{-2})^2 = 16 \times 10^{-3} v^2$$

$\Rightarrow v = 90$ m/s

19. Answer: **(1)**

Power of motor initially = p_0

Let, rate of flow of motor = (x)

Since, power, $p_0 = \frac{work}{time} = \frac{mgy}{t} = mg\left(\frac{y}{t}\right)$

$\frac{y}{t} = x$ = rate of flow of water

$= mgx$ --- (i)

If rate of flow of water is increased by n times, i.e., (nx).

Increased power, $p_1 = \frac{mgy'}{t} = mg\left(\frac{y'}{t}\right)$

$= nmgx$ --- (ii)

The ratio of power

$$\frac{p_1}{p_0} = \frac{nmgx}{mgx} = \frac{n}{1} \Rightarrow p_1 : p_0 \Rightarrow n : 1$$

20. Answer: **(2)**

Linear momentum of water striking per second to the wall

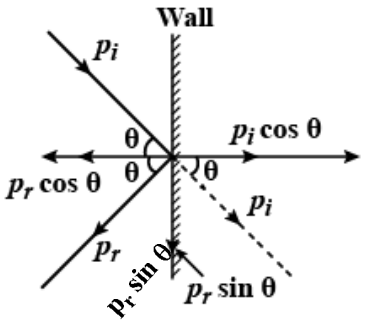
$P_1mv = Av\rho v = Av^2\rho$, similarly linear momentum of reflected water per second

$P_r = Av^2\rho$

Now making components of momentum along x-axes and y-axes. Change in momentum of water per second.

$= P_i \cos\theta + P_r \cos\theta$

$= 2Av^2\rho \cos\theta$



By definition of force, force exerted on the Wall = $2Av^2\rho \cos\theta$