

# NEW STANDARD ACADEMY

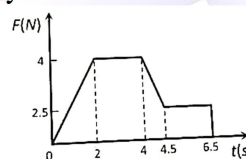
Date : 12-08-24

CLASS : 11<sup>TH</sup> NEET

Marks: 90  
Time: 3 HRS

## PHYSICS

- The breaking tension of a string is 10N. A particle of mass 0.1 kg tied to it is rotated along a horizontal circle of radius 0.5 metre. The maximum speed with which the particle can be rotated without breaking the string is
  - $\sqrt{5}m/sec$
  - $\sqrt{50}m/sec$
  - $\sqrt{(500)}m/sec$
  - $\sqrt{(1000)}m/sec$
- What happens to centripetal force of a revolving body if you double the orbital speed  $v$  and halve the angular velocity  $\omega$ 
  - Centripetal force remains unchanged
  - Centripetal force is halved
  - Centripetal force is doubled
  - Centripetal force is quadrupled
- If both the speed and radius of circular path of a revolving body are doubled, the magnitude of centripetal force will be
  - equal to the former
  - twice the former
  - 4 times the former
  - 8 times the former
- When the road is dry and the coefficient of friction is  $\mu$ , the maximum speed of a car in a circular path is 10 m/s, if the road becomes wet and  $\mu' = \mu/2$ . What is the maximum speed permitted?
  - 5m/s
  - 10m/s
  - $10\sqrt{2}$  m/s
  - $5\sqrt{2}$  m/s
- A body is revolving with a uniform speed  $V$  in a circle of radius  $r$ . The angular acceleration of the body is
  - $\frac{V}{r}$
  - Zero
  - $\frac{V^2}{r}$  along the radius and towards the centre
  - $\frac{V^2}{r}$  along the radius and away from the centre
- A car of mass 1000 kg moves on a circular track of radius 20 m. if the coefficient of friction is 0.64, what is the maximum velocity with which the car can be moved?
  - 1.12 m/s
  - 11.2 m/s
  - $\frac{(0.64 \times 20)}{1000}$  m / s
  - $\frac{1000}{(0.64 \times 20)}$  m / s
- A railway track is banked for a speed  $v$ , by making the height of the outer rail ( $h$ ) higher than that of the inner rail. The distance between the rails is  $d$ . The radius of curvature of the track is  $r$ 
  - $\frac{h}{d} = \frac{v^2}{rg}$
  - $\tan(\sin^{-1} \frac{h}{d}) = \frac{v^2}{rg}$
  - $\tan^{-1} (\frac{h}{d}) = \frac{v^2}{rg}$
  - $\frac{h}{r} = \frac{v^2}{rg}$
- A particle is acted upon by a constant force always normal to the direction of motion of the particle. It is therefore inferred that
  - Its velocity is constant
  - It moves in a straight line
  - Its speed is constant
  - It moves in circular path
  - i, iv
  - iii, iv
  - i, ii
  - i, ii, iii
- A body of 2 kg has an initial speed  $5ms^{-1}$ . A force acts on it for some time in the direction of motion. The force time graph is shown in figure. The final speed of the body



- a)  $9.25 \text{ ms}^{-1}$                       b)  $5 \text{ ms}^{-1}$   
 c)  $14.25 \text{ ms}^{-1}$                     d)  $4.25 \text{ ms}^{-1}$

10. On an unbanked road, a cyclist negotiating a bend of radius  $r$  at velocity  $v$  must lean inwards by an angle equal to

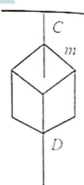
- a)  $\tan^{-1}(V^2 / g)$   
 b)  $\tan^{-1}(g / v)$   
 c)  $\tan^{-1}(v^2 / gr)$   
 d)  $\tan^{-1}(rg / v^2)$

11. 2kg stone at the end of a string 1 m long is whirled in a vertical circle at a constant speed. The speed of the stone is 4 m/sec. The tension in the string will be 52 N when the stone is-

- a) at the top of the circle  
 b) at the bottom of the circle  
 c) half way down  
 d) none of the above

12. A heavy block of mass  $m$  is supported by a cord C from the ceiling, and another cord D is attached to the bottom of the block. If a sudden jerk is given to D, then

- a) cord C breaks  
 b) cord D breaks  
 c) cord C and D both break  
 d) none of the cords breaks



13. A bullet of 5 g, travelling at a speed of 100 m/s penetrates a wooden block up to 6.0 cm. Then the average force applied by the bullet on the block is

- a) 417 N  
 b) 8333 N  
 c) 83.3 N  
 d) zero

14. The linear momentum  $P$  of a body moving in one dimension varies with time according to the equation  $P = at + bt^2$  where  $a$  and  $b$  are positive constants. The net force acting on the body is

- a) proportional to  
 b) a constant  
 c) proportional to  $t$   
 d) inversely proportional to  $t$

15. An empty plastic box of mass  $m$  is found to accelerate up at the rate of  $g/6$  when placed deep inside water. How much sand should be put inside the box so that it may accelerate down at the rate of  $g/6$ ?

- a)  $2m/3$   
 b)  $2m/5$   
 c)  $m/5$

d)  $6m/7$

## CHEMISTRY

1. In exothermic process, heat will be released to the surroundings because in an isothermal process

- a)  $\Delta U = 0$                               b)  $\Delta U \neq 0$   
 c)  $\Delta P = 0$                               d)  $\Delta V = 0$

2. Which of the following process is conducted in such a way that the pressure of the system remains constant throughout the change?

- a) adiabatic                              b) isochoric  
 c) isothermal                            d) isobaric

3. The state of equilibrium is attained after the completion of the process in case of

- a) reversible process  
 b) irreversible process  
 c) isochoric process  
 d) isobaric process

4. Which of the following values of heat of formation indicates that the product is least stable?

- a) -94.4 kcal                              b) -231.6 kcal  
 c) +21.4 kcal                            d) +64.8 kcal

5. When 1 M  $\text{H}_2\text{SO}_4$  is completely neutralised by sodium hydroxide, the heat liberated is 114.64 kJ. What is the enthalpy of neutralisation?

- a) +114.64 kJ                            b) -114.64 kJ  
 c) -57.32 kJ                              d) +57.32 kJ

6.  $\Delta H_{\text{neutralisation}}$  is always

- a) positive                              b) negative  
 c) zero                                    d) positive or negative

7. Select the correct expression for pressure volume work (at constant pressure).

- a)  $W = -P_x (V_1 - V_2)$   
 b)  $W_{\text{max}} = -2.303 nRT \log_{10} \frac{P_1}{P_2}$   
 c)  $W = -P_{\text{ex}} \Delta V$   
 d)  $W_{\text{max}} = -2.303 nRT \log_{10} \frac{V_1}{V_2}$

8. Given standard enthalpy of formation of  $\text{CO}(-110\text{kJmol}^{-1})$  and  $\text{CO}_2(-394\text{kJmol}^{-1})$  The heat of combustion when one mole of graphite burns is

- a) -110 kJ                                  b) -284 kJ  
 c) -394 kJ                                d) -504 kJ

9. The heats of neutralization of  $\text{CH}_3\text{COOH}$ ,  $\text{HCOOH}$ ,  $\text{HCN}$  and  $\text{H}_2\text{S}$  are

- 13.2, -13.4, -2.9 and -3.8 kcal per equivalent respectively. The correct increasing order of acid strength is

(1)  $\text{HCOOH} < \text{CH}_3\text{COOH} < \text{H}_2\text{S} < \text{HCN}$

- (2)  $\text{HCN} < \text{H}_2\text{S} < \text{CHOOH} < \text{HCOOH}$   
 (3)  $\text{HCOOH} < \text{CH}_3\text{COOH} < \text{HCN} < \text{H}_2\text{S}$   
 (4)  $\text{CH}_3\text{COOH} < \text{H}_2\text{S} < \text{HCN} < \text{HCOOH}$
10. Suppose 25 kJ of work is done on the system and it releases 15 kJ of heat, then  $\Delta U =$   
 a) +10 kJ  
 b) -10 kJ  
 c) -40 kJ  
 d) +40 kJ
11. For an isothermal reversible expansion of an ideal gas  
 a)  $\Delta S_{\text{system}} > \Delta S_{\text{surrounding}}$   
 b)  $\Delta S_{\text{system}} < \Delta S_{\text{surrounding}}$   
 c)  $\Delta S_{\text{system}} = \Delta S_{\text{surrounding}}$   
 d)  $\Delta S_{\text{system}} = -\Delta S_{\text{surrounding}}$
12. 2 moles of an ideal gas at 27°C is expanded reversibly from 2 litre to 20 litre. Find entropy change ( $R = 2 \text{ cal/mol K}$ .)  
 a) 92.1  
 b) 0  
 c) 4  
 d) 9.2
13. If the bond enthalpy of H - C l(g),  $\text{H}_2(\text{g})$  and  $\text{Cl}_2(\text{g})$  is 103, 104 and 58 kcal mol<sup>-1</sup>, then enthalpy change at constant volume for the following reaction at 300 K will be  

$$\frac{1}{2} \text{H}_2(\text{g}) + 12 \text{Cl}_2(\text{g}) \rightarrow \text{HCl}(\text{g})$$
  
 a) -44 kcal mol<sup>-1</sup>  
 b) -66 kcal mol<sup>-1</sup>  
 c) -11 kcal mol<sup>-1</sup>  
 d) -22 kcal mol<sup>-1</sup>
14. What is the standard enthalpy of combustion of acetylene, as  
 $\Delta_f H^\circ(\text{CO}_2) = -393.5 \text{ kJ mol}^{-1}$   
 $\Delta_f H^\circ(\text{H}_2\text{O}) = -285.8 \text{ kJ mol}^{-1}$   
 $\Delta_f H^\circ(\text{C}_2\text{H}_2) = 227.8 \text{ kJ mol}^{-1}$   
 a) + 1300 kJ mol<sup>-1</sup>  
 b) +130 kJ mol<sup>-1</sup>  
 c) -1300 kJ mol<sup>-1</sup>  
 d) - 130 kJ mol<sup>-1</sup>
15.  $\Delta C_p$  for a reaction is given by  $2.0 + 0.2 T$  cal/deg. Its enthalpy of reaction at 10 K is -14.2 kcal. Its enthalpy of reaction at 100 K in kcal will be  
 a) -13.21  
 b) -15.37  
 c) 16.02  
 d) 7.08

## BIOLOGY

- Bony/teleost fishes are characterized by  
 a) Osteichthyes                      b) Chondrichthyes  
 c) Cyclostomata                      d) Amphibian
- Which one is a true fish?  
 a) Cuttlefish                              b) Dog fish  
 c) Jelly fish                                d) Silver fish
- Heart is two-chambered in  
 a) Fishes                                    b) Amphibians  
 c) Reptiles                                 d) Birds
- Flying frog is  
 a) Rhacophorus                          b) Hyla  
 c) Pipa                                        d) Alytes
- Frog respire through  
 a) skin                                        b) Buccopharyngeal  
 c) Lungs                                      d) All of the above
- Tetrapods include  
 a) Amphibian, reptile, aves and mammalia  
 b) Reptile, mammalia and amphibian  
 c) Amphibian and reptile  
 d) Aves and mammalia
- Study of reptiles is  
 a) Rhinology                                b) Herpetology  
 c) Nidology                                 d) Ichthyology
- Cold blooded animal is  
 a) Man                                        c) Cattle  
 c) Pigeon                                    d) Snake
- Voice box bird is  
 a) Larynx                                    b) Syrinx  
 c) Pharynx                                  d) Synaptene
- A mammal which lays eggs is  
 a) Scaly Anteater                          b) Spiny Anteater  
 c) Porcupine                                d) Hedgehog
- Mammary gland are modified  
 a) Salivary glands                          b) Lacrimal glands  
 c) Sweat glands                            d) Sebaceous
- Cropus callosun occurs in the brains of  
 a) Pigeon                                    b) Frog  
 c) Crocodile                                d) Elephant
- Protochordates:  
 a) Include urochordata and cephalochordate  
 b) Are exclusively marine  
 c) Both (a) and (b)  
 d) Have notochord only in the larval stage
- Notochord is  
 a) Ensheathed hollow and elastic structure  
 b) Replaced by neurons in vertebrates  
 c) Located between nerve cord and alimentary canal  
 d) Bony or cartilaginous structure

15. Birds:

- a) Are poikilotherms
- b) Have respiration performed only by the air sacs
- c) Are bipeds
- d) Endoskeleton is ossified partially

