NEW STANDARD ACADEMY

Marks: 60

Date : 02-09-24 **CLASS : 11TH NEET** **Time: 3 HRS**

PHYSICS

1. In a uniform circular motion, the direction of linear velocity is along the
   a) Tangent to the curve path
   b) Radius vector towards the centre
   c) Perpendicular to the plane of the circular motion
   d) Radius vector
2. For a particle performing UCM, the physical quantities are constant
   a) Speed and angular velocity
   b) Kinetic energy and radius vector
   c) Angular velocity and Kinetic energy
   d) 'a' and 'c'
3. A particle describes a circular path of diameter 20 m every 2s. the average angular speed of the particle during 4s is
   a) 20 π rad/ s
   b) 10 π rad /s
   c) 5π rad/ s
   d) $\pi\ rad/s$
4. A particles moves in a circular path of radius 10 cm with a constant speed of 10 cm/s. its acceleration is
   a) 100cm/s^2
   b) 10 cm/s^2
   c) 1 cm/s^2
   d) Zero
5. A sprit level is placed at the edge of a turn table along its radius. The bubble will be
   a) At the centre of the container
   b) At the outer edge of the container
   c) At the inner edge of the container
   d) Will oscillate about the centre of the container
6. A body of mass 0.4 kg is revolved in a horizontal circle of radius 5m. If it performs 120 rev/min, the centripetal force acting on it is.
   a) 2 π^2 N
   b) 4 π^2 N
   c) $16\pi^2$ N
   d) $32\pi^2$ N
7. The maximum safe speed of a vehicle on a circular track is 15 km/h. When the track becomes wet, the maximum safe speed is 10 km/h. the ratio of coefficient of friction of dry track to that of the wet track is
   a) 2:3 b) 3:2
   c) 9:4 d) 1:1
8. A car takes a circular turn at an optimum speed on a road which is banked at an angle $\theta = \sin^{-1} 0.1$. If the required centripetal force is 400 N, the normal reaction on the car is
   a) 400 N, vertically upward
   b) 40N, normal to the road surface
   c) 4000 N, normal to the road surface
   d) 4000 N, vertically downward
9. A bucket of water, tied to a rope is to be rotated without spilling in a vertical circle of radius 5 m. The minimum speed of the bucket at the highest position should be
   a) 0.7 m/s b) 2 m/s
   c) 4 m/s d) 7 m/s
10. The angular acceleration of a rotating body which slows down from 500 rpm to rest in 10 seconds is about
    a) 5 rad/s^2
    b) – 2.5 rad/s^2
    c) – 5 rad/s^2
    d) – 10 rad/s^2
11. A bob of mass 30 g suspended by a string is able to complete a vertical circular loop at a place where g = 10 m/s^2. If the maximum change in its PE during the motion is 0.6 J, the radius of the path is
    a) 10 m b) 2m
    c) 1 m d) 0.5 m
12. Initial angular velocity of a wheel is 2 rad/s. It rotates with a constant angular acceleration of 3.5 rad/s^2. Its angular displacement in 2 s is

a) 4 rad b) 7 rad
c) 8 rad d) 11 rad

13. A bicycle is moving with a constant velocity $\vec{v}$ the graph of angular speed ω,of its wheels against the distance travelled s is
a) A hyperbola
b) A straight line parallel to the ωaxis
c) A straight line parallel to the s axis
d) A parabola

14. When a body moves with a constant speed along a circle ,
a) Its linear velocity remains constant
b) No force acts on it
c) No work is done on it
d) No acceleration is produced is in it

15. Two particles, whose masses are in the ratio 7:3, go around two concentric tracks whose radii are in the ratio 1:2 If their linear speeds are in the ratio 1:2, their centripetal accelerations are in the ratio
a) 7:6 b) 1:1
c) 1:2 d) 1:4

CHEMISTRY

1. At constant temperature, the equilibrium constant Kp for the decomposition reaction expressed by $Kp = 4x^2 P/(1 - x^2)$ of decomposition. $N_2O_4 \rightleftharpoons 2NO_2$ where P = pressure, x = extent
Which one of the following statements is true?
(1) K_p increases with increase of P
(2) K_P increases with increase of x
(3) K_p increases with decrease of x
(4) K_p remains constant with change in P and x

2. It is not possible to attain equilibrium in
(1) closed system
(2) isolated system
(3) open system
(4) none of these

3. In the lime kiln, the reversible reaction $CaCO_3 \rightleftharpoons CaO + CO_2$ proceeds to completion because of
(1) high temperature
(2) CO_2 escapes
(3) CaO is removed
(4) low temperature

4.

Example of homogeneous equilibria is

(1) $Ca(OH)_{2(s)} + H_2O_{(aq)} \rightleftharpoons Ca^{2+}_{(aq)} + 2OH^-_{(aq)}$

(2) $Ag_2O_{(s)} + 2HNO_{3(aq)} \rightleftharpoons 2AgNO_{3(aq)} + H_2O_{(l)}$

(3) $Fe^{3+}_{(aq)} + SCN^-_{(aq)} \rightleftharpoons Fe(SCN)^{2+}_{(aq)}$

(4) $Ni_{(s)} + 4CO_{(g)} \rightleftharpoons Ni(CO)_{4(g)}$

5. Which of the following is a characteristic of reversible reaction?
(1) It never proceeds to completion
(2) It can be influenced by a catalyst
(3) It proceeds only in the forward direction
(4) Number of moles of reactants and products are equal

6. 60 g of water gas and 18 g of steam are heated in a closed vessel to a temperature of 450°C so that the equilibrium: $CO_{(g)} + H_2O_{(g)} \rightleftharpoons CO_{2(g)} + H_{2(g)}$ is reached. If K for the CO_2 will be
(1) 11 g
(2) 22 g
(3) 44 g
(4) 60 g

7. For a reaction, $2NOCl_{(g)} \rightleftharpoons 2NO_{(g)} + Cl_{2(g)}$, K. at 427°C is 3×10^{-6} L mol^{-1}, The value of K is nearly
(1) 7.5×10^{-5}
(2) 2.5×10^{-5}
(3) 2.5×10^{-4}
(4) 1.72×10^{-4}

8.

The equilibrium constants for the reaction

$Zn_{(S)} + Cu^{2+}_{(aq)} \rightleftharpoons Zn^{2+}_{(aq)} + Cu_{(S)}$ and

$Cu_{(S)} + 2Ag^+_{(aq)} \rightleftharpoons Cu^{2+}_{(aq)} + 2Ag_{(S)}$

are K_1 and K_2 respectively. Then the equilibrium constant for the reaction $Zn_{(S)} + 2Ag^+_{(aq)} \rightleftharpoons Zn^{2+}_{(aq)} + 2Ag_{(S)}$ will be

(1) $K_1 + K_2$ (2) $K_1 \times K_2$
(3) K_1/K_2 (4) $K_1 - K_2$

9. If 0.2 moles of $H_{2(g)}$ and 2.0 moles of $S_{(s)}$ are mixed in a 1 dm³ vessel at

90°C, the partial pressure of H_2S formed according to the reaction $H_{2(g)} + S_{(s)} \rightleftharpoons H_2S_{(g)}$ ($K = 6.8 \times 10^{-2}$) would be
(1) 0.19 atrn
(3) 0.6 atm
(2) 0.38 atm
(4) 0.072 atm

10. a moles of PCI_5 are heated in a closed container to equilibriate $PCl_5 \rightleftharpoons PC1_{(g)} + Cl_{2(g)}$ at a pressure of P atm. If x moles of PCl_5 dissociate at equilibrium, then

(1) $\frac{x}{a} = \frac{K_p}{K_p + P}$ (2) $\frac{x}{a} = \left(\frac{K_p + P}{K_p}\right)^{1/2}$

(3) $\frac{x}{a} = \left(\frac{K_p}{P}\right)^{1/2}$ (4) $\frac{x}{a} = \left(\frac{K_p}{K_p + P}\right)^{1/2}$

11. The first and second dissociation constants of an acid H_2A are 1.0×10^{-5} and 5×10^{-10} respectively. The overall dissociation constant of the acid will be
(1) 0.2×10^{5}
(2) 5×10^{-5}
(3) 5×10^{15}
(4) 5×10^{-15}

12. Incorrect relation is
(1) $\Delta G = \Delta G^{o} + RT \ln(K)$
(2) $\Delta G° = - R\ TInK$
(3) $\Delta G° = \Delta G + RT\ \ln(K)$
(4) $K = e^{-G^0/RT}$

13. Calculate the degree of dissociation of PCl_5 the density at 230 °C is 70.
(1) 97.8%
(3) 4.89%
(2) 48.9%
(4) 24.45%

14. In which of the following reaction $K_p > K_c$?

(1) $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$

(2) $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$

(3) $PCI_{3(g)} + Cl_{2(g)} \sim PCI_{5(g)}$

(4) $2SO_{3(g)} \rightleftharpoons 2SO_{2(g)} + O_{2(g)}$

15. For the reaction $2HI \rightleftharpoons H_2 + I_2$
(1) $K_p > K_c$ (2) $K_c > K_p$
(3) $K_p = K_c$ (4) None of thes

BIOLOGY

1. I Initial CO_2 acceptor
II. Extent of photorespiration
III. Enzyme catalyzing reaction that fixes CO_2
IV. Presence of Calvin Cycle
V. Leaf anatomy
Which one does not differ between a C_3 and a C_4 plant?
(a) I and V
(b) IV
(c) II and III
(d) II

2. PEP carboxylase is -
(a) Involved in at least some CO_2 fixation in both C3 and C4 plants.
(b) Catalyzes the reaction fixing CO_2 into pyruvic acid in bundle sheath cells
(c) Capable of fixing CO_2 more efficiently at lower atmospheric CO_2 concentration than RUBP carboxylase
(d) The most abundant enzyme in the world

3. When Rubisco acts as an oxygenase -
(a) Phsophoglycerate and phosphogiycolate are produced
(b) Phosphoenol pyruvate is oxidized
(c) Net carbon fixation is enhanced
(d) It must mean that the piant is deprived of CO_2

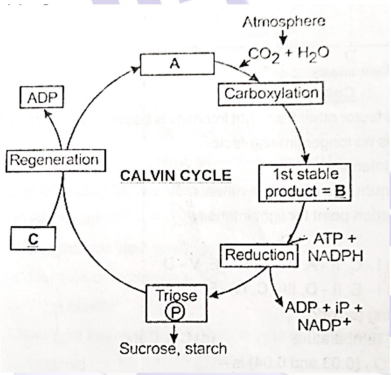
4. Calvin Cycle has -
(a) Carboxylation, Regenration
(b) Oxygenation, Regeneration
(c) Reduction, Oxygenation
(d) Carboxylation, reduction and regeneration

5. Which of following ratio is correct for the production of one molecule of glucose through 6 rounds of calvin cyle?

	CO_2	:	ATP	:	$NADPH_2$
(a)	1	:	2	:	2
(b)	6	:	18	:	12
(c)	6	:	12	:	18
(d)	5	:	6	:	9

6. C_4 plants are abundant in -
   (a) Temperate region with more humid conditions
   (b) Temeprate region with more dry conditions
   (c) Tropical region with more humid conditions
   (d) Tropical region with more dry conditions
7. The leaves of C_4 plants show-
   (a) No chioroplasts in cells of bundle sheath
   (b) No chioroplasts in mesophyll
   (c) Mononorphic chloroplasts
   (d) Kranz anatomy
8. Under the normal condition which one is the major limiting factor?
   (a) CO_2 conc.
   (b) Light
   (c) Temperature
   (d) Chl. Conc

9.



Identify A, B and C

	A	B	C
(a)	ATP	3PGA	RuBP
(b)	3PGA	ATP	Sugar
(c)	RuBP	3-PGA	ATP
(d)	Sugar	RuDP	NADPH

10. In an experiment, mature leaves on the plant were enclosed for a fixed amount of time in a transparent bag the radioactive CO_2 In which part of the plant will maximum radioactivity be found after some time?
    (a) Actively growing leaves
    (b) Guard cells of all the leaves.
    (c) In mature leaves.
    (d) Senescing leaves and roots.
11. CAM helps the plants in
    (a) Reproduction
    (b) Conserving water
    (c) Secondary growth
    (d) Disease resistance
12. In Kranz anatomy, the bundle sheath cells have
    (a) thin walls, many intercellular spaces and no chloroplasts
    (b) thick walls, no intercellular spaces and large number of chloroplasts
    (c) thin walls, no intercellular spaces and several chloropiasts
    (d) thick walls, many intercellular spaces and few chloroplasts
13. Bundle sheath cells
    (a) Are rich in RuBisCO
    (b) Are rich in PEP carboxylase
    (c) Lack RuBisCO
    (d) Lack both RuBisCO and PEP carboxylase
14. Stomata remain open at night in
    (a) C_3 plants
    (b) C_4 piants
    (c) CAM piants
    (d) Hydrophytic plants

15. The entire reactions of C_4 pathway takes place in
    (a) Mesophyll and bundle sheath
    (b) Vascular bundle and palisade tissue
    (c) Mitochondria and peroxisome
    (d) Bundle sheath and endoplasmic reticulum