NEW STANDARD ACADEMY

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CLASS 11 (21-05-2024) DPP (Academy)

PHYSICS

Q 1. A Body moves 6 m north. 8 m east and 10m vertically upwards, what is its resultant displacement from initial position:

(a) $10\sqrt{3}$ m (b) 10 m

(c) $10\sqrt{2}$ m (d) 20 m

Q 2. An athlete completes one round of a circular track of radius R in 40 sec with uniform speed. What will be his displacement at the end of 2 min. 30 sec?

(a) zero (b) $\sqrt{2}R$

(c) $5\ 2\pi R$ (d) $15\ 2\pi R$

Q 3. A car covers the first half of the distance between two places at 40 kmph and the other half at 60 kmph. The average speed of the car is:

(a) 40 kmph (b) 48 kmph

(c) 50 kmph (d) 60 kmph

Q 4. A particle is constrained to move on a straight line path. It returns to the starting point after 10 sec. The total distance covered by the particle during this time is 30 m. Which of the following statements about the motion of the particle is false?

(a) Displacement of the particle is zero

(b) Average speed of the particle is 3 m/s

(c) Displacement of the particle is 30 m

(d) Average velocity of the particle is zero.

Q 5. A particle moves along a semicircle of radius 10m from A to B in 5 seconds. The average velocity of the particle is:

(a) $2\pi\ m/s$ (b) $4\pi\ m/s$

(c) $2\ m/s$ (d) $4\ m/s$

Q 6. A passenger travels along a straight line with velocity V_1 for first ha time and with velocity V_2 for next half time, then the mean speed v is give by –

(a) $v = v_1 + v_2\ ^2$ (b) $v = \sqrt{v_1 v_2}$

(c) $v = \sqrt{}\ v_2\ v_1$ (d) $2\ v = v_1 + v_2$

Q 7. A particle's position as a function of time is described as $y = 2t^2 + 3t + 4$. What is the average velocity of the particle from t 0 to $t = 3$ sec?

(a) 3 m/s (b) 6 m/s

(c) 9 m/s (d) 12 m/s

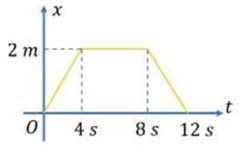
Q 8. Position-time graph of a particle is shown below. What is the averag velocity of the particle between the times $t = 0\ s$ to $t = 12\ s$?

(a) 1.33 m/s

(b) zero

(c) 12 m/s

(d) -01.33 m/s



Q 9. A dog walking to the right with a velocity of 1.5 m/s sees a cat and speeds up with a constant rightward acceleration of magnitude 12 m/s 2 . What is the velocity of the dog after speeding up for 3.0 m?

(a) 4 m/s (b) 8.6 m/s

(c) 12.6 m/s (d) 16.6 m/s

Q 10. A particle moving in straight line experience constant acceleration for 20 second after starting from rest. If it travel a distance S_1 in the first 10 seconds and distance S_2 in the next 10 seconds then find the relation between S_1 and S_2:

(a) $S_1 = 3S_2$ (b) $S1 = 3^2 S_2$

(c) $S_2 = 3S_1$ (d) $S2 = 3^2 S_1$

CHEMISTRY

1. A^+B^- and A^-B^+ can be formed from elements (A) and (B). Explain their formation based on relative value of (EN),(EA) and (IE).
2. Arrange the following compounds in order of their decreasing stabilities: HF,CCl_3,HBr,HI,HCl
   (Given EN values of elements as below)
   H=2.1,F=4,Cl=3.0,Br=2.8,I=2.3,N=3.0
3. Calculate the electronegativity of chlorine .Given the bond energies of Cl_2 =58Kcal/mole,F_2 =38 Kcal/mole and Cl-F =61 k cal/mole. Given electronegativity of fluorine is 4.0.
4. Ionisation potential and electron affinity of fluorine are 17.42 and 3.45eV respectively .calculate the electronegativity of fluorine on mulliken scale and Pauling scale .
5. Which is more electronegative in each pair?
   a) Ne or F b) F or Cl
6. Calculate electronegativity of carbon at pauling scales. Given that:
   E_{H-H}=104.2 kcal mol^{-1}
   E_{C-C}=83.1 kcal mol^{-1}
   E_{C-H}=98.8 kcal mol^{-1}
   Electronegativity of hydrogen =2.1
7. Electronegativity of F on pauling scale is 4.0 Calculate its value on mulliken scale
8. Four atoms are arbitrarily labelled D,E,F and G.Their electronegativity are as follows D=3.8 E= 3.3, F= 2.8 and G=1.3.If atoms of these elements form the molcules DE,DG,EG and DF, how would arrange these molecules in order of increasing covalent bond character?
9. Arrange the following oxides in order in order of increasing molecular (acidic) character
   SO_3,Cl_2O_7, CaO and PbO_2
10. Give the decreasing order of the basic properties of oxides.
    a) Tl_2O b) Al_2O_3 c) Tl_2O_3 D Ga_2O_3

BIOLOGY

1. An amino acid under certain conditions have both positive and negative charges simultaneously in the same molecule. Such a form of amino acid is called
   a) Acidic form Basic form
   b) Basic form
   c) Aromatic from
   d) Zwitter ionic form
2. Which of the following nucleotide is not present in the structure of DNA?
   a) Adenylic acid b) Thymidylic acid
   c) Guanylic acid d) Uridylic acid
3. Which of the following bond is present between the phosphate and hydroxyl group of sugar?
   a) Hydrogen bond b) Peptide bond
   c) Ester bond d) Glycosidic bond
4. A triglyceride has 3 fatty acids. The number of fatty acids in the phospholipid lecithin is
   a) 2 b) 0
   c) 3 d) 1
5. Following are the examples of secondary metabolites except one. Mark the except one
   a) Morphine b) Cellulose
   c) Carotenoids d) Cholesterol
6. The enormous diversity of proteins molecules is mainly due to the diversity of
   a) Peptide bonds b) R groups on amino acids
   c) Tertiary structure of protein
   d) Amino acid sequence of the protein
7. If a deoxyribose sugar is supplemented with oxygen at second carbon atom which one of these is formed?
   a) Maltose b) Galactose
   c) Ribose d) Ribulose
8. Type of linkage in amylopectin is / are
   a) $\alpha\ 1-4$ b) $\alpha\ 1-4, \alpha 1-6$
   c) $\beta\ 1-4$ d) $\beta 1-4, \beta 1-6$
9. Mark the odd one:

a) Adenylic acid b) Guanylic acid
c) Uridine Mono phosphate d) Aspartic acid

10. In secondary structure of protein molecules, the peptide chain attains a helical structure through the formation of
a) Peptide bonds b) Intramolecular ionic bond
c) Hydrogen bond d) Disulphide bond

MATH

1. The least value of 18 $\sin^2\theta$+ 2$\text{cosec}^2\theta$-3 is
a) -15 b) -12 c) 0 d) 9
2. If $\sin^4\alpha+\cos^4\beta + 2 = 4\sin\alpha cos\beta, 0 \leq \alpha, \beta \leq \frac{\pi}{2}$,then $(\sin\alpha + cos\beta)$ *is equal to*____
3. If $\tan\tan\theta - cot\theta = 7$, *then the value of* $\tan^3\theta - cot^3\theta$ *is*_
4. $\frac{sin\theta}{1-cot} + \frac{cos\theta}{1-tan\theta} =$
a) 0 b) 1 c)$\cos\theta - sin\theta$ d)$\cos\theta + sin\theta$
5. The value of $\frac{tan^2 20° - sin^2 20℃}{tan^2 20° . sin^2 20℃}$
a) 1/2 b)1 c) 2 d) None of these
6. If $\frac{sin^2x-2cos^2x+1}{sin^2x+2cos^2x-1}$=4 then the value of $2tan^2x$ is
a) 3 b)4 c)5 d)6
7. If $\tan\theta - cos\theta$=a and $\sin\theta + cos\theta$=b, then $(b^2-1)^2$ (a^2+4) is equal to
a) 2 -4 c)$\pm$4 d) 4
8. If $\frac{cos\alpha}{cosA} + \frac{Sin\alpha}{sinA} = \frac{cos\beta}{cosA} + \frac{sin\beta}{sinA} = 1$, where $\alpha \neq \beta$,then $\left|\frac{Cos\alpha Cos\beta}{cos^2A} + \frac{Sin\alpha sin\beta}{sin^2A}\right|$ =
9. The measure of the the angle subtended at the centre of a circle of radius 100 cm by an arc of length 22cm is
a) 12°36' b) 11°26' c) 13°16' d) 14°06'
10. In a circle of diameter 40 cm ,the length of a chord is 20 cm. then the length of minor arc of the chord is
a)$\frac{10\pi}{3}cm$ b) $\frac{20\pi}{3}cm$ c) $\frac{40\pi}{3}cm$ d) $\frac{25\pi}{4}cm$
a) $-1/\sqrt{3}$ b) $1/\sqrt{3}$ c) $-\sqrt{3}$ d) $\sqrt{3}$