AMITY INSTITUTE
FOR COMPETITIVE EXAMINATIONS

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AMITY FIVE YEARS CONCEPTUAL PROGRAMME

AFYCP WORKSHEET

"*An Insight* "

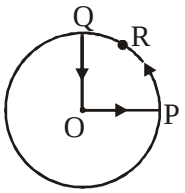
CLASS (IX)

Time: 1 hr ***Maximum Marks:* (4 × 30 = 120)**

LEVEL-I

(2 Question Physics, 2 Chemistry, 4 Maths, 2 Bio)

1. A cyclist starts from centre O of a circular park of radius 1 km and moves along the path OPRQO as shown in figure. If he maintains constant speed of 10 ms^{-1}. What is his acceleration at point R?



(a) 10 ms^{-2} (b) 0.1 ms^{-2}

(c) 0.01 ms^{-2} (d) 1 ms^{-2}

2. Read the given statements and mark the correct option.

Statement-1 : Acceleration and displacement are in the opposite directions during retardation.

Statement-2 : Acceleration is given as the change in velocity per unit time.

(a) Both statement 1 and statement 2 are true and statement 2 is the correct explanation of statement 1.

(b) Both statement 1 and statement 2 are true but statement 2 is not the correct explanation of statement 1.

(c) Statement 1 is true but statement 2 is false.

(d) Statement 1 is false but statement 2 is true.

3. To separate two miscible liquids by fractional distillation, it should have one of the following condition.

(a) should be miscible (b) difference in the boiling point should be less than 25 k

(c) should be immiscible (d) None of these

4. The density of water is maximum at

(a) 0°C(b) 100°C (c) 4°C (d) 273 K

5. If $a = 2+\sqrt{3}$, then $\left(a+\frac{1}{a}\right)^2$ is equal to

(a) 2 (b) 4 (c) 16 (d) 8

6. If $x^3 + 4x^2 + x - 6 = (x + 2)(x - 1)(x + k)$, where k is any real number, then k is equal to

(a) 1 (b) –3 (c) 3 (d) –2

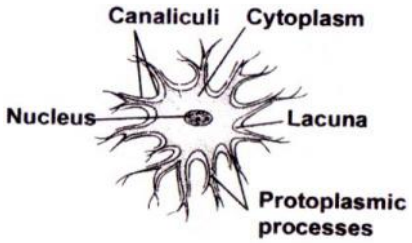
7. If $a + b + c = 6$ and $a^2 + b^2 + c^2 = 14$, then $ab + bc + ca$ is equal to

(a) 7 (b) 9 (c) 11 (d) 13

8. If $(16)^3 = (2)^m$, where m is a natural number, then m =

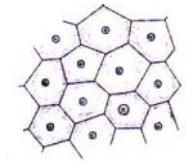
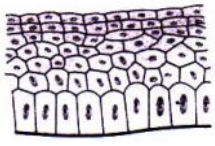
(a) 12 (b) 16 (c) 10 (d) 14

9. The given figure shows a type of cell from the human body. Which type of cell is it?



(a) Blood cell (b) Bone cell (c) Nerve cell (d) Muscle cell

10. Match Column-I with Column-II and select the correct option from the codes given below :

Column-I	**Column-II**
(A) 	(i) Blood vessels
(B) 	(ii) Parotid salivary glands
(C) 	(iii) Oesophagus
(D) 	(iv) Kidney tubules

(a) (A) - (i), (B) - (iv), (C) - (ii), (D) - (ii)
(b) (A) - (iii), (B) - (iv), (C) - (ii), (D) - (i)
(c) (A) - (i), (B) - (ii), (C) - (iii), (D) - (iv)
(d) (A) - (i), (B) - (ii), (C) - (iv), (D) - (iii)

LEVEL-II (Comprehension Segment)

(2 Question Physics, 2 Chemistry, 3 Maths, 1 Bio and 2 Mental Aptitude)

Read and answer the following questions :-

g at height $h = g\left(\frac{R}{R+h}\right)^2$, g at depth d = g (1 – d/R) where, R is radius of earth

1. At a place, value of 'g' is less by 1% than its value on the surface of the earth (Radius of Earth = 6400 km). The place is

   (a) 64 km below the surface of the earth

   (b) 64 km above the surface of the earth

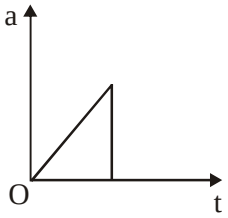
   (c) 30 km above the surface of the earth

   (d) 32 km below the surface of the earth

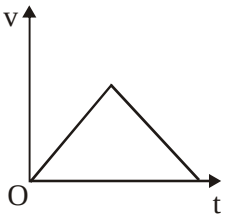
Read and answer the following questions :-

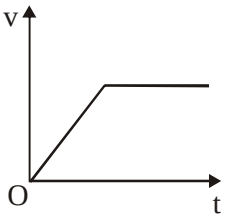
Slope of velocity time graph is acceleration.

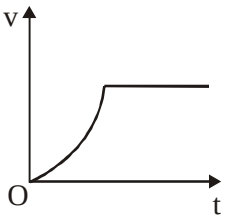
2. The acceleration-time graph for a body is shown in figure.

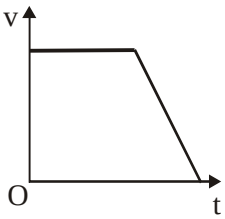


The most probable velocity-time graph for the body is

(a)


(b)


(c)


(d)


Read and answer the following questions :-

A colloid is a heterogeneous system consisting of two phases, namely, the dispersion medium and the dispersed phase. The dispersion medium is a continuous phase, where as the dispersed phase is a discontinuous phase. e.g. Fog, Milk, rubber etc.

3. Which of the following shows tyndal effects

   (a) Milk (b) Sugar solution

   (c) Starch solution (d) chalk powder + water

4. Which of the following is liquid - liquid solution

(a) face cream (b) emulsion (c) milk (d) all of these

5. Match Column-I with Column-II and select the correct option from the codes given below :

Column-I	**Column-II**
(A) IR-8	(i) Cow
(B) Shakti	(ii) Maize
(C) Gir	(iii) Fowl
(D) IBL-80	(iv) Mustard
(E) Kranti	(v) Rice

(a) (A) - (v), (B) - (ii), (C) - (i), (D) - (iii), (E) - (iv)

(b) (A) - (i), (B) - (ii), (C) - (v), (D) - (iii), (E) - (iv)

(c) (A) - (v), (B) - (iv), (C) - (ii), (D) - (i), (E) - (iii)

(d) (A) - (ii), (B) - (v), (C) - (iii), (D) - (i), (E) - (iv)

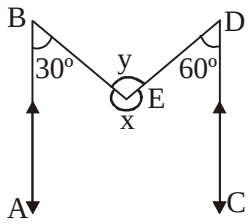
Read and answer the following questions :-

"If α and β are roots of $ax^2 + bx + c = 0$, then $ax^2 + bx + c = k(x-\alpha)(x-\beta)$, where a, b, c and k are real numbers, and $a \neq 0$."

6. If α, β and γ are zeroes of $ax^3 + bx^2 + cx + d$, then $\alpha\beta + \beta\gamma + \alpha\gamma$ is equal to

(a) $-\frac{b}{a}$ (b) $\frac{d}{a}$ (c) $\frac{c}{a}$ (d) $-\frac{d}{a}$

7. In the given figure AB||CD. The value of x – y is



(a) 150° (b) 270° (c) 210° (d) 180°

8. The distance between any two points A and B having coordinates (x_1, y_1) and (x_2, y_2) is calculated as $AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$. If the distance between the points (1, 3) and (4, x) is $\sqrt{13}$, then the value of x can be

(a) 5 (b) 6 (c) 4 (d) 2

9. From among the four alternatives given below, which number replaces the question mark?

4	5	= 13
2	5	

6	4	= 15
7	2	

9	3	= 18
4	5	

8	3	= ?
4	6	

(a) 11 (b) 14 (c) 16 (d) 17

10. Five horses are made to stand in a row. The total number of possible ways in which 5 horses can be arranged is

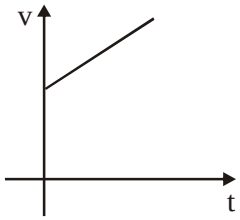
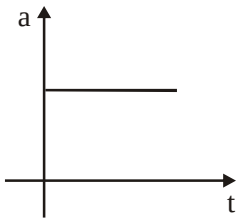
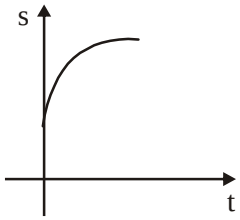
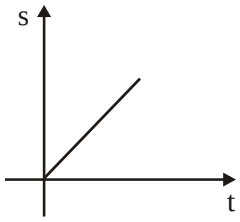
(a) 5 (b) 120 (c) 60 (d) 720

LEVEL-III (Read, Understand and Apply)

(1 Question Physics, 1 Chemistry, 3 Maths, 1 Bio, 2 Mental Aptitude, 1 SST based GK and 1 General Eng)

1. Slope of velocity time graph is acceleration. Slope of displacement time graph is velocity.

Match Column-I with Column-II and select the correct option from the codes given below :

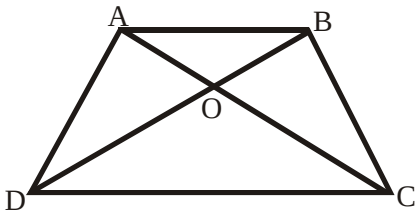
Column-I	**Column-II**
(A) Uniform velocity	(i) 
(B) Uniform acceleration	(ii) 
(C) Uniform retardation	(iii) 
(D) Uniform acceleration with initial velocity	(iv) 

(a) (A) - (i), (B) - (ii), (C) - (iii), (D) - (iv)
(b) (A) - (ii), (B) - (iv), (C) - (i), (D) - (iii)
(c) (A) - (iv), (B) - (ii), (C) - (iii), (D) - (i)
(d) (A) - (iii), (B) - (i), (C) - (iv), (D) - (ii)

2. A solution contains 20 g of common salt in 160 g of water. Calculate the concentration in terms of mass by mass percentage of the solution.

(a) 12.1%
(b) 11.5%
(c) 12.5%
(d) None of these

3. Which of the following results is always correct for the given figure?



(a) $AC + DB > \frac{2}{3}(AB + BC + CD + DA)$

(b) $AC + DB > 2(AB + BC + CD + DA)$

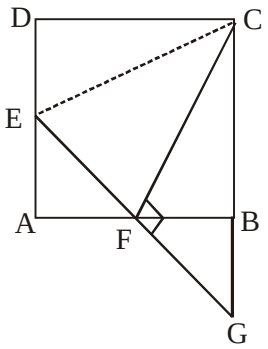
(c) $AC + DB > \frac{1}{2}(AB + BC + CD + DA)$

(d) $AC + DB > 4(AB + BC + CD + DA)$

4. Three cubes of side 2 cm each are joined end to end. The total surface area of the resultant shape so formed is

(a) 64 sq. cm (b) 50 sq. cm (c) 60 sq. cm (d) 56 sq. cm

5. In the given figure, ABCD is a square and F is the mid-point of AB. $EF \perp CF$ and meets CB produced at G. Which of the following results is always correct?



(a) CD = 2AB (b) CE = AB + AE (c) CE = 3CD (d) CE = EF + FG

6. Read the following statements (A-C) and select the option which correctly fills up the blanks in any two statements.

(A) ___(i)_____ nutrients are required in large quantity and called as _____(ii)_____.

(B) Kharif crops are cultivated from _____(iii)_____ to _____(iv)_____.

(C) Berseem is an important _____(v)_____crops.

(a) (i)-17, (ii)-Macronutrients, (iii)-June, (iv)-October

(b) (iii)-June, (iv)-October, (v)-Fodder

(c) (i)-3, (ii)-Macronutrients, (iv)-Fodder

(d) (iii)-November, (iv)-April, (v)-Rabi

7. The day on 29th December 1985 was

(a) Monday (b) Tuesday (c) Sunday (d) Saturday

8. If “A” and “C” can do a work in 6 days “A” and “B” can do that work in $\frac{10}{3}$ days and “B” and “C” can do the same work in $\frac{15}{4}$ days, then B alone can do the work in

(a) 4 days (b) 6 days (c) 8 days (d) 5 days

9. What is the world s largest office building?

10. Complete the text with the correct pair of words.

West side story is a good example of work_____ plot revolves around an _____romance. In the musical , two teenagers from rival gangs fall in love .

(a) whose, illicit (b) who’s, illicit

(c) whose, elicit (d) who’s, elicit

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