St. Lawrence High School

A Jesuit Christian Minority Institution

Term : 1st

Work Sheet – 5

Class – XI   Subject – Physics   Date – 19.06.20

Chapter – Motion in 1D   Topic –Integration

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Choose the correct option for the following questions. $1 \times 15 = 15$

1. Integrating $\int (5x^4 - 3)dx$, we will get –
   a. $x^5 + c$
   b. $x^5 - 3x + c$
   c. $\frac{x^5}{5} - 3x + c$
   d. *None of these*

2. $\int_{-\frac{\pi}{2}}^{5\pi} cos\theta \, d\theta =$
   a. 0
   b. 1
   c. – 1
   d. None of these

3. $\int_0^7 (4y^3 - 98y)dy =$
   a. 1
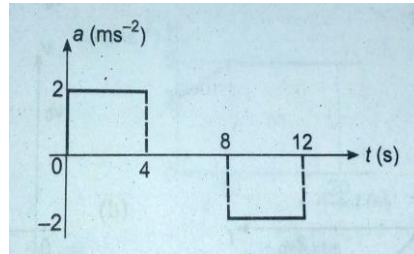   b. -1
   c. 0
   d. 49

4. $\int_0^2 (9t^2 - 3)dt =$
   a. 30
   b. 18
   c. 0
   d. None of these

5. $\int_0^\pi (sin\theta - cos\theta) \, d\theta =$
   a. -2
   b. $- 1$
   c. $+1$
   d. $+2$

6. A body starts moving with a velocity $v_0 = 10m/s$. It experiences a retardation equal to $0.2v^2$. Its velocity after 2s is given by –
   a. 2 m/s
   b. 4m/s
   c. – 2m/s
   d. 6 m/s

7. A lift starts from rest. Its acceleration is plotted against time. When it comes to rest its height above its starting point is –
   a. 20m
   b. 64m
   c. 32m
   d. 36m

8. Starting from rest, the acceleration of a particle is $a = 2t - 2$. The velocity of the particle at t = 5sec is –
   a. 15m/s
   b. 25m/s
   c. 5m/s
   d. None of these

9. From the given velocity time graph of a body, the distance travelled by the body and its displacement during 5 sec in metres will be –
   a. 75, 75
   b. 110, 70
   c. 110, 110
   d. 110, 40
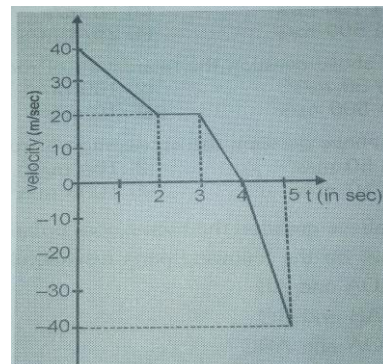
10. A rocket is launched upward from earth's surface whose velocity time graph is shown in the figure. The maximum height attained by the rocket is –
    a. 1km
    b. 10km
    c. 100km
    d. 60km
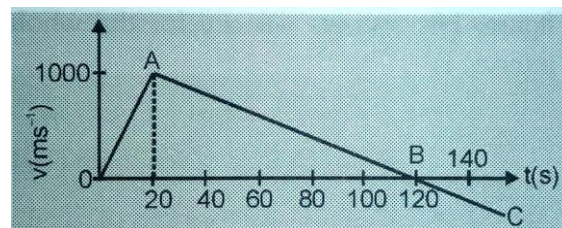
11. In the above question, the retardation of the rocket is –
    a. $50 \ m/s^2$
    b. $100 \ m/s^2$
    c. $500 m/s^2$
    d. $10 m/s^2$

12. In question number 10) , the acceleration of the rocket is –
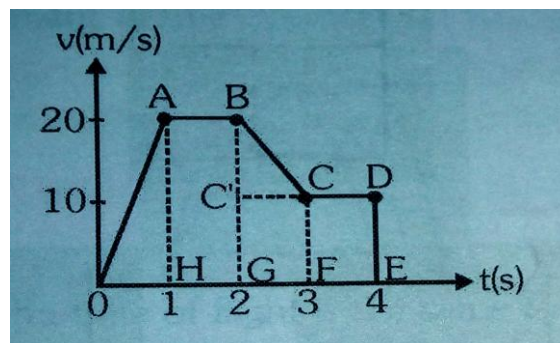   a. $50 \ m/s^2$
   b. $100 \ m/s^2$
   c. $10m/s^2$
   d. $1000m/s^2$

13. In question number 10) , the rocket goes up and comes down on the following parts relatively –
   a. OA and AB
   b. AB and BC
   c. OA and ABC
   d. OAB and BC

14. The variation of velocity of a particle moving along a straight line is shown in the figure. The distance travelled by the particle in 4 sec is –
   a. 60m

   b. 25m

   c. 55m

   d. 30m

15. A particle starts from res. Its acceleration at time t = 0 is $5m/s^2$ which varies with time as shown in the figure. The maximum velocity of the particle will be –
   a. 7.5 m/s
   b. 15 m/s
   c. 30 m/s
   d. 37.5 m/s
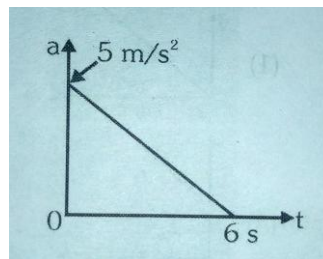
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