INDO ASIAN MEDICAL CONSULTANCY

ENGLISH

NEET UG SPECIAL CHAPTER WISE TEST

NKP-02

Q. Types : Easy	Moderate	Difficult	Total
Q. Number : 20	20	10	50
Max. Marks : 80	80	40	200

ALL INDIA TEST SERIES

TOPIC-MOTION IN 1D

Date	14/07/24
Time	50 minutes

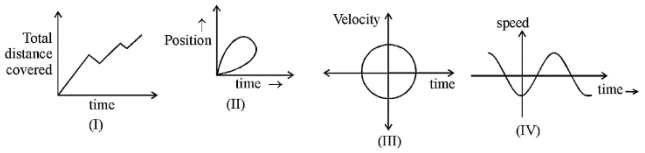
INSTRUCTIONS-

- This test is purely based on pattern of NEET(UG)-2025
- Before attempting the question paper ensure that it contains all the pages and no question is missing.
- The important points to note:
  - Each question carries 04 (four) marks and, for each correct answer candidate will get 04 (four) marks.
  - For each incorrect answer, 01 (one) mark will be deducted from the total score.
  - To answer a question, the candidate has to find, for each question, the correct answer/ best option.
  - However, after the process of the challenge of key, if more than one option is found to be correct then all/any one of the multiple correct/best options marked will be given four marks (+4).
  - Unanswered/Unattempted questions will be given no marks. In case, a question is dropped/ ignored, all candidates will be given four marks (+4) irrespective of the fact whether the question has been attempted or not attempted by the candidate.

OUR EXPERT AND RESPECTED TEACHERS

PHYSICS	ISHAN SIR , ANJALI MAM , GUDIYA MAM,NITIN SIR
CHEMISTRY	ASHUTOSH SIR, MAHEK MAM, HIMANSHU SIR
BIOLOGY	KAPIL SIR , NITIN SIR , PRASHANT SIR,MAHEK MAM

1. **Which of the following graphs cannot possibly represent one dimensional motion of a particle :-**



(a) I and II
(b) II and III
(c) II and IV
(d) All four

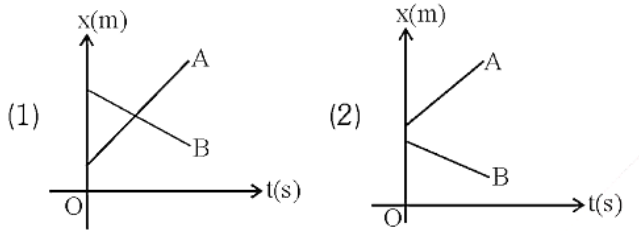
2. **A ball is thrown vertically upwards with a velocity of 45 ms^{-1} from the top of a multistorey building. The height of the point from where the ball is thrown is 50m from the ground. Ball will hit the ground after time (take g = 10ms^2) :-**

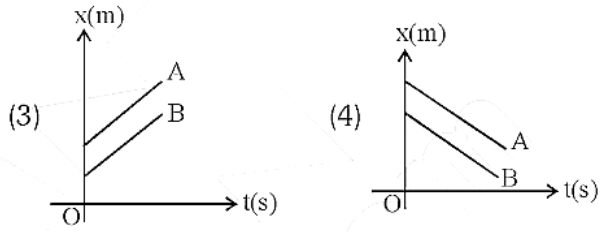
(a) 5 sec
(b) 8 sec
(c) 10 sec
(d) 12 sec

3. **A car covers a distance of 2 km in 2.5 minutes. If it covers half of the distance with speed 40 km/hr, then the rest distance it shall cover with a speed of :-**

(a) 56 km/hr
(b) 60 km/hr
(c) 48 km/hr
(d) 50 km/hr

4. **Which of the following position-time graphs represent two object having velocities in opposite directions and not meeting ever.**

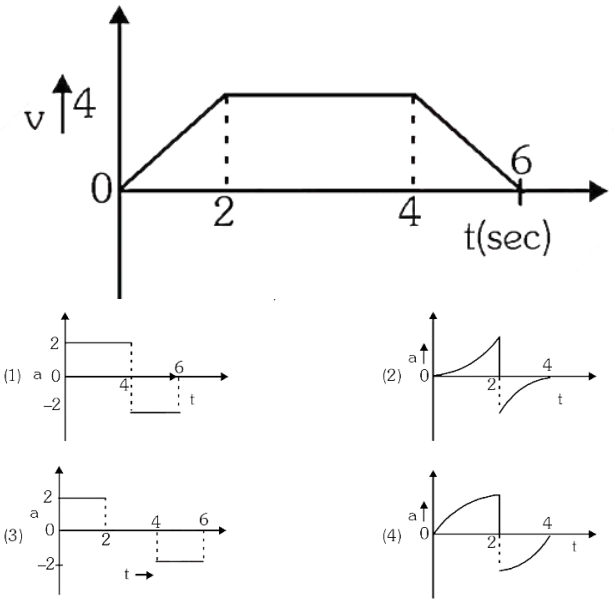




5. **Which of the following relation is not true-**

(a) |Instantaneous velocity| = Instantaneous speed
(b) | Average velocity | > Average speed
(c) |Displacement | ≤ Distance travelled
(d) Constant velocity means constant speed

6. **Convert the following graph into a-t graph**



7. **The position x of a particle varies with time as x = at^2 - bt^3. The acceleration at time t of the particle will be equal to zero where t is equal to-**

(a) $\frac{2a}{3b}$
(b) $\frac{a}{b}$
(c) $\frac{a}{3b}$
(d) Zero

8. **A vehicle travels half the distance l with speed v_1 and the other half with speed v_2 , then its average speed is**

(a) $\frac{v_1+v_2}{2}$
(b) $\frac{2v_1+v_2}{v_1+v_2}$
(c) $\frac{2v_1v_2}{v_1+v_2}$
(d) $\frac{l(v_1+v_2)}{v_1v_2}$

9. The velocity of a body depends on time according to the equation v = $\frac{t^2}{10}$+20. The body is undergoing

(a) uniform acceleration
(b) uniform retardation
(c) non-uniform acceleration
(d) zero acceleration

10. A particle moves along a straight line OX. At a time t (in seconds), the distance x = 40 + 12t - t^3. How long would the particle travel before coming to rest?

(a) 24 m
(b) 40 m
(c) 56 m
(d) 16 m

11. A stone is allowed to fall freely from rest. The ratio of the time taken to fall through the first metre and the second metre distance is

(a) √2-1
(b) √2+1
(c) √2
(d) None of these

12. A particle moves a distance x in time t according to equation x = $(t + 5)^{-1}$. The acceleration of particle is proportional to

(a) $(velocity)^{3/2}$
(b) $(distance)^2$
(c) $(distance)^{-2}$
(d) $(velocity)^{2/3}$

13. A body falling from a high Minaret travels 40 m in the last 2 seconds of its fall to ground. Height of Minaret in metre is (Take, g = 10 ms^{-2})

(a) 60
(b) 45
(c) 80
(d) 50

14. A man takes 3 h to cover a certain distance along the flow of river and takes 6 h to cover the same distance opposite to the flow of river. In how much time, he will cross this distance in still water?

(a) 3.5h
(b) 4h
(c) 4.5 h
(d) 5 h

15. A ball is dropped onto the floor from a height of 10 m. It rebounds to a height of 5 m. If the ball was in contact with the floor for 0.01 s, what was its average acceleration during contact? (Take, g = 10 ms^{-2})

(a) 2414 ms^{-2}
(b) 1735 ms^{-2}
(c) 3120 ms^{-2}
(d) 4105 ms^{-2}

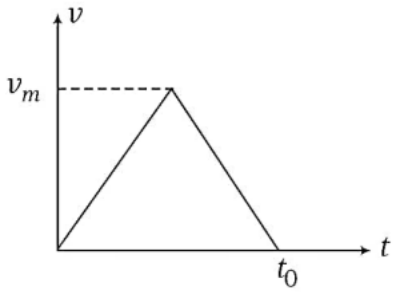
16. A particle moves along X-axis as x = 4(t - 2) + a $(t-2)^2$
Which of the following statement

a) The initial velocity of particle is 4.
b) The acceleration of particle is 2a.
c) The particle is at origin at t = 0
d) None of the above

17. Assertion: A lift is ascending with decreasing speed means acceleration of lift is downwards
Reason: A body always moves in the direction of its acceleration.

a) Both Assertion & Reason are correct, but reason is not the correct explanation of assertion.
b) Assertion is false, but Reason is true.
c) Assertion is true, but Reason is false.
d) Both Assertion & Reason are correct, and Reason is the correct explanation of assertion.

18. I. In the v-t diagram as shown in figure, average velocity between the interval t = 0 and t = t_0 is independent of t_0



II. Average velocity in the given interval is $\frac{1}{2}v_m$.
Which amongst the statement(s) is/are correct?

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

19. A lift is coming from 8th floor and is just about to reach 4th floor. Taking ground floor as origin and positive direction upwards for all quantities, which one of the following is correct?

a) x < 0 v < 0 a > 0
b) x > 0 v < 0 a < 0
c) x > 0 v < 0 a > 0
d) x > 0 v > 0 , a < 0

20. A particle moving along X-axis has acceleration f, at time t, given f = $f_0\left(1-\frac{t}{T}\right)$, where f_0 and T are constants. The particle at t = 0 has zero velocity. When f = 0, the particle's velocity (v_x) is

(a) $\frac{1}{2}f_0T$
(b) f_0T
(c) $\frac{1}{2}f_0T^2$
(d) f_0T^{-2}

21. A stone is dropped into a well in which the level of water is h below the top of the well. If v is velocity of sound, the time T after which the splash is heard is given by

(a) $T=\frac{2h}{v}$
(b) $T=\sqrt{\frac{2h}{g}}+\frac{h}{v}$
(c) $T=\sqrt{\frac{2h}{v}}+\frac{h}{g}$
(d) $T=\sqrt{\frac{h}{2g}}+\frac{2h}{v}$

22. A stone falls from a balloon that is descending at a uniform rate of 12 ms^1. The displacement of the stone from the point of release after 10 s is: (g = 10 m/s^2)

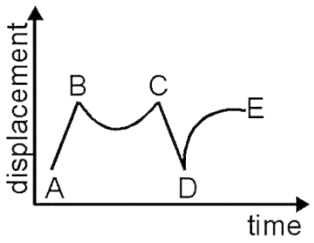
(a) 490 m
(b) 510 m
(c) 620 m
(d) 725 m

23. A train accelerates from rest at constant rate α for distance x_1 and time t_1 . After that is retards at constant rate β for distance x_2 and time t_2 and comes to the rest. Which of the following relation is correct :

(a) $\frac{x_1}{x_2}=\frac{\alpha}{\beta}=\frac{t_1}{t_2}$
(b) $\frac{x_1}{x_2}=\frac{\beta}{\alpha}=\frac{t_1}{t_2}$
(c) $\frac{x_1}{x_2}=\frac{\alpha}{\beta}=\frac{t_2}{t_1}$
(d) $\frac{x_1}{x_2}=\frac{\beta}{\alpha}=\frac{t_2}{t_1}$

24. Fig. shows the displacement of a particle going along x-axis as a function of time. The acceleration of the particle is zero in the region

(a) AB b) BC
c) CD d) DE



1) a, b
2) a, c
3) b, d
4) c, d

25. A rocket is fired vertically from the ground. It moves upwards with a constant acceleration 10 m/s² after 30 s the fuel is finished. After what time from the instant of firing the rocket will attain the maximum height? g = 10 m/s²:

(a) 30s
(b) 45s
(c) 60s
(d) 75s

26. If an iron ball and a wooden ball of the same radius are released from a height h in vacuum then time taken by both of them to reach ground will be:

(a) Unequal
(b) Exactly equal
(c) Roughly equal
(d) Zero

27. A body covers one-third of the distance with a velocity v_1 the second one-third of the distance with a velocity v_2 , and the last one-third of the distance with a velocity v_3. The average velocity is

(a) $\frac{v_1+v_2+v_3}{3}$

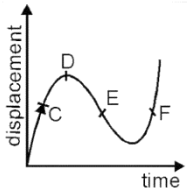
(b) $\frac{3v_1v_2v_3}{v_1v_2+v_2v_3+v_3v_1}$

(c) $\frac{v_1v_2+v_2v_3+v_3v_1}{3}$

(d) $\frac{v_1v_2v_3}{3}$

28. The displacement-time graph of a moving particle is shown. The instantaneous velocity of the particle is negative at the point:

(a) D
(b) F
(c) C
(d) E



29. Which of the following statements is false?

a) A body can have zero velocity and still be accelerated
b) A body can have a constant velocity and still have a varying speed
c) A body can have a constant speed and still have a varying velocity
d) The direction of the velocity of a body can change when its acceleration is constant.

30. A body starts from rest, what is the ratio of the distance travelled by the body during the 4th and 3rd second?

(a) $\frac{7}{5}$

(b) $\frac{5}{7}$

(c) $\frac{7}{3}$

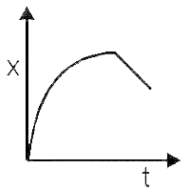
(d) $\frac{3}{7}$

31. A body is released from the top of the tower of height H. It takes t time to reach the ground. Where is the body t/2 time after release:

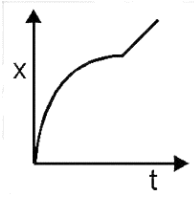
(a) At H/2 metres from the ground
(b) At H/4 metres from the ground
(c) At 3H/4 metres from the ground
(d) At H/6 metres from the ground

32. **A car starts from rest accelerates uniform by for 4 second and then moves with uniform velocity which of the x-t graph represent the motion of the car :**

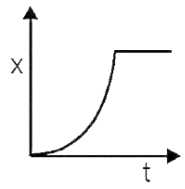
(a)



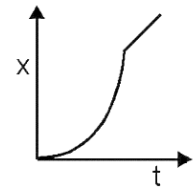
(b)



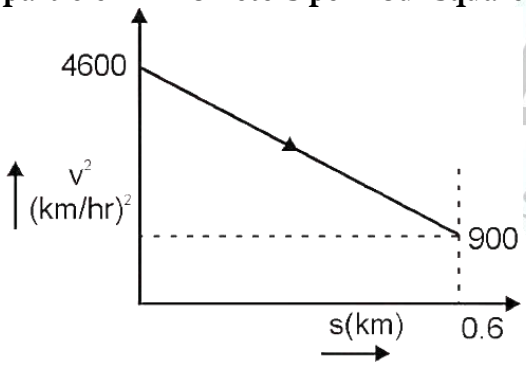
(c)



(d)



33. **A graph between the square of the velocity of a particle and the distance (s) moved is shown in figure. The acceleration of the particle in kilometers per hour square is:**



(a) 2250
(b) 3084
(c) -2250
(d) -3084

34. **A stone is thrown upwards with a speed 'u' from the top of the tower reaches the ground with a velocity '3u'. The height of the tower is:**

(a) $\frac{3u^2}{g}$
(b) $\frac{4u^2}{g}$
(c) $\frac{6u^2}{g}$
(d) $\frac{9u^2}{g}$

35. **Drops of water falls from the roof of a building 9m. high at regular intervals of time. When the first drop reaches the ground, at the same instant fourth drop starts to fall. What are the distances of the second and third drops from the roof:**

a) 6 m and 2 m
b) 6 m and 3 m
c) 4 m and 1 m
d) 4 m and 2 m

36. **A ball is thrown vertically upwards. Assuming the air resistance to be constant in magnitude and considerable**

a) the time of ascent ≥ the time of descent
b) the time of ascent < the time of descent
c) the time of ascent > the time of descent
d) the time of ascent = the time of descent

37. **A particle is thrown vertically upward. Its velocity at half of the height is 10m/s. The maximum height attained by it is (g=10 ms-²):**

(a) 8m
(b) 20m
(c) 10m
(d) 16m

38. **The position x of a particle with respect to time t along x-axis is given by $x= 9t^2-t^3$ where x is in metres and t in seconds. What will be the position of this particle when it achieves maximum speed along the + x direction**

(a) 24m
(b) 32m
(c) 54m
(d) 81m

39. **A bus is moving with a speed of 10 ms^{-1} on a straight road. A scooterist wishes to overtake the bus in 100 s. If the bus is at a distance of 1 km from the scooterist, with what speed should the scooterist chase the bus:**

(a) $10\ ms^{-1}$
(b) $20\ ms^{-1}$
(c) $40\ ms^{-1}$
(d) $25\ ms^{-1}$

40. A ball is dropped from a high rise platform at t = 0 starting from rest. After 6 seconds another ball is thrown downwards from the same platform with a speed v. The two balls meet at t = 18s What is the value of v? (take g = 10m/s^{-2})

(a) $60\ ms^{-1}$
(b) $75\ ms^{-1}$
(c) $55\ ms^{-1}$
(d) $40\ ms^{-1}$

41. A stone falls freely under gravity. It covers distance h_1, h_2 and h_3 in the first 5 seconds, the next 5 seconds and the next 5 seconds respectively. The relation between h_1, h_2 and h_3 is-

(a) $h_1 = h_2 = h_3$
(b) $h_1 = 2h_2 = 3h_3$
(c) $h_1 = \frac{h_2}{3} = \frac{h_3}{5}$
(d) $h_2 = 3\ h_1$ and $h_3 = 3\ h_2$

42. The coordinates of a moving particle at any time t are given by x =αt^3 and y =βt^3. The speed of the particle at time t is given by:

(a) $\sqrt{\alpha^2 + \beta^2}$
(b) $3t^2\sqrt{\alpha^2 + \beta^2}$
(c) $t^2\sqrt{\alpha^2 + \beta^2}$
(d) $\sqrt{\alpha^2 - \beta^2}$

43. A car, starting from rest, accelerates at the rate f through a distance S, then continues at constant speed for time t and then decelerates at the rate f/2 to come to rest. If the total distance travelled is 15S then:

(a) S=ft
(b) $S=\frac{1}{6}ft^2$
(c) $S=\frac{1}{72}ft^2$
(d) $\frac{1}{4}ft^2$

44. A particle is moving with velocity v=K(y$\hat{i}$+ x $\hat{j}$), where K is a constant. The general equation for its path is :

(a) $y=x^2+constant$
(b) $y^2=x+constant$
(c) $xy=constant$
(d) $y^2=x^2+constant$

45. Preeti reached the metro station and found that the escalator was not working. She walked up the stationary escalator in time t_1. On other days, if she remains stationary on the moving escalator, then the escalator takes her up in time t_2. The time taken by her to walk up on the moving escalator will be

(a) $\frac{t_1 t_2}{t_2 - t_1}$
(b) $\frac{t_1 t_2}{t_2 + t_1}$
(c) $t_1 - t_2$
(d) $\frac{t_2 + t_1}{2}$

46. A car starts moving along a line, first with acceleration a = 5 ms^{-2} starting from rest, then uniformly and finally decelerating at the same rate a and comes to rest. The total time of motion is 25 s. The average speed during the time is 20 ms^{-1}. How long does particle move uniformly?

(a) 10s
(b) 12s
(c) 20s
(d) 15s

47. A body moves for a total of nine second starting from rest with uniform acceleration and then with uniform retardation, which is twice the value of acceleration and then stops. The duration of uniform acceleration is

(a) 3s
(b) 4.5s
(c) 5s
(d) 6s

48. A body is thrown vertically up with a velocity u. It passes three points A, B and C in its upward journey with velocities $\frac{u}{2}$, $\frac{u}{3}$ and $\frac{u}{4}$ respectively. The ratio of the separations between points A and B and between B and C i.e. $\frac{AB}{BC}$ is

(a) 1
(b) 2
(c) $\frac{10}{7}$
(d) $\frac{20}{7}$

49. Let $r_1(t) = 3t\,\hat{i} + 4t^2\,\hat{j}$ and $r_2(t) = 4t^2\hat{i} + 3t\hat{j}$ represent the positions of particles 1 and 2, respectively, as function of time t, $r_1(t)$ and $r_2(t)$ are in metre and t in second. The relative speed of the two particles at the instant t = 1s will be

(a) 1m/s
(b) $3\sqrt{2}$ m/s
(c) $5\sqrt{2}$ m/s
(d) $7\sqrt{2}$ m/s

50. A particle of unit mass undergoes one dimensional motion such that its velocity varies according to v(x) = βx^{-2n}, where β and n are constants and x is the position of the particle. The acceleration of the particle as a function of x, is given by

(a) $-2n\beta^2 x^{-2n-1}$
(b) $-2n\beta^2 x^{-4n-1}$
(c) $-2\beta^2 x^{-2n+1}$
(d) $-2n\beta^2 x^{-4n+1}$

➢ **Answer key will be posted on our telegram channel ANWER KEY**
➢ **Video solution of the paper will be provided within 2-3 days of uploading, on our youtube channel VIDEO SOLUTION**
➢ **For guidance/mentorship – CLICK HERE**

IF ANY QUERY THEN CONTACT -- @MEDICO_NITIN , @KAPILIAMC