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Kinematics

EUEE questions

1. A projectile is fired at 60° with the horizontal. At the highest point of its path, the vertical component of its velocity is momentarily zero. What is the magnitude of its acceleration at this point?

A. 20m/s2
B. 10m/s2
C. 5m/s2
D. 0m/s2

2. A car accelerates steadily form 0 m/s to 30m/s in a distance d and a time t. Another car takes a time 3t to accelerate steadily from stationary to the same final velocity. What distance does the second car cover during the new acceleration?

A. 3d

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B. d
C. d/3
D. d/9

3. An object moving with uniform acceleration has a velocity of 12m/s in the positive x direction when its x coordinate is 3cm. In its x coordinate 2s later is – 4m, what is its acceleration?
A. -12m/s2
C. -16m/s2
B. -13m/s2
D. 12m/s2

4. The coordinate of a particle in meters is given by x(t) = 25t – 3t2, where the time t is in seconds. At what value t will the particle become momentarily at rest?
A. 2.78s
B. 1.67s
C. 0.6s
D. 0.36s

5. A rocket moving in free space has a speed of 3 x 103 relative to the Earth. Its engines are turned on, and fuel is ejected in a direction opposite the rocket's motion at a speed of 5 x 103 relative to the rocket. What is the speed of the rocket relative to the Earth once the rocket's mass is reduced to half its mass before ignition?
A. 7 x 103
B. 5 x 103
C. 4 x 103
D. 2 x 103

6. Two projectiles are fired from ground level at equal speed but different angles. One is fired at an angle of 30degrees and the other at 60 degrees. The projectile to hit the ground first will be the one fired at (neglect airresistance)
A. 60 degrees
C.. Both hit at the same time
B. 30 degrees
D. Cannot be determined from the given information

7. A body moving with constant acceleration covers the distance between to points 60m a part in 5s. its velocity as it passes the second point is 15m/s. what is the acceleration?
A. 3m/s2
B. 2.4m/s2
C. 1.8m/s2
D. 1.2m/s2

8. A placekicker must kick a football from a point which is at a distance of 36.0m from the goal. When kicked, the ball
leaves the ground with a speed of 20.0m/s at an angle of 53.0° to the horizontal. If the ball hits the crossbar of the
goal at a height h and bounces back what will be the height of the crossbar?
A. 2.45m B. 2.85m
C. 3.00m
D. 3.15

9. If a long distance jumper athlete leaves the ground at an angle of 37.0° above the horizontal surface at a speed of
10.0m/s, how far does he jump in the horizontal direction?
A. 4.8m

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B. 6m
C. 9.6m
D. 12m
10. A woman is rotating a bucket of water in a vertical circle of radius 0.9m. The mass of bucket and water is 5kg.
What is the bucket's minimum speed at the top of the circle if no water is to spill out?
A. 0
B. 1m/s
C. 3m/s
D. 9m/s
11. Which one of the following statements is correct?
A. An object moving toward the east cannot have an acceleration toward the west.
B. If the average velocity of an object for that time interval is also zero.
C. The velocity-time graph of an object moving with constant acceleration is parallel to the time axis.
D. An object having zero velocity can have acceleration different from zero.
12. A car travels along a straight line at a constant speed of 20m/s for a distance d and then another distance d in the
same direction at a constant speed of 36km/hr. what is the average speed for the entire trip?
A. 23km/h
B. 48km/h
C. 54km/h
D. 60km/h
13. An airplane travelled from Addis Ababa to Mekele, 780km, in 45 minutes. What was its average speed?
A. 0.28 m/sec
C. 17.3 m/min
B. 1040 km/hr
D. 585 km/hr
14. An example of a body moving with constant speed but still accelerating is:
A. A body moving on a straight road
C. A body moving in a circular path
B. A body moving on a straight railway rack
D. A body falling in a viscous fluid
15. A student moves along the boundary of a square field of side 10m in 40sec. If he started from one of the corners of the square what will be the magnitude of displacement of the student at the Kinematicss minutes and 20 seconds from his initial position?
A. 10m
B.10 radical 2 m
C. 40m
D. 30m

 # Practice questions

15 A boat can travel at a speed of 8 km/h in still water on a lake. In the flowing water of a stream, it can move at 8 km/h relative to the water in the stream. If the stream speed is 3 km/h, how fast can the boat move past a tree on the shore when it is traveling upstream?
A.5km/hr B. 16km/hr D. 11km/hr D. 3km/hr
16. A plane is traveling eastward at an airspeed of 6 km/h. But a 8 km/h wind is blowing southward. What are the speed of the plane relative to the ground?
A.14km/hr south of east. B. 8km/hr east of south

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C. 7km/hr south of east D. 10kmsouth of east.

17. A ball is dropped from rest at a height of 5m above the ground. How long does it take to reach the ground? A. 5m/s B. 100m/s C.20m/s D. 0.5m/s

18. A whiffle ball is tossed straight up, reaches a highest point, and falls back down. Air resistance is not negligible. which of the following statements are true?

I. The ball's speed is zero at the highest point.

II. The ball's acceleration is zero at the highest point.

III. The ball takes a longer time to travel up to the highest point than to fall back down.

(A) I only (B) II only (C) I & II only (D) I & III only

19. Is it possible for an object's velocity to increase while its acceleration decreases?

(A) No, because if acceleration is decreasing the object will be slowing down

(B) No, because velocity and acceleration must always be in the same direction

(C) Yes, an example would be a falling object near the surface of the moon

(D) Yes, an example would be a falling object in the presence of air resistance

#EUEE Questions

20. For an object moving in straight line,

A/ If the velocity increases by equal amount in equal time interval, the velocity-time graph is straight line with positive slope and the acceleration-time graph is horizontal/

B/ The slope displacement-time graph and the area of the region under the acceleration time graph are, respectively, the acceleration and velocity of the object/

C/ If the displacement changes by equal amount in equal time interval the displacement graph is horizontal line/

D/ The area of the region under the displacement-time graph and the slope of velocity-time graph are, respectively, the acceleration and displacement of the object/

21. A student throws a ball vertically upward with a speed of 20 m/s/ The maximum height reached by the ball and its velocity 3/0 s after it was thrown are, respectively.

A/ 20 m and 10 m/s downward/

C/ 15 m and 10 m/s downward/

B/ 20 m and 30 m/s upward/

D/ 105 m and 50 m/s upward/

22. A car is traveling at constant velocity along a straight line/ Which, statement is correct?

A/ The displacement of the car is in opposite direction/

B/ The displacement of the car increases linearly with time/

C/ The acceleration of the car is in the opposite direction/

D/ The net force on the car is different from zero/

23. Instantaneous velocity is different from the average velocity in that- instantaneous velocity is.

A/ In opposite direction to the displacement of the moving object/

B/ the velocity at a particular instant of time/

C/ the average velocity during the time of acceleration/

D/ the total displacement to the time taken/

24. A car traveling at 20 m/s starts to speed up/ After 5 minutes its speed is 144 m/s/ What is the acceleration of the car?

A/ 0/41 m/s2

C/ 0/55 m/s2

B/ 28/8 m/s2

D/ 24/8 m/s2

25. While going to school, a student travels 3 km, East and then 4 km, North in 2 hrs/ The magnitude

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of student's average velocity and average speed are, respectively.
A/ 2/5 km/hr and 3/5 km/hr
C/ 5 km/hr and 7 km/hr
B/ 2 km/hr and 7 km/hr
D/ 3/5 km/hr and 2/5 km/hr
26. A boy throws a ball vertically upward with an initial speed of 20 m/s/ Neglecting air resistance, which of the following is true about the motion of the ball?
A/ The time taken to reach the maximum height is 4s/
B/ Its velocity after 3s is 50 m/s, downward/
C/ Its maximum height is 20 m/
D/ Its velocity after 1s is 30 m/s, upward/1/
27. A driver of an automobile traveling at constant speed of 20 m/s suddenly applies a break and the automobile comes to rest in 2/0 seconds after skidding for a certain distance/ What is the length of the skid distance?
A/ 400 m
B/ 10 m
C/ 40m
D/ 20m
28. A race car is moving at constant speed of 35 m/s/ A security car was moving at a speed of 5 m/s as the car passes by it and was accelerating at constant rate of 5 m/s2/ What was the speed of the security car when it took over the race car?
A/ 35 m/s
B/ 60 m/s
C/ 65 m/s
D/ 5 m/s
29. A cricketer throws a ball vertically upwards with initial speed of 20 m/s/ how long is it in the air before it returns to the cricketer's hands?
A/ 2 s
B/ 10 s
C/ 5 s
D/ 4 s
30. An airplane traveled from Addis Ababa to Mekelle, 780 km, in 45 minutes/ What was its average speed?
A/ 0/28 m/sec
B/ 1040 km/hr
C/ 17/3 $m/mħn$
D/ 585 km/hr
31. An example of a body moving with constant speed but still accelerating is.
A/ A body moving on a straight road/
B/ A body moving on a straight railway track/
C/ A body moving in a circular path/
D/ A body falling in a viscous fluid/
32. Which one of the following statements is correct?
A/ An object moving toward the east cannot have an acceleration toward the west/
B/ If the average velocity of an object is zero in some time interval, the average speed of the object for that time interval is also zero/
C/ The velocity-time graph of an object moving with constant acceleration is parallel to the time axis/

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D/ An object having zero velocity can have acceleration different from zero/

33/ A car traveling along a straight line at constant speed of 20 m/s for a distance d and then another distance d in the same direction at constant speed of 36 km/hr/ what is the average speed for the entire trip?

A/ 23 km/h

B/ 48 km/h

C/ 54 km/h

D/ 60 km/h

#Practice questions

34. Which one of the following is WRONG about uniformly rectilinear motion?

A. The body covers equal distance in equal intervals of time.

B. The average and instantaneous velocities have the same magnitude.

C. The velocity of the body changes uniformly throughout the motion.

D. The velocity and the speed of the body have the same magnitude.

35. Two cars start to move at once from the same point in the same direction with a velocity of 20 m/s and 25 m/s. What is the separation distance between the cars after one minute?

A. 1200 m B. 1500 m

C. 300 m D. 2700 m

36. A car goes the first and the second half of its path at speeds of 12 m/s and 20 m/s, respectively, along a straight rod. What is the average speed for the whole trip?

A. 15 m/s B. 8 m/s C. 18 m/s D. 16 m/s

37. A body goes at 15 m/s for the first 8 sec and then a distance of 300 m at 25 m/s along a straight line. What is its average speed for the whole path?

A. 10 m/s B. 21 m/s C. 20 m/s D. 14 m/s

38. An object in space can have a:-

A. constant velocity even through its acceleration is non-zero.

B. constant velocity and still have varying speed.

C. zero velocity even though its acceleration is not zero.

D. constant speed even though its acceleration is non-zero.

39. A body initially moving at 4 m/s accelerates at the rate of 2 m/s2

. What is the average velocity of the body

during the first 5 sec of its motion?

A. 6 m/s B. 7 m/s C. 14 m/s D. 10 m/s

40. Initially moving at a speed 6 m/s along a straight road, a body attains a speed of 30 m/s in 12 sec. What is its

displacement during the 5th sec of its motion?

A. 40 m B. 55 m C. 95 m D. 15 m

41. Which one of the following is FALSE about the kinematics of a particle in space?

A. A body can have eastward velocity while having westward acceleration.

B. The direction of the velocity might change when its acceleration is constant.

C. There can be motion in two dimensions with an acceleration is only in one dimension.

D. The acceleration and velocity of a body have the same direction for decelerated motion.

42. The displacement of a particle along the x-direction as a function of time is given by $x(t) = 6t2 - t3$, where x is in meter and t s in second. What are the stopping time and stopping distance?

A. 2 s and 16 m B. 4 s and 32 m C. 8 s and 64 m D. 3 s and 24 m

43. The velocity of a uniformly accelerated object at time t = 2 s and then two seconds later are 20 m/s and

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28 m/s, respectively. What are its initial velocity and acceleration?
A. 12 m/s, 4 m/s2
B. 24 m/s, 8 m/s2
C. 24 m/s, 4 m/s2
D. 12 m/s, 8 m/s2

44. Consider the following two statements.
I. The magnitudes of the instantaneous velocity and instantaneous speed are the same.
II. The magnitudes of the average velocity and average speed are the same.
Which one of the following is always TRUE about the above two statements?
A. Both statements are correct.
C. Only statement 'I' is correct.
B. Neither statement is correct.
D. Only statement 'II' is correct.

#MODEL Questions

45. Which of the following statements is/are correct?
1. If speed of a body is varying, its velocity must be varying and it must have non-zero acceleration.
2. If velocity of a body is varying, its speed must be varying.
3. A body moving with varying velocity may have constant speed.
4. A body moving with varying speed may have constant velocity, if its direction of motion remains constant.
A. only 4 is correct
C. 3 and 4 are correct
B. 1 and 2 are correct
D. 1 and 3 are correct

46. In a projectile motion the horizontal velocity is constant. The best reason for this constant velocity motion is_____.
A. The acceleration of the body is zero
B. the air resistance is zero.
C. The velocity is zero.
D. The net horizontal force is zero.

47. At the same time two boys throw stones horizontally with different velocities from the same place. Which of the following statements is true?
A. The slower stone hits the ground first,
B. The faster stone hits the ground first.
C. Both stones hit the ground simultaneously
D. The stone with the greater mall will hit the ground first.

48. A golf ball is hit with a velocity of 30m/s at an angle of 600 above the horizontal. After it travels a horizontal distance of 50m, how high is it from the ground?
A. 4m
B. 42m
C. 25m
D. 18.6 m

49. When a wheel rotates about a fixed axis all point on the wheel have the same _____.
A.angular velocity
B.linear velocity
C.tangential acceleration

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D.all of the above

50.Two planets with equal mass are orbiting a star. Planet A is twice the distance from the star compared to Planet B. Due to Newton's law of universal gravitation, which of the following statement is true?

A. Planet A experiences a stronger gravitational force and orbits faster.

B. Planet B experiences a stronger gravitational force and orbits faster.

C. Both planets experience the same gravitational force and orbit at the same speed.

D. It depends on the composition of the planets, not just their mass.

If the Earth shrinks, what will the effective on the value of gravitational acceleration?

A. decrease

B. increase

C. become zero

D. become infinite

51. A girl can throw a stone to a maximum horizontal distance of 64m. If she throws the stone vertically upward with the same speed. What is the maximum height reached by the stone?

A. 64m

B. 32m

C. 16m

D.8m.

52. A, B, and C are three points on a straight line road with AB=40km and BC=90km. A woman travel from A to B at 10km/h and then B to C at 15km/h. What is the average speed of the woman for the journey from A to C?

A. 25km/h

B. 5km/h

C. 13km/h

D. 10km/h

53. Which one of the following quantity is constant, where a particle is undergoing in uniform circular motion with respect to a fixed axis of rotation?

A. Speed

B. Displacement

C. Velocity

D. acceleration

54. Which one of the quantity remains constant if a ball is moved along a parabolic trajectory/path through warm air? (Assume the effect of air resistance is neglected)

A. Horizontal component velocity of the ball

C. The velocities in both components of the ball

B. Vertical component velocity of the ball

D. Vertical component displacement of the ball

#EUEE Questions

55. Uniform circular motion is a:(UEE:2003)

A. Motion with constant velocity. C. motion with acceleration of constant magnitude.

B. Motion in one dimension. D. motion in which net force is constant

56. An object of mass m moving with initial speed of 15m/s got an acceleration of 10m/s2 after a constant force F is applied to it. How long does it take for the object to reach 90m from its initial position:(UEE:2003)

A. 3.22 s. B. 0.75 s. C. 3 s. D. 2.5 s

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57. A 4 kg block is given an initial speed of 8m/s at the bottom of 30degree inclined plane. The frictional force that retards its motion is 15 N. If the block directed up the inclined plane, how far will it move before it stops? (UEE: 2003).
A. 3.35m B. 3.66m. C. 4.40m. D. 4.67m.
58. A ball is thrown downward (not dropped) from the top of a tower. After being released, its downward: (UEE:2003)
A. Velocity will be uniform. C. Acceleration will be greater than g.
B. Acceleration will be equal to g. D. Acceleration will be smaller than g.
59. A small car and a bus move with velocities given by Vc = (3ˆ-2ˆ) m/s and Vb = (-5ˆ-4ˆ) m/s respectively according to an observer on the ground. What is the velocity of the bus according to a car driver? (UEE: 2003).
A. (-2iˆ+ 6jˆ) m/s. B. (-2iˆ-6jˆ) m/s. C. (-8iˆ+ 2jˆ) m/s. D. (-8iˆ-2jˆ) m/s.
60. A car initially at rest and at the origin has moved a distance of 5,10,15,20,25,30,40,50,60,70 meters during the 1, 2, 3,…10 seconds periods respectively. What is the average speed during the first 5 second and the second half period from t = 6 seconds to t = 10 second in m/s respectively? (UEE:2003)
A 4, 10 B. 4, 9. C. 5, 9. D. 5, 10
61. An athlete accelerates 1.9m/s2 for 2.2sec at the beginning of a race. What is the speed of the athlete at the end of a 300m race? (2002: EUEE)
A. 0. 86m/s
B. 1.16m/s
C) 4.18m/s
D. 9.20m/s
62. A body is rotating with a uniform speed of in a circle of radius 1m. What is the centripetal acceleration in m/s if it completes 12 rotations in 3 seconds? (2002: EUEE)
A.36π2
B) 64π2
C. 72π2
D. 144π2
63. If a car moves around a circular road of radius r at a constant speed. (2002: EUEE)
A. Its velocity changes and its acceleration is V^2/r
B. There is no force on the car since the speed is constant
C. There is no velocity change since the speed is constant
D. The force per unit mass on the car is towards the center and is
64. A car with an initial speed of 4m/s starts accelerating in a straight line at 3.2m/s for 10 seconds. If the brakes are then applied and it travels a further 20m before, what is itsacceleration? (2002: EUEE)
A. -48.6
B. 16.2
C. -8.1
D) -32.4
65. A ball rolls off the edge of the horizontal table top 4m high. .It strikes the floor at a point 5mhorizontally away from the edge of the table. How long was the ball in the air in seconds? (2002: EUEE)
A. 3/√5 B.1 √5 C. 2√3 D.2 √5
66. A boat is travelling at 15km/h with respect to the water of a river in the upstream direction. The water itself is flowing at 6km/h with respect to the ground. A child on the boat walks formrear seat to front seat at 5km/h with respect to the boat. What is the velocity of the boat? Whatare the velocities of the boat and the child in km/h with respect to the ground respectively? (2002: EUEE)

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A. 6, 12
B. 21, 12
C. 5, 9
D. 9, 14

67. In a 100m race Usain Bolt and Assefa Powel cross the finish line in a dead beat, both taking 10s. Accelerating uniformly, Usain Bolt takes 3s and Assefa Powel took 2s to attain maximum speed which they maintained for the rest of the race. What was the acceleration of Usain Bolt and Assefa Powel respectively? (2002: EUEE)
A. 4.32 m/s, 2.25 m/s
B. 4.92 m/s, 6.45 m/s
C. 3.92 m/s, 5.55 m/s
D.4.92m/s, 5.35 m/ss

68. The coordinate of the particle in meters is given by x (t) = 25t - 3t, where t in seconds. At what value of t will the particle momentarily at rest? (2005: EUEE)
A. 2.78s
B. 1.67s
C. 0.6s
D. 0.36s

69. A women deriving a 2000kg car along a level road at 30m/s takes her foot off the gas to see how far her car will roll before it slows to a stop .She covers that it takes 150m. What is the average force of friction acting on the car? (2005: EUEE)
A. 9000N
B. 6000N
C. 3000N
D. 400N

70. A deriver moving at a constant speed of 20m/s sees an accident up a head and hits the brakes .If The car decelerates at a constant arte of -5 m/s, how far does the car go before it comes to a stop? (2005: EUEE)
A. 120m
B. 100m
C. 40m
D. 20m

71. The planet Jupiter is about 318 times as massive as Earth, yet on its surface you would weighonly about 2.4 times your weight on Earth. Why is this happened? (2005: EUEE)
A. Your mass is 132.5 times less on Jupiter
B. you are 132.5 times more weightless there
C. Jupiter is significantly farther from the sun.
D. Jupiter's radius is about 11.5 times on the earth's surface

72. A rocket moving in free space has a speed of 3 x 103 m/s relative to the Earth .Its engine are turned on and fuel is ejected in a direction opposite the rockets motion at a speed of 5 x 103 m/s relative to the rocket. What is the speed of the rocket relative to the earth once the rocket's mass is reduced to half before ignition? (2005: EUEE)
A. 7 x 103 m/s
B. 4 x 103 m/s
C. 2 x 103 m/s
D. 5 x 103 m/s

#Practice Questions

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73. A particle starts from the origin, goes along the X-axis to the point (20 m, 0) and then returns along the same line to the point (–20 m, 0). Find the distance and displacement of the particle during the trip.

A. 20m and 60m B. 60m and 20m C. -20m and 60m D. 60m and -20m

74. The speed of a car as a function of time is shown in figure below. Find the distance travelled by the car in 8 seconds and its acceleration.

A. 80m, 2.5 m/s2

B. 64m, 2.5 m/s2

C. 50m, 2.5 m/s2

D. 100m, 2.5 m/s2

75. The acceleration of a cart started at t , varies with time as shown in figure below. Find the distance traveled in 30 seconds.

A. 250 m

B. 500 m

C. 1000 m

D. 300m

76. A ball is dropped from a height. If it takes 0.200 s to cross the last 6.00 m before hitting the ground, find the height from which it was dropped. Take g = 10 m/s

A. 42.05m

B. 84.1 m

C. 100m

D. 59.4 m

77. A car begins driving from a stationary position. It accelerates at 4 m/s2 for 10 seconds, and then travels at a steady speed for another 10 seconds, all in the same direction. How much distance has it covered since it started driving?

A. 400m B. 600m C. 200m D. 500m

78. A rocket traveling at 88 m/s is accelerated to 132 m/s over a 15 second interval. What is its displacement in this time?

A. 330 m B. 1650 m C. 1765 m D. 5000 m

79. What is the stopping distance for an automobile with an initial speed of 90 km/hr and human reaction time of 1.0 sec for an acceleration of -4.0 m/s?

A. 78 m B. 25 m C. 103 m D. 54 m

80. A ball is dropped from the top of a building 100m high and simultaneously another stone is thrown upwards with a velocity of 40 m/s from the bottom of the building. What is the time and position when they cross each other?

A. 2.5 s, 68.75 m B. 2 s, 60 m C. 2.2 s, 40m D. 3 s, 60m

81. A car A is traveling on a straight road with a uniform speed of Car B is following it with uniform velocity of 70km/h When the distance between them is 2.5 km, the car B is given a deceleration of 20km/h^2. At what distance and time will the car B catch up with car A?

A.1h B.½ h C.¼ h D. ⅛ h

82. A motorcyclist moves along a straight road with a constant acceleration of 4m/s2. If initially she was at a position of 5m and had a velocity of 3m/s, calculate the position and velocity at time t = 2s.

A. 11m, 11 m/s B. 19m, 11 m/s C. 15m, 11 m/s D. 11m,

83. Which one of the following physical quantities is constant in uniform circular motion?

A. Speed

C. Acceleration

B. Velocity

D. Force

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#PILOT Exam

84. What is the value of acceleration due to gravity at a height of 1000 km from the surface of the Earth?
A. 9.80 m/s
C. 9.71m/s
B. 10.00 m/s
D. 7.31m/s
85. Which one of the following types of motion represents a uniformly accelerated motion?
A. Free falling object
B. A mass attached on a spring oscillating on a smooth horizontal surface
C. A car moving along a curved path at a constant speed.
D. A car moving in a straight line with constantly increasing acceleration
86. Starting from rest, a car accelerated uniformly with 2.5 m/s. How much distance should it travel to attain a speed of 180 km/h in the direction of acceleration?
A. 5 km
C. 10km
B. 100 m
D. 50m
87. A race car starting from rest accelerated at a constant rate of 4m/s. What will be the velocity of the car after traveling a distance of 20 km?
A. 200 m/s
C. 200 m/s
B. 400 m/s
D. 400 m/s
88. A ball thrown horizontally with a speed of 5m/s from the top of a 20m high building hit the ground after a time t. what will be the horizontal distance from the base of the building to the point it hits the ground? (Neglect air resistance)
A. 10 m
C. 5 m
B. 50 m
D. 100 m
89. What is the difference between uniform and non-uniform circular motions?
A. Direction of the acceleration is constant in uniform circular motion but not in non-uniform circular motion.
B. Speed is constant in uniform circular motion but not in non-uniform circular motion.
C. The velocity of a body in a uniform circular motion is constant but not in non-uniform motion.
D. acceleration is zero in uniform circular motion but non-zero constant in non-uniform circular motion.
90. A ball is dropped from a building of height h. The kinetic energy of the ball (Neglect air resistance)
A. is maximum at its maximum height
B. just before it hits the ground is equal to its potential energy when it is dropped
C. and the potential energy of the ball are equal when it hits the ground
D. and the potential energies of the ball cannot be equal any time during the flight
91. What will be the acceleration due to gravity on the surface of the moon if its radius is ¼ th the radius of the earth and its mass is 1/8th the mass of the earth?
A) g/6
B)g/5

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C)g/7
D)g/8
92. The gravitational force between two objects that are 2 m apart is 3.2N. If the mass of one object is 60kg, what is the mass of the other object?
A. 0.32kg B. 32kg C. 16kg D. 8kg E. none
474. What is the orbiting speed of a satellite moving uniformly in a circular path at a height above the earth of 5000km?(G = 6.67x10-11Nm2/kg2, M= 6 kg)
A. 59km/s B. 5.9 m/s C. 5,900km/s D. 5.9m/s
93. The first man-made Earth's satellite launched in space is known as:
A. Explorer I B. Sputnik I C. Moon D. A and B
94. Which of the following is the largest, when the height attained by the projection is the greatest?
A. Time of flight B. Angle of projection C. range D. horizontal component of velocity
95. The range of projectile when launched at angle is the same as when launched at angle . What is the value of ?
A. 30 B. 60 C. 15 D. 45
96. At which angle of projection will the maximum height of projectile be obtained?
A. 30 B. 45 C. 60 D. 90
97. What object experiences uniform circular motion?
A) A car speeding up as it turns left
B) A car traveling around a curve at a constant speed
C) A car slowing down as it crests a tall hill
D) A car traveling down the road at a constant speed
98. For a particle projected at an angle of 45 , what will be the ratio of its range to the maximum height?
A. 1 : 4 B. 2:1 C. 1:3 D. 4:1
99. With what speed must an anti- aircraft be shot vertically upward in order to reach a maximum height of 2000m?
A. 2000m/s B. 200m/s C. 20m/s D. 2m/s E. none
100. A satellite is in orbit 35600 km above the surface of the Earth. Its angular velocity is 7.27 x 10-5 rad/s. What is the
velocity of the satellite? (The radius of the Earth is 6400 km.)
A. 3,053m/s B. 353m/s C. 3530m/s D.35m/s