A. Z. ALZAHRANI

1. Units and Measurements

The SI unit of the speed is

m.s

m/s

m^2/s

m/s^2

2.The density of element is defined as the mass per unit volume. If the mass is measured in Kg and the volume is measured in cubic metre, the unit of density is

m^3/kg

kg/m^3

$kg.m^3$

None

3.Using the dimension principle,the equation v=a/t (where v is the speed and t is time), is

correct?

incorrect?

4.During an examination, a student writes the equation $a=v^2/r$ (a is acceleration, v is speed, and r is distance). Is the equation right?

Yes

No

No enough information, sorry I cant answer

5.Using the dimension principle, what is the unit of the parameter (k) in the equation v=F.d/k, where v is speed, F is force, and d is distance

kg

m/s

kg.m/s

kg.s/m

6. How many significant digits in the number 9000

1

2

3

4

7. Which is the right sentence of the followings
Metre is one of the derived units
Speed is measured by the basic units
Length is the only basic unit
Kilogram is one of basic units

8. Newton is the unit of
acceleration
velocity
momentum
force

9. A square metre is the unit of
length
area
volume
force

10. Which of these is a unit of volume?
nanometre
milligram
cubic centimeters
squared metre

11. If the veocity of a particle is given by v=F.t/b, (v is speed, F is force, and t is time), the unit of b is
m/s
kg/m
kg
kg/s

12. Two men have a total mass of 170 kg, if one of them is 176 lbs, the other is
80 kg
80 lbs
90 kg
90 lbs

13. If the acceleration of a particle is given by a=F.t/b, (v is acceleration, F is force, and t is time) the unit of b is
m/s
kg/m
kg.s
kg/s

14. The SI unit of force is
kg.s/m
m/kg.s
kg.m/s^2
kg.s/m^2

15. The SI unit of the acceleration is
m/s^3
m/s
s/m^2
m/s^2

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2. Motion along a straight line

1. I travelled from Jeddah to my village (300 km south Jeddah) in 2.5 hr, my average speed is

100 km/hr

120 km/hr

140 km/hr

164 km/hr

2. The position of a ball thrown upward is given by the equation $y = 1.00 + 25.0t - 5.00t^2$ (SI units), the average velocity for the first 2.00s is

15 m/s

20 m/s

25 m/s

30 m/s

3. The position of a ball thrown upward is given by the equation $y = 1.00 + 25.0t - 5.00t^2$ (SI units), the velocity at t= 2.00s is

15 m/s

20 m/s

25 m/s

5 m/s

4. A car goes from zero to 120 km/hr in 8.00s. The average acceleration of the car is

15 km/hr

4.2 km/hr^2

4.2 m/s^2

4.2 m/s

4.2 km/hr^2

5. A ball is thrown vertically upward with 20 m/s, its acceleration after 1.2 s is

8.2 m/s^2

9.8 m/s^2

2.04 m/s^2

20.4 m/s^2

6. A stone is thrown vertically upwards with initial speed of 20 m/s, the maximum height the stone can reach is
9.8 m
20 m
20.4 m
19.6 m

7. A ball is thrown vertically upward with an initial speed of 19.6 m/s, the total time of flight is
2 s
4 s
6 s
8 s

8. A ball falls from a height of 44.1 m above the ground, the time taken to hit the ground is
1 s
2 s
3 s
4 s

9. A red ball is thrown vertically upwards with 20 m/s. One second later, a blue ball thrown upwards by 30 m/s. At what height above the ground will they meet? Assume g= 10 m/s^2
19.68 m
25.6 m
31.4 m
37.9 m

10. A car moves with constant speed of 40 km/hr, its speed after 0.5 hr is
20 km/hr
30 km/hr
40 km/hr
No enough data, acceleration is needed

11. A truck moves with a constant speed of 40 km/hr, suddenly driver applies break to stop the truck at a 15-m away pedestrian. What is the time for the

stopping?
2.0 s
0.74 s
2.7 s
5 s

12. A truck moves with a constant speed of 40 km/hr, suddenly the driver applies break to stop the truck at a 15-m away pedestrian. What is the magnitude of its deceleration?
2.11 m/s^2
4.12 m/s^2
6.6 m/s^2
0

13. Ali was driving his hilux on Makkah-Jeddah high way when he saw a police car. If he brake from 75 km/h to 45 km/h over a distance of 88m. What is the acceleration, assumed to be constant?
1.6 m/s^2
-1.6 m/s^2
Both are correct
None of them is correct

14. Khalid is at a 46-m high building and his physics professor, who is 1.8 m tall, is walking alongside the building at a constant speed of 1.2 m/s. If khalid wish to drop an egg on his professor's head, where should the professor be when he freely releases the egg?
3 m
3.6 m
4.2 m
4.8 m

15. Fahd, freely and vertically, drops a melon from the roof of a building. If he hears the sound of the melon going "splat" 2.5 seconds later, how high is the building (sound speed is 330 m/s).
30.5 m
28.5
26.5

24.5

16. A stone is thrown vertically upwards with initial speed v. Two seconds later, the position of the stone is 10 m above the ground. What is its initial speed, v?
9.90 m/s
14.8 m/s
5.00 m/s
2.50 m/s

17. A stone is freely droped downwards from a height h.Two seconds later, the position of the stone is 10 m above the ground. What is the height, h?
19.8 m
20.6 m
29.6 m
39.8 m

18. A car starts its motion from rest and accelerates uniformly with 2.25 m/s^2 for 20 s. After that, the car moves with constant speed for 40 sec. What is the total distance covered by the car in the one-minute trip?
2.50 km
250 m
2.25 km
225 m

19. The slope of the displacement-time curve represents
velocity
acceleration
speed
distance

20. The slope of the velocity-time curve represents
velocity
acceleration
speed
distance

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3. Vectors

1. Which one of the followings is not vector quantity?
speed
velocity
acceleration
force

2. Any scalar quanity has
magnitude and direction
magnitude only
direction only

3. If two vectors are perpendicular, then
their vector product is zero
their scalar product is zero
their resutant vector is zero
their subtracted vector is zero

4. Suppose that a = 2i - j + 5k. What is the magnitude of the vector a?
5.48
30
5.3
5.0

5. Suppose that a = i + 2j, b = i- j + k, and c = j + 3k. What is the magnitude of the vector 2a- b + c ?
41
5.37
6.4
3.8

6. Given that A = 3i + 2j - k, , the unit vector in the opposite direction to A is
0.27 (3i + 2j - k)
0.27 (3i - 2j - k)
-0.27 (3i + 2j - k)
-0.27 (3i + 2j + k)

7. Given that u = 2i + 2j and v = i - 3j + 2k, the unit vector in the direction of (u - 2v) is
8i - 4k
8j - 4k
0.1 (8i - 4k)
0.1 (8j - 4k)

8. Relative to the origin, point P has position vector u and Q has position vector v. The vector QP is
u - v
v - u
-u - v
u + v

9. Relative to the origin, point A has position vector i - j + 3k and B has position vector 2i + j - 2k, the magnitude of the vectore AB is
i + 2j - 5k
2i + k
5.5
30

10. Ali walks 5 km south-east then 3 km due west. Approximately how far from its starting position is Ali now ?
3.6
4.5
7
8

11. Ali and Ahmad are both pushing on a box. Ali pushed the box first 12.0m east, while Ahmad pushed it after 5.0m north. What is the magnitude of the displacment?
19m
13m
7m
5m

12. If a = 2i+3j, b = –3i+2j and c = 2i–j, which of the following vectors is parallel to the resultant of a, b and c,
–2i – 6j
2i + 8j
2i - 8j
-2i + 8j

13. If a = i + j and b = i – j, for which of the following values of k is the vector (ka + b) parallel to c = 3i – j?
0.25
0.50
-0.25
-0.50

14. If u = –2i + 4j, v = 3i + 2j, w = 4i + 6j then |u + v + w| is
15
13
5i + 12j
12i + 5j

15. a = i + j and b = i – j, for which of the following values of k is the vector (ka + b) normal to c = 3i – j?
-1
1
-2
2

16. If vectors A and B are parallel, then
their cross product is zero
their scalar product is zero
their resultant vector is zero
their subtracted vector is zero

17. For two vectors, A and B, |A + B|=5 units and |A - B|=3 units, the magnitude of vector A if the magnitude of B is 2, is
4
5.1

5.5
3

18. Ali walks 53.1 degrees north of east for 2.5km then due east for 2.0km. What is Ali's total displacement from his starting point?
3km
4km
5km
6km

19. Consider vectors a and b such that |a| = 11, |b| = 23, and |a – b| = 30. Find |a + b|
20
12
33
3

20. The angle that the vector, A=2i -j +3k, makes with the positive y-axis is
67.5
88.5
105.5
74.5

21. If |a + b| = |a - b|, then
|a|=0
|b|=0
|a x b|=0 (cross product is zero)
a . b=0 (scalar product is zero)

22. If A= i - j + 3k and B= 2i + j - 2k, the angle between A and B is
59.8
70.4
99.6
120.2

23. If A= i - j + 3k and B= 2i + j - 2k, the vector C that is normal to both is
C= i - j + 3k
C= 2i + j - 2k

C= 3i + k
C= -i + 8j + 3k

24. If A= i - j + 3k, B= 2i + j - 2k, and C= ai + 2k, the value of a that makes A, B, and C planar is
4
5
6
7

25. A and B are two vectors in xy plane. If A=2i - 4j and the x-component of B is 2.5, what is the y-component of B that makes A and B perpendicular?
1.0
1.25
1.5
2.0

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4. Motion in 2 and 3 dimensions

1. At the maximum height of a projectile, what of the followings is correct?
Its velocity is zero
Its y-component velocity is zero
Its x-component velocity is zero
Its acceleration is zero

2. To have the maximum range, a projectile must be launched at an angle of
25
35
45
60

3. Ignoring air resistance, the acceleration of any projectile along the x-direction is (SI units)
9.8
0
varied from one to another
less than zero

4. Ignoring air resistance, the acceleration of any projectile along the y-direction is (SI units)
9.8
0
varied from one to another
less than zero

5. A projectile is fired at an angle of 30 above the horizontal with an initial speed of v. If the maximum range it reaches is 140 m, what its initial speed?
20 m/s
40 m/s
60 m/s
80 m/s

6. A projectile is fired with an angle Q above the horizontal. It takes 15 s to reach its range of 135 m. What is its speed at the highest point?
9 m/s
10 m/s
11 m/s
12 m/s

7. A projectile is fired horizontally from a height of 100 m above the ground. If it takes 2 sec to hit the ground, what is its initial speed?
20.2 m/s
30.2 m/s
40.2 m/s
50.2 m/s

8. A projectile is fired horizontally from a building of height of 100 m above the ground. If it hits the ground at a point 20 m away from the edge of the building, what is its initial speed?
4.4 m/s
6.4 m/s
8.4 m/s
10 m/s

9. A projectile is fired with initial speed of v at an angle Q above the horizontal. ITwo seconds later, the velocity of the projectile is determined to be v(t)=18.2 i - 11.15 j (m/s). What is its initial speed ?
20 m/s
30 m/s
40 m/s
50 m/s

10. A projectile is fired with initial speed of v at an angle Q above the horizontal. Two seconds later, the velocity of the projectile is determined to be v(t)=18.2 i - 11.15 j (m/s). What is angle Q ?
15
25
35
45