



mechanic mid term revision

Qena Student Club





1- Two stones are projected from the same point with same speed making angles $45^\circ + \theta$ and $45^\circ - \theta$ with the horizontal, respectively. If $\theta < 45^\circ$, then the horizontal ranges of the two stones are in the ratio of ?

A- 1:1

B- 1:2

C- 1:3

D- 1:4

Answer is : A

2- Three balls of same masses are projected with equal speeds at angles 15° , 45° , 75° and their ranges are respectively R_1 , R_2 and R_3 , then ?

A- $R_1 > R_2 > R_3$

B- $R_1 < R_2 < R_3$

C- $R_1 = R_2 = R_3$

D- $R_1 = R_3 < R_2$

Answer is : D



3- Two stones are projected with same velocity v at an angle θ and $90^\circ-\theta$. If H and H_1 are greatest heights in the two paths, what is the relation between R , H and H_1 ?

A- $R = 4\sqrt{HH_1}$

B- $R = \sqrt{HH_1}$

C- $R = 4HH_1$

D- None of these

Answer is : A

4- A baseball is thrown horizontally from a cliff. At the same instant, a bowling ball is dropped from the same height. Assuming air resistance can be ignored, which of the following statements is correct?

A- The bowling ball hits the ground first

B- Both the bowling ball and the baseball hit the ground at the same time.

C- The baseball has the greater acceleration just before it hit the ground

D- The bowling ball has the greater velocity just before it hit the ground

Answer is :B

5- The velocity of projection of a projectile is given by $\vec{u} = 5\hat{i} + 10\hat{j}$ Find the approximated time of flight ?

A- 2

B- 3

C- 5

D- 10

Answer is :A

6- A particle is projected horizontally the angle of projection to maximum range is

A- 90

B- 60

C- 45

D- 30

Answer is: C



7- Two forces of magnitude 6 and F N, act on a particle, if the resultant bisect the angle between them, then $F=.....$ Newton



A- 12

B- 6

C- 8

D- 10

Answer is :B

8-If the initial speed of a projectile is doubled

A- its range will double

B- Its range will be decreased by a factor of two

C- Its range will quadruple

D- its range will decrease by factor of four

Answer is : C



9- You stand on a cliff 30 m high You throw a rock off the cliff . The rock is thrown straight up at 10m/s calculate the time of flight as the rock strikes the ground at the bottom of cliff

A- 3.7

B- 2.3

C- 1.6

D- 2.5

Answer is : A

10-the components of a force 150 Newton into two direction inclined at angle of 45 and 30 with the force are

A- 77.63 N ,105.78 N

B -78.63 N ,109.78 N

C- 79.63 N ,110.78

D- 77.63 N , 109.78 N

Answer is : D



11- A particle is projected horizontally. The angle of projection to get the maximum range is

A- 90

B- 60

C- 45

D- 30

Answer is : C

12- A ball is projected with a velocity 28 m/s. if the range of ball in horizontal plane is 64 m the two possible angle for the projection are And

A- 26.57 , 63.44

B- 53.13 , 126.87

C- 26.57 , 126.87

D- 53.13 , 63.44

Answer is : A



13- A bullet with fired at velocity 100 m/s and angle 45 with horizontal how high the bullet will rise ?

A- 353.55m

B- 500m

C- 250m

D- 707.1m

Answer is : C

14- Two forces of magnitudes F1 newton and F2 newton act on a particle. If their resultant bisects the angle between the two forces, then.....

A- $F_1 > F_2$

B- $F_1 < F_2$

C- $F_1 = F_2$

D- $F_1 = 2F_2$

Answer is : C



15- The magnitude of the resultant of two equal forces is equal to the magnitude of either forces. What is the angle between the two forces?

- A- 60**
- B- 90**
- C- 120**
- D- 150**

Answer is : C

16- Two forces of magnitude 5N and 10N act on a wooden block. If 5N force acts towards right and 10N force acts towards left, which of the following statements is correct?

- A- Resultant force is 15N towards left.**
- B- Resultant force is 15N towards right.**
- C- Resultant force is 5N towards left.**
- D- Resultant force is 5N towards right.**

Answer is : C



17- If the sum of all the forces acting on a body is zero, it may be concluded that the body.....

A- Must be in equilibrium.

B- Cannot be in equilibrium.

C- May be in equilibrium provided the forces are concurrent.

D- May be in equilibrium provided the forces are parallel.

Answer is : A

18- Two perpendicular forces of magnitude 6 and 8 N, act on a particle, then the magnitude of their resultant=..... Newton

A- 20

B- 14

C- 10

D- 8

Answer is : C



19- The sum of magnitudes of two forces acting at a point is 16N. if the resultant force is 8N and its direction is perpendicular to the smaller force , then the forces are

A- 6N and 10N

B- 8n and 8N

C- 4N and 12N

D- 2N and 14N

Answer is : A

20-Two forces of magnitude F_1 , F_2 act at a particle, the magnitude of their resultant is R newton where $8 \leq R \leq 12$, then: $F_1 = \dots$ Newton , $F_2 = \dots$ Newton. Given that $F_1 < F_2$.

A- 2,10

B- 8,12

C- 6,8

D- 8,10

Answer is : D



21- .The sum of the magnitudes of two forces acting at a point is 16 N, the resultant of these forces has a magnitude of 8 N and is perpendicular to the smaller force. Find the magnitude of the smaller force.

A- 4N

B- 5N

C- 6N

D- 7N

Answer is : A

22- force of magnitude 6 Newton acts in direction of North. It is resolved into two perpendicular components, so its component in direction of the East equals Newton.

A- 6

B- $6\sqrt{2}$

C- 0

D- -6

Answer is : C

23- The minimum number of vectors of unequal magnitudes which can give zero resultant are.....

- A- Two**
- B- Three**
- C- Four**
- D- More than four**



Answer is : B

24- Two forces of magnitudes 25 and 85 newton acting on a body form an angle of 55° , then the magnitude of their resultant =..... Newton approximated to the nearest hundredth, and measure of the angle formed between the resultant and larger force=..... To the nearest degree.

110.43 , 13°

101.43 , 12°

101.15 , 28°

110.24 , 11°

Answer is :



25- Two forces of magnitudes 25 and 85 newton acting on a body form an angle of 55° , then the magnitude of their resultant =..... Newton approximated to the nearest hundredth, and measure of the angle formed between the resultant and larger force=..... To the nearest degree.

A- 110.43 , 13°

B- 101.43 , 12°

C- 101.15 , 28°

D- 110.24 , 11°

Answer is : B

26-A helicopte of mass 3 ton ,moving vertically upwards with uniform acceleration $4 \frac{9}{30} \text{ m/sec}^2$ if the resistance of air 0 . 5 ton .wt pear each ton of its mass ,the force helicopter

A- 14700 N

B- 4900 Kg .wt

C- 5000 to N.wt

D- 5 ton.wt

Answer is : D



27- If the sum of all the forces acting on a body is zero, it may be concluded that the body

A- Must be in equilibrium

B- Cannot be in equilibrium

C- May be in equilibrium provided the forces are concurrent

D- May be in equilibrium provided the forces are parallel

Answer is : A

28- A bullet of mass 3 gm is fired horizontally to wards a wooden target of 50 Thick with velocity 42m/sec and resistance 5.8 kg.wt then the velocity of bullet come out= -----m/sec

A- 57.72

B- 14

C- 40.04

D- 28

Answer is : B