(A) جامعة الملك عبد العزيز/ كلية العلوم/ قسم الفيزياء

الدوري الثاني/ زمن الاختبار ساعة و نصف 1431/1/14هـ

1- In the projectile motion, the y-component of the velocity at the maximum height is:
(a)Zero (b) constant (c) the maximum value (d) Negative

2- In the projectile motion, the x-component of the velocity is:
(a) $v_0 \sin\theta$ (b) $-v_0 \sin\theta$ (c) $v_0 \cos\theta$ (d) $-v_0 \tan\theta$

3- In the projectile motion, the angle for the maximum range is:
(a)$90^0$ (b) $75^0$ (c) $180^0$ (d) $45^0$

4- In the projectile motion, the maximum range is:
(a) $\frac{v_0^2}{g}(\cos 2\theta)$ (b) $\frac{v_0^2}{g}$ (c) $\frac{v_0}{g}$ (d) $\frac{v_0^2}{g}(\cos\theta)^2$

5-A body move with a velocity $\vec{v} = 2\hat{i} - 3\hat{j}\ \ m/s$ and acceleration $\vec{a} = 2\hat{i} + \hat{j}\ \ m/s^2$ .The velocity after 2s (in SI unit) is:
(a) $\vec{v} = 6\hat{i} - \hat{j}$ (b) $\vec{v} = 6\hat{i} + \hat{j}$ (c) $\vec{v} = -6\hat{i} - \hat{j}$ (d) $\vec{v} = +6\hat{i} + \hat{j}$

6-A ball is thrown with a velocity of 15 m/s at an angle of $30^0$. The y-component of the velocity is :
(a)30 m/s (b) 7.5 m/s (c)15 m/s (d) 13m/s

7- In question (6), the x-component of the velocity is:
(a)30 m/s (b) 7.5 m/s (c)15 m/s (d) 13m/s

8- In question (6), the maximum height is :
(a)2870m (b)287m (c)2.87 m (d) 28.7 m

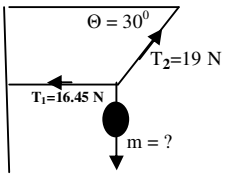
9- In question (6), the range is:
(a) 19.88 m (b)198.8 m (c) 1988 m (d) 1.988 m

10- In question (6), the time of flight is:
(a)0.015 s (b)0.15 s (c) 15 s (d) 1.5 s

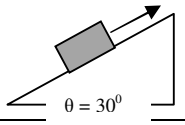
11- A boy hold a rope of 30 cm long, from one end and the other end a stone, he rotate the stone in a horizontal circle with speed of 3 m/s. The acceleration of the stone is:
(a) 0.03 m/s$^2$ (b) 30 m/s$^2$ (c)3.0 m/s$^2$ (d) 300 m/s$^2$

12- A man stand on the ground level, if his mass is 80 kg, his weight is:
(a) 7.84 N (b)784 N (c) 78.4 N (d)7840 N

13- A body of mass m, is hung by the ropes, at equilibrium, as shown in the figure.
The value of mass is:
(a) 950 kg (b) 0.97 kg (c) 9.5 kg (d) 95 kg

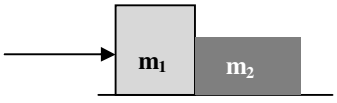



14- The force needed to keep the mass (m=20 kg) at rest , as shown in the figure, the force is:
(a) 98 N (b)980 N (c)9.8 N (d)0.98 N



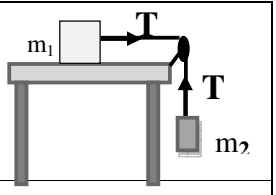

15- In question (14), the normal force on the body is:
(a) 1.69 N (b) 10.0 N (c) 16.97 N (d) 169.7 N

16- From the figure $m_1$=20kg and $m_2$ =10 kg. The force acting to accelerate the two bodies by 2 m/s$^2$, the force is:
(a) 60 N (b) 6.0 N (c)600 N (d)0.06 N



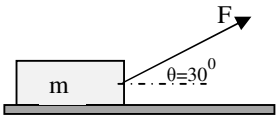

17- A racing car of mass 600 kg moves is decelerated by 4.5 m/s$^2$ using the brakes, the frictional force is:
(a) 225 N (b)0.225 N (c)2700 N (d) 2.25 N

18- In the figure shown, if $m_1$=5kg and the system move with acceleration of 2 m/s$^2$ and the tension in the rope was 10 N. The value of $m_2$ is:
(a)2.5 kg (b)1.28 kg (c)8.0 kg (d)50 kg



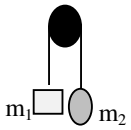

19- In question (18), the normal force on the $m_1$ is:
(a) 0.49 N (b) 490 N (c) 4.9 N (d) 49 N

20- A block of mass 10 kg, was pulled by a force 30 N, the block was going with a constant speed (as shown in the figure) on a rough surface. The friction force is:
(a)25.98 N (b)259.8 N (c) 2.598 N (d) 0.2598N




21- A space satellite moves in a circular orbit around the earth, at altitude of 530 km and with speed of 8.2 km/s. The acceleration of the satellite is: ( the earth radius $6.37\times10^6$m)
(a) 0.974 m/s$^2$ (b)3 m/s$^2$ (c)9.74 m/s$^2$ (d)5.5 m/s$^2$

22- In the figure shown two bodies are hung by a rope over a frictionless pulley.
If $m_1$=3 kg and $m_2$= 1.5 kg. the acceleration of the two bodes is:
(a) 2.7 m/s$^2$ (b) 0.327 m/s$^2$ (c) 7.27 m/s$^2$ (d)3.27 m/s$^2$




23- Two boxes $m_1$=10 kg and $m_2$=15 kg, the gravitational force on $m_2$ is
(a)25 N (b)245 N (c)2450 N (d)5 N

24- In question 23, the gravitational force on $m_1$ is:
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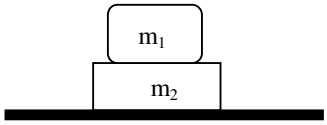


25- A man of mass 80 kg stand on elevator, if the elevator is going upward with acceleration of 2 m/s$^2$, the apparent weight of the man is:
(a)944 N (b)80 N (c)44 N (d)9.8 N

26- In question (25), if the elevator is going with constant velocity 5 m/s, the weight of the man is:
(a) 80 N (b)7.84 N (c)784 N (d)78.4 N

27- A box stands on rough incline plane of $30^0$, when just about to move, the static coefficient of friction is:
(a) 1.00 (b) 5.8 (c) Zero (c) 0.58

28- A box stands on rough incline plane of θ, the box is moving with a constant velocity, the frictional force is:
(a) mg sin θ (b) mg tan θ (c) mg cos θ (d) mg

29- A box of mass 5 kg is sliding down with a constant velocity on a rough incline surface at an angle $20^0$ with the horizontal. The kinetic friction coefficient is:
(a) 0.1 (b) 2.6 (c)0.36 (d) 1.00

30- A car was going in a circular road with a radius of 50m with constant velocity of 25 m/s, the static friction coefficient is:
(a) 0.816 (b) 0.1 (c) 1.00 (d) 1.27

| | | | | | |
|---|---|---|---|---|---|
| Referring | العودة الى | Initial | ابتدائي | Hitting | اصطدم |
| Thrown | قذف | altitude | إرتفاع عن سطح الارض | Magnitude | القيمة العددية |
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| Hangs | معلق | Circular | دائري | Apparent weight | الوزن الظاهري |
| Horizontal | أفقي | Rough | خشن | Gravitational | الجاذبية الارضية |
| Radius | نصف قطر | Coefficient | معامل | Frictional | الاحتكاك |
| Sliding | ينزلق | Static | السكوني | Floor | الارض |
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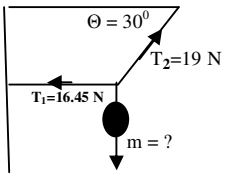


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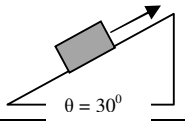


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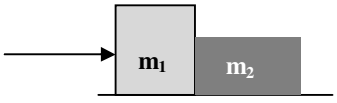


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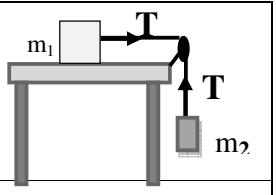


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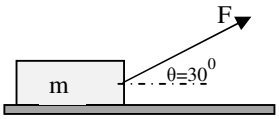


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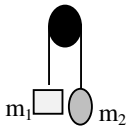


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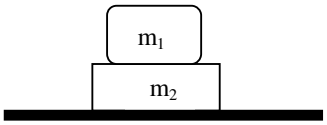


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