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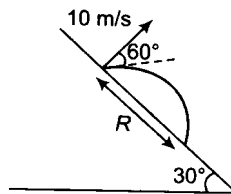
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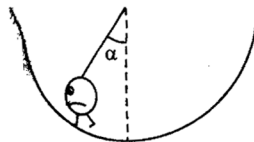
Sample Paper of Scholarship cum Admission Test for Class-XII (Medical)

PART-1 (PHYSICS)

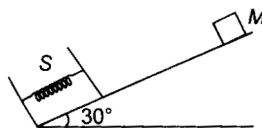
1. A projectile is launched with a speed of 10 m/s at an angle 60° with the horizontal from a sloping surface of inclination 30° . The range R is (Take $g=10 \text{ m/s}^2$)



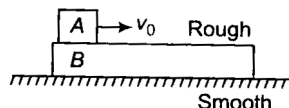
- (a) 4.9 m (b) 13.3 m (c) 9.1 m (d) 12.6 m
2. An insect crawls up a hemispherical surface very slowly. The coefficient of friction between the insect and the surface is $\frac{1}{3}$. If the line joining the centre of the hemispherical surface to the insect makes an angle α with the vertical the maximum possible value of α is given by



- (a) $\cot \alpha = 3$ (b) $\tan \alpha = 3$ (c) $\sec \alpha = 3$ (d) $\operatorname{cosec} \alpha = 3$
3. An ideal massless spring S can be compressed 1 m by a force of 100 N in equilibrium. The same spring is placed at the bottom of a frictionless inclined plane inclined at 30° to the horizontal. A 10 kg block M is released from rest at the top of the incline and is brought to rest momentarily after compressing the spring by 2m. If $g=10 \text{ m/s}^2$, what is the speed of mass just before it touches the spring ?



- (a) $\sqrt{20} \text{ m/s}$ (b) $\sqrt{30} \text{ m/s}$ (c) $\sqrt{10} \text{ m/s}$ (d) $\sqrt{40} \text{ m/s}$
4. In a two block system an initial velocity v_0 with respect to ground is given to block A.

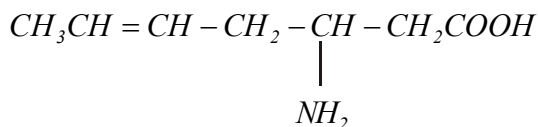


- (a) The momentum of block A is not conserved.
 (b) The momentum of system of blocks A and B is conserved.
 (c) The increase in momentum of B is equal to the decrease in momentum of block A
 (d) All of the above
5. A rigid body rotates about a fixed axis with variable angular velocity equal to $\alpha - \beta t$, at the time t , where α , β are constants. The angle through which it rotates before it stops.

- (a) $\frac{\alpha^2}{2\beta}$ (b) $\frac{\alpha^2 - \beta^2}{2\alpha}$ (c) $\frac{\alpha^2 - \beta^2}{2\beta}$ (d) $\frac{(\alpha - \beta)\alpha}{2}$

PART-2 (CHEMISTRY)

6. A mixture of NO_2 and N_2O_4 has a vapour density of 38.3 at 300 K. What is the number of moles of NO_2 in 100 g of the mixture
 a) 0.043 b) 4.4 c) 3.4 d) 0.437
7. Which of the following is not a water softener?
 a) Calgon b) Permutit c) Na_2CO_3 d) Na_2CO_4
8. In group IVA or 14 of the extended form of the periodic table with increase in atomic number, the metallic character:
 a) $\text{Ge} > \text{Pb} > \text{Sn}$ b) $\text{Ge} > \text{Sn} > \text{Pb}$
 c) $\text{Pb} > \text{Ge} > \text{Sn}$ d) $\text{Pb} > \text{Sn} > \text{Ge}$
9. A light whose frequency is equal to 6×10^{14} Hz is incident on a metal whose work function is 2eV ($h = 6.63 \times 10^{-34}$ Js, $1\text{eV} = 1.6 \times 10^{-19}\text{J}$). The maximum energy of electrons emitted will be.
 a) 2.49eV b) 4.49 eV c) 0.49 eV d) 5.49 eV
10. The IUPAC name of the following is:



- a) 3 - aminohept -5-enoic acid b) 5-aminohex-2-ene-carboxylic acid
 c) 3-amino- δ - heptenoic acid d) 5- aminohept-2-enoic acid

PART-3 (BIOLOGY)

11. Protein portion of enzyme is called :-
 a) Co-factor b) Apoenzyme c) Co-enzyme d) NAD

12. Which one of the following is not a living fossil?
a) *Peripatus* b) King crab c) *Sphenodon* d) *Archeopteryx*
13. Fruit of mustard is
a) Siliqua b) Achene
c) Nut d) Cypsella
14. Which of the Amino acid is in zwitterionic form :-
- a) $\text{H}_3\text{N}^+ - \underset{\text{R}}{\text{CH}} - \text{COOH}$ b) $\text{H}_3\text{N}^+ - \underset{\text{R}}{\text{CH}} - \text{COO}^-$
- c) $\text{H}_2\text{N} - \underset{\text{R}}{\text{CH}} - \text{COOH}$ d) $\text{H}_2\text{N} - \underset{\text{R}}{\text{CH}} - \text{COO}^-$
15. The theory of random genetic drift was proposed by :
a) Sewall Wright b) Hardy-Weinberg
c) R A Fisher d) Mayer