CENTRAL COLLEGE KAWEMPE

SENIOR THREE PHYSICS

END OF TERM II

Time :. 2 hours and 15 minutes

Instructions: answer all questions in section A and any 3 questions in section B

SECTION A

1 A teacher gave a list of the following quantities to senior three students and asked them to group them accordingly, speed velocity distance displacement mass momentum.

1. From the above mentioned quantities list the ;

Vector quantities

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Scalar quantities

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I) What the major difference between the above quantities you have listed in 1 (I)

2 Mechanical energy contains a sum of two types of energy

1. Name these types of energy

B) A stone of mass 4kg is released from the roof top of house at a height of 4m from the ground

1. State the law that relate the energy changes that takes place when a stone start falling from the top of roof to the ground

II) Determine the velocity with which the stone hits the ground

3) A cargo lorry taking market vendors to a market was loaded up to its top with luggage and when the driver by passed the the traffic police,he was stopped and charged with overloading

1. Explain how overloading can cause an accident (3marks)

B)If the lorry had a mass estimated to be 25000 kg and it was moving with a velocity of 30 m/s, calculate the momentum of the car (2 MKS)

4An astronaut from Nasser planetary science research institute measured his weight while still on earth and found out that it was 600N when he went to the moon, his weight reduced to 400N

1. Explain why the weigth of the astronaut changed from earth to the moon (3mks)

B) If the astronaut has a mass o 60 kg, calculate the acceleration due to gravity on the moon (2 MKS )

5 A car toy car of mass 5kg moving with a velocity of 6m/s collides with another toy car of mass 3kg at rest, if the two toy cars stick together after collision,

a) state the type of collision that occurred

B) If. After collision the two toy cars moved with a common velocity of 3 m/s ,show that the kinetic energy was not conserved (4 MKS )

6 A bus starts from rest and accelerates uniformly at a rate of 1.2 ms² for 30 seconds what is the meaning of the statement ‘uniformly accelerated ‘

B) What is the velocity bus at the end of the the motion

7) Briefly state the meaning of the statement “calibration if a thermometers”

B) Water is not normally used as a thermometric liquid,state the reasons why water is not suitable for the above purpose (2mks)

C) Describe how you can determine the lower fixed point of un calibrated Thermometers

8 light from air is made to strike the surface of alcohol of refractive index of 1.36. The incident light makes of 20⁰ with the normal at the point of incidence . What is the angle of refraction as light passes the air alcohol interface? (3 MKS)

8 B) State the laws of refraction (2 MKS)

Section B

Answer any two questions

9 a) Distinguish between conductors and insulators in electrostatics

B) A student rubbed a pen in her hair for like 2 minutes and after put it on a small paper

1. State what the student observed when he put the pen on a small piece of paper
2. Describe process by which the pen got charged

C A negatively charged rod is brought near the un charged conductor

1. Draw diagram to show the distribution of charges in both the rod and the conductor

D Your village uncle has just completed building a very tall building on which he is not willing to place a lighting conductor because he thinks they are useless

Support material:



Task

As a senior three student who is in holiday advice your uncle the use of lightning conductor and how it performs it's duty on tall buildings

10 State Newton's laws of motion (3marks)

B) On your way back to home for holidays you boarded bus and fastened your seat belt but one of the senior one student refused explain in terms Newton's second law of motion why she shouldnt refuse to fasten her seat belt

C) if the bus you boarded started from rest and accelerated uniformly to a velocity of 30 m/s for 40 seconds and then maintained this velocity for 20 seconds and later decelerated to rest in 15 seconds to pick another customer on the road side

I) Draw a velocity -time graph for the motion of the bus

II) Determine the distance the covered by the bus from rest to where it picked up the the road side customer

D) Paratroopers (parachutists) normally jump off a speedy aeroplane and land safely to the ground, describe the motion of a parachutists from the plane to the ground

END