CENTRAL COLLEGE KAWEMPE

END OF YEAR ASSESSMENT EXAM

SENIOR THREE

PHYSICS

Time: 2 hours

Answer all the questions in section A and any two in section B

1 a). Define the term efficiency and a gear as applied to machines 2marks

b). In a gear system, the number of teeth on the driving wheel is 10 and the teeth on the driven wheel are 40. If the system is able to lift a load of 300N with an effort of 100N. Find:

i). V.R ii). M.A iii). Efficiency

6marks

1. a). Define the terms kinetic and potential energy 2marks

b). A 200g ball falls from a height of 0.5m.Calculate its kinetic energy just before hitting the ground 3marks

3 While going to the village for your Christmas holidays your mother forgot to tighten the seat belt , and to make matters worse she was driving at high speed when she reached near a certain forest she noticed that a big tree had fallen in road and then suddenly applied the brakes and hit the windscreen shown below

1. Explain why your mother hit the windscreen 2marks
2. State the Newton's laws that is applied in the above situation 1mark

A saloon car of mass 4 tonnes moving with a velocity of 40 m/s collides with a stationary Toyota vitz car of mass 2 tonnes, if after collision the two cars move together with the common velocity

Find the common velocity 3marks

4 Water is not normally used in thermometers

I ) State the reason why water is not used in thermometers

2 marks

1. If water is not used in thermometers,then which liquids do you think are suitable for use in thermometers

III)Why do you think one of the above liquids is commonly used over the other

5 a) Weight and mass are two measurable quantities in physics,as a senior three physics student, explain how you can differentiate between weight and mass

B I) If you are to measure both mass and weight ,which instruments can you use to measure both weight and mass

After measuring her mass on a sprung balance, Jane found out that she has a mass of 50kg ,

Find Jane's weight 2 marks

6 There are many components of a solar system

1. List some of these components 2 marks

II) Farmers in the village normally complain whenever the seasons change and they end up blaming the government as senior three student explain to village farmers what causes change in season using the knowledge of solar system 4 marks

7 A senior two student after being reaserch work by their physics teacher on a theme of LIGHT they were surprised to find a term "Power of a lens " in the research book and they didn't know the meaning of this term

1. As a senior three student define the term power of lens and also tell them to SI unit of power of lens

B) While in your school science laboratory you came across a lens but you could not tell the " power of this lens" but you found it was labelled to have a focal length of 25cm , show how you can calculate the power of this lens 2 marks

8 Jane is putting on a Nike air Max shoe with approximate surface area 0.75m² while Peter is putting on an Adidas shoe of approximate area 0.6m², if Jane and Peter have a mass of 50kg and 60kg respectively,find who exert a high pressure on the ground 4 marks

1. Keeping mass of the two constant which shoe would you recommend someone to put on a rainy day (2 marks)

SECTION B

Answer any two questions

9 A boy of height 120cm stands in front of a lens camera with a lens of focal length 40cm at a distance 160cm from camera by scale drawing find the ; nature size and position of the image of the boy on the camera

1. While in your literature lesson, your teacher asks your friend to stand up and read for the class a book of Oliver Twist, however your friend always tell your literature teacher that she is unable to see the letters in the books and even when she sits near the board she's unable to see but your teacher and other fellow literature students think she's bewitched

Task

As suppose you are a physics teacher,expl explain to your students and the literature teacher the cause of the problem and the would be possible solution to the above problem

10 a) Temperature and heat normally confuse people especially primary pupils

1. Come up with a way you distinguish these two terms to a primary pupil
2. Suppose you are have been given a thermometer with only the upper fixed point ( Steam point) , correctly come up with procedures you can follow to establish the lower fixed point ( ice point)
3. If the length of mercury column at the ice point is 5cm and that at the steam point is 15cm determine the temperature of a baby if the length of the mercury column when the thermometer is placed in a baby is 9cm
4. While in the school laboratory, you came across a thermometer but un fortunately it lacked a liquid inside one of your friends suggest that you should put on Water as a liquid in the thermometer, you insisted and said water is not suitable because it is a poor conductor of heat

Using the available apparatus in the lab describe an experiment you would use to convince your friend that water is poor conductor of heat

11 a) While watching a movie, you saw parachutist jumping off from an aeroplane high above in the sky but to your surprise,the parachutist was able to land safely on to ground without any injury , his velocity by the time he landed was also reduced and most of your friends were left confused

Support material



Task;

Write a simple message you can give to your friends explaining how a parachutist is able to land safely on the ground

1. A lorry of approximate mass 45000kg moving at a velocity of 60m/s collides with a motorcycle rider of mass 200kg moving at a velocity of 75m/s after collision , the motorcycle rider gets stuck in the wheels of a lorry
2. Which type of collision do you think occurred
3. If the motorcycle rider had separated from the lorry after collision, state the difference between this type of collision and the type of collision in in B (I)
4. Ignoring friction force , calculate the common velocity both of the lorry and the motorcycle rider moved with after collision