GATITU SECONDARY SCHOOL, P.O. BOX 327 – 01030, GATUNDU.
FORM 3 PHYSICS . END OF TERM 2 EXAMINATION. TERM 2 2016.
NAME:_____CLASS:_____ADM:_____

INSTRUCTIONS:

i)   Answer all the questions in the spaces provided in the question paper.

ii)   Non-Programmable silent calculators and Mathematical tables may be used unless
        where stated otherwise.

iii)   Clean organized work may earn you more marks while slovenly work will cost you
        dearly.

1.   A litre can of oil is found to have a mass of 1.04kg before it is opened and a mass of
        0.24kg after it has been opened and all the oil poured out.

a)   Find the mass of oil originally in the can.   (2mks

b)   Calculate the density of oil in kg/m^3.   (2mks

2.   The speed of Eldoret express bus varies as shown below as it travels between two
        stations along a straight line.
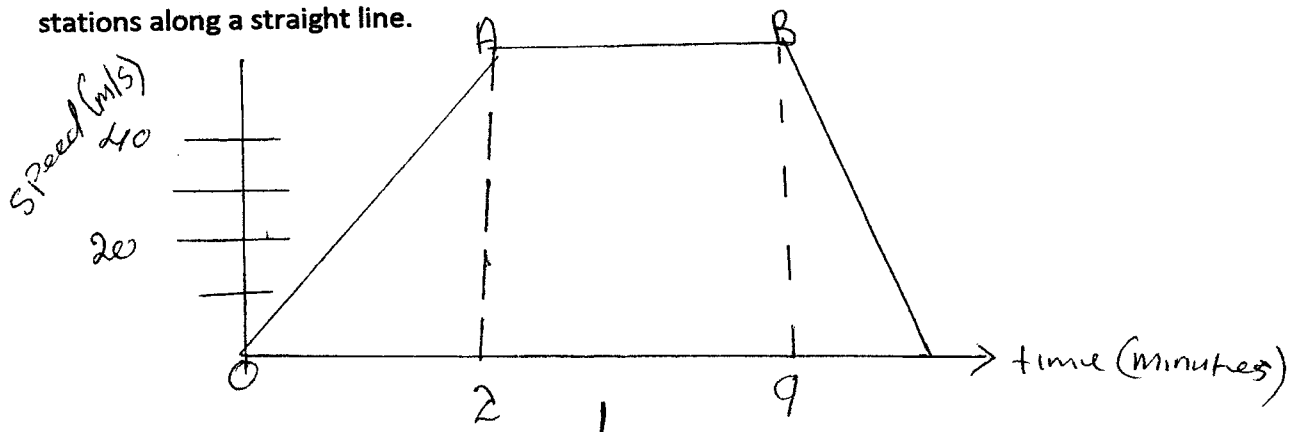
Use the graph to determine   (1mk

i)   The maximum speed of the bus

ii)   The acceleration in m/s2 of the bus during the first 2 minutes of the journey.   (2mks

iii)   The time during which the bus is slowing down.   (1mk

iv)   The total distance in metres between the two stations along the line.   (4mks

v)   The average speed in m/s of the bus.   (2mks

vi)   What does the station of the graph AB signify   (2mks

3.   When the bulb of the thermometer is dipped in hot water, there is a fall in the mercury
        level at the beginning and then it begins to rise. Explain.   (2mks

4.   In an experiment with a concave mirror the following readings were obtained for the
        magnification (M) and the image distance (V)

V(cm)	7.5	6.7	6.0	5.5	4.8	4.0
M	0.38	0.44	0.50	0.55	0.60	0.66

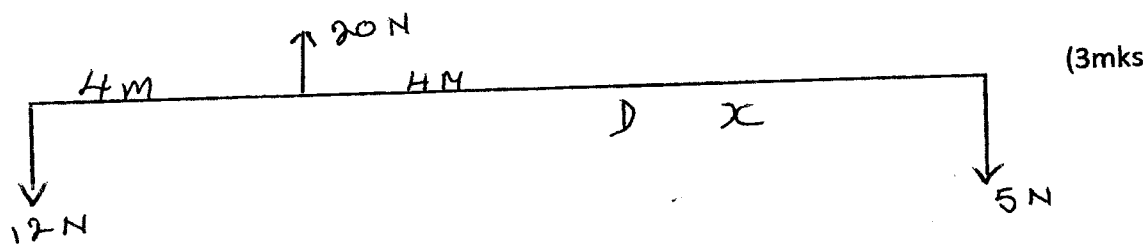Use the graph paper provided to draw the graph of V against m + 1   (5mks

i)   Find the gradient of the graph   (3mks

ii)   What does this value represent?   (2mks

5.   State the principle of moments.   (2mks

ii)   By using the principle, find the value of X in the diagram below.

(3mks

6(i)   State the snell's law of refraction.   (2mks

ii)   Crown glass has a critical angle of $42°$ and water of $49°$. Find their respective refractive indices.   (2mks

7.   Two dry cells in series provide an e.m.f. of 3.0V. when a load of 6.9Ω is connected in series, the current drawn is 0.33A. Calculate the internal resistance of each cell. (3mks

8a)   An electrical device converts 78J of electrical energy to heat when 6 coulombs pass through it. Find the p.d across it.   (2mks

b)   If a current of 10A flows through the device for one hour, calculate the total charge circulated through the heater.   (2mks

9.   State one advantage and one disadvantage a fluorescent lamp has over a filament lamp.(2mks

10a)   Differentiate between heat capacity and specific heat capacity.   (2mks

b)   A 180W heater is immersed in a copper calorimeter of mass 100g containing 200g of alcohol. When the heater is switched on after 36 seconds the temperature of the calorimeter and its contents rises to 12oc. Determine the specific heat capacity, take cu = 400J/kg K, water = 4200 J/kg K.   (5mks

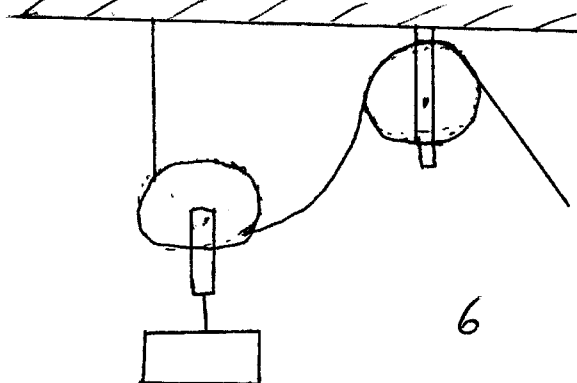11(a) A car can be brought to rest from a speed of 20m/s in a time of 2 seconds. Calculate
i)   the average deceleration.
                                                                              (2mks

ii)   The drivers reaction time is 0.2 seconds. Determine the shortest stopping distance.
      (3mks

12.   A load was raised using the system below.

(a)
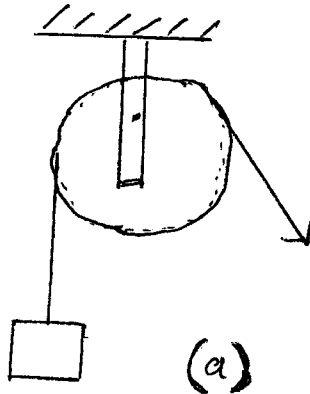
The system was then modified as shown in (b) and used to raise the same load.
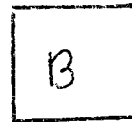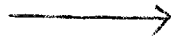

6

State and explain the change in efficiency.   (3mks

13.   Below is an energy chain of the lightly system of the bicycle. Fill in the blank space.

Chemical energy   ⟶ | B | ⟶   Electrical energy
In the cyclist   in the dynamo

⟶ | D |—| E | (3mks

14.   Name the device used to convert light energy directly into electrical energy.   (2mks

15.   When a footballer kicks a ball, the ball and the man experience force of the same magnitude but in opposite direction according to the Newtons 3rd law. The ball moves but the man does not move. Explain.   (3mks

16. Use the circuit below to determine
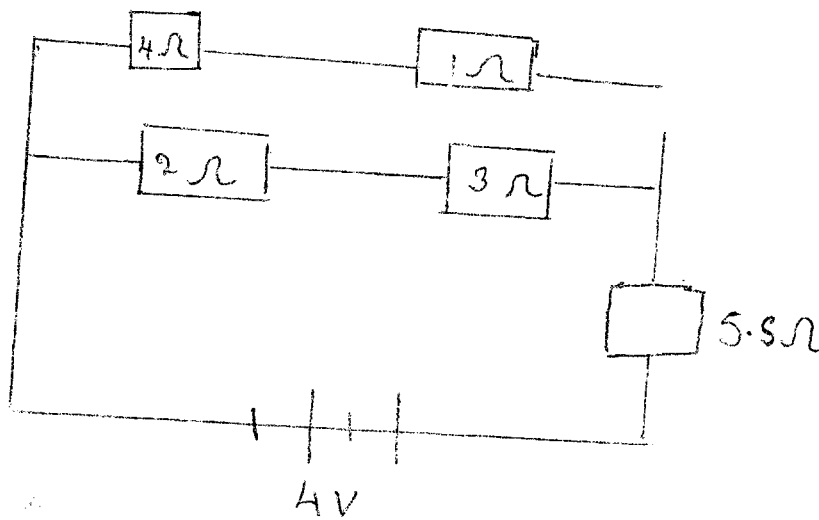i) Effective resistance

(3mks

ii) Total current

(3mks

iii) Current thro' 3Ω resistor.

(3mks

17. Define the term capacitance.

(2mks

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx