**NAME........................................................................................ADM NO........................CLASS...........**

**MID TERM THREE, 2022**

**PHYSICS FORM TWO**

**TIME: 2 hours 15 min.**

**SECTION A: (40 MARKS)**

**Answer all questions in this section in the spaces provided.**

1. The figure below shows part of scale of a vernier caliper. Given the vernier caliper has a zero error of -0.02 and is has been used to measure the diameter of a ball. (2 mks)



What is the radius of the ball? …………………………………………………………………………………………………………………………………………………………………………………………………………………………

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2. A pipe of radius 6mm is connected to another pipe of radius 9mm. If water flows in the wider pipe at 2m/s, what is the speed in the narrower pipe? (4mks)

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3. Distinguish between mass and weight of a body stating the SI unit for each. (2mks)

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4. KBC transmits at frequency 106Hz. Given the speed of the radio waves is 3.0 X 108**,** calculate the wavelength KBC transmits at. (3mks)

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5. Distinguish between streamline flow and turbulent flow in fluids. (2 marks)

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6. The figure shows six identical springs. If each spring stretches by 12mm when a mass of 60g hangs on it and that the connecting bars and springs have negligible masses, calculate the total extension in the set up (3 marks)

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7. Define moment of a force and state its SI unit. (2 mark)

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8. The speed of sound in air is 340m/s. A loud speaker placed between two walls A and B , but nearer wall A than wall B is sending out constant sound pulses. How far is the speaker from wall B if it is 200m form wall A and the time between the 2 echoes received is 0.176 seconds? (4mks)

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9. State two conditions for equilibrium of a body which is acted upon by a number of forces. (2mks)

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10. **Figure 3**shows a uniform bar of mass0.8kg supported by a spring balance at its centre and the bar is at equilibrium.

 ////////////////////// support

 Spring balance

 0.8 m 0.6m

 XN 24N

 **Figure 3**

Determine the:

(a)value of X (3 marks)

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(b) Reading of the spring balance (1mark)

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11. Explain why the bottom of cooking vessels are usually blackened. (1mk)

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12.A sphere of diameter 6.0 cm is moulded into a thin uniform wire of diameter 0.2mm. Calculate the length of the wire in meters. (3mks)

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13. draw the magnetic field pattern in the diagram below. (2mks)



14. Distinguish between transverse and longitudinal waves giving an example of each. (2mks)

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15. Water is not a suitable thermometric liquid. State two reasons that justify the statement. (2mks)

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16. The figure below shows a mercury barometer used to measure pressure.



Using the information, determine the value of atmospheric pressure. (3mks)

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**SECTION B (60 marks)**

17. a) the diagram below shows two plane mirrors placed at an angle of 600 to each other. A ray is incident to one of the mirrors at an angle of 700 to the mirror as shown



1. State the laws of reflection (2mks)

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1. Complete the path followed by ray show on the diagram above showing angles of incidence and reflection on the two mirrors. (3mks)
2. State two properties of images formed by plane mirrors ( 2mks)

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1. State the principle of reversibility of light. (1mk)

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 b) If an object is placed in between the two mirrors, how many images will be formed. (2mks)

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c) Why are plane mirrors not suitable for use as driving mirrors (1mk)

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d) a convex mirror of focal length 9cm produces an image on its axis 6cm from the mirror. Determine the position of the object. (3mks)

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18 a) Define the term pressure stating its SI unit. (2mks)

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 b) Explain why its not advisable to carry an ink pen with you to an aeroplane. (2mks)

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c) Calculate the pressure experienced by a diver 20 below a fresh water lake given the atmospheric

pressure above the lake surface is 103,000 N/m2. (3mks)

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d) The figure below shows a U-tube filled with water, mercury and another liquid:



1. Determine the density of the liquid (3mks)

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1. State two factors affecting pressure in liquids (2mks)

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19. The figure below shows the displacement-time graph for a wave:



1. What is the periodic time for the wave shown (2mk)

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1. What is the frequency of the wave shown (3mks)

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1. Draw on the same diagram, a wave form with twice the frequency and half the amplitude of the wave shown. (2mks)
2. State two differences between electromagnetic and mechanical waves (2mks)

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 e) Explain any 2 factors affecting velocity of sound in air (2mks)

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 f) State two differences between sound and light waves (2mks)

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 20.a) state Bernoulli’s principle (1mk)

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 b) Explain why its dangerous to stand close to a railway line on which a fast moving train is passing. (2mks)

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 c) A bottle of soda stands on a bench. As the temperature of the surrounding rises the temperature of the bottle also rises. State and explain the effect of this on the stability of the bottle. (3 Mks)

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d) State the assumptions made in deriving the equation of continuity (3mks)

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21 a) state the right hand grip rule (1mk)

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c) Draw the magnetic field patterns around the conductors shown indicating the direction of force. (3mks)



 d) A solid weighs 16.5N on the surface of the moon. The force of gravity on the moon is

 1.7N/kg. Determine the mass of the solid. (3 mks)

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 “SUCCESS”