AA-14
FORM TWO PHYSICS

SECTION A (25MARKS)

Answer all question this section

1. Distinguish between mass and weight of a body stating the S.I units for each. (2mks)

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2. The figure below shows part of scale of vernier calipers.

7cm 8cm

0 10

What is the reading indicated on the scale …….. (1mk)

3. $180cm^3$ of fresh water of density $100kg/m^3$ is mixed with $2200cm^3$ of sea water of density $1025kg/m^3$. Calculate the density of the mixture (4mks)

4. Explain why fish can survive under water when the surface is already frozen (2mks)

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5. Two inflated balloons are at the same level while suspended from threads a short distance apart as shown below;

Some air is blown gently in the space between the balloon in horizontal direction. Explain what happens to the balloons. (2mks)

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6. State **one** advantage of an alkaline battery over a lead acid battery. (1mk)

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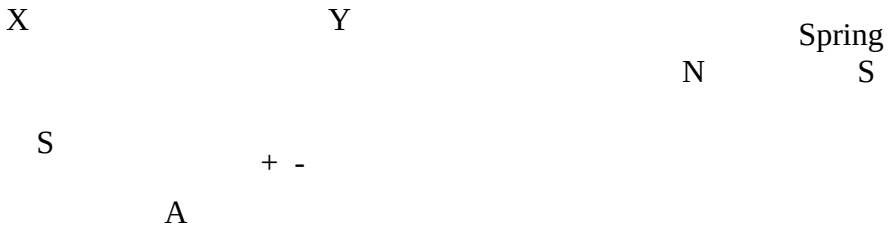
7. The diagram below shows a permanent magnet suspended by a spring. State with reason the behaviour of the magnet when the switch is closed. (2mks)



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8. Convection and diffusion both involve motion of fluids. Distinguish between the two. (2mks)

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9. A negatively, charged rod is brought close to (but not touching) an uncharged sphere. If the sphere is momentarily earthed and then the rod is removed, briefly explain what happens. (2mks)

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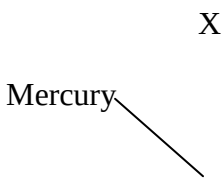
10. Indicate on the diagram below, the level of mercury in the tubes **X** and **Y** (2mks)



11. An object weighs 1200N on a certain planet. What is the gravitational field strength of this planet if the object is 60kg? (3mks)

12. State **two** properties of a thermometric liquid. (2mks)

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SECTION B (55MARKS)

Answer <u>all</u> question this section

13. (a) How does amplitude affect the loudness of musical note? (1mk)

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(b) What can be done to reduce echo in theatre halls? (1mk)

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(c) A girl stands some distance from a high wall and claps her hands;

(i) What **two** measurements would need to be made in order to determine the speed of sound? (2mks)

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(d) Describe how you would make use of these measurements. (3mks)

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(e) A girl is standing between two cliffs A and B but nearer to cliff B than A. She stands 140m from wall **B** and shouts once. She hears two echoes and discovers that the time between the two echoes is 0.6seconds. Determine how far the girls if standing from the cliff given that the speed of sound in air is 340m/s. (3mks)

14. (a) State **Hooke's law** . (1mk)

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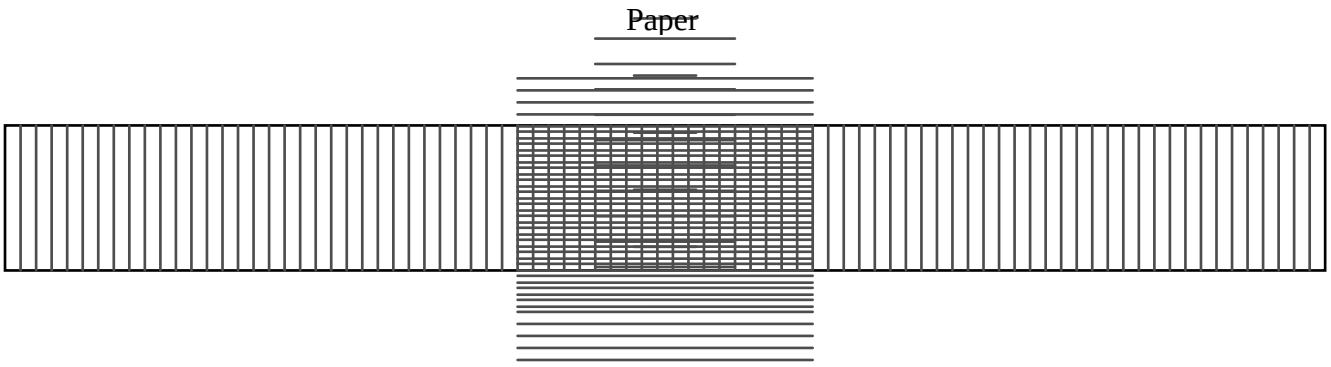
(b) The following readings were obtained when a spring was loaded gradually;

Load (N)	0	10	20	30	40	50	60	70	80
Extension (cm)	0	12	25	37	48	60	70	78	85

(i) Plot a graph of load (N) against extension (cm) (5mks)



(ii) Mark on your graph the elastic limit **P**. (1mk)

(iii) Determine from the graph the elasticity constant of the material of the wire. (3mks)

15. (a) Distinguish between streamline and turbulent flow. (2mks)

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(b) The figure below shows two light sheets of paper arranged as shown;

Explain the observation made when air is blown at the same speed and at the same time at point **A** and **B**. (2mks)

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(c) The diagram below shows an incompressible fluid moving through a tube of varied cross-sectional area. If the area of the small tube is $0.055m^2$, calculate the diameter of the layer tube. (3mks)

(d) Explain why a high speed jet has a sharp –nose shape (2mks)

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16. (a) Define **pressure** and give its S.I nits. (2mks)

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(b) The diagram below represents a motor car hydraulic braking system;

B

A

Brake pedal

Master piston

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Slave piston brake fluid

(i)State **two** properties of the liquid used as a brake fluid (2mks)

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(ii) Given that in the diagram **(b)** above the master piston has an area of $15cm^2$ and the slave piston has an area of $50cm^2$ a force of 100N is applied on the master piston. Find the force used to stop the car. (3mks)

(c) Compare the values of pressure in the two pistons above and give a reason for your answer. (2mks)

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(d) Give a reason why gas is not suitable for use in place of the brake fluid. (1mk)

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17. (a) Define **centre of gravity**. (1mk)

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(b) State **two** factors affecting stability of a book. (2mks)

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(c) Use simple sketches to show the three states of equilibrium. Name the states. (3mks)

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18. (a) Distinguish between a **longitudinal wave** and a **transverse wave**. (1mk)

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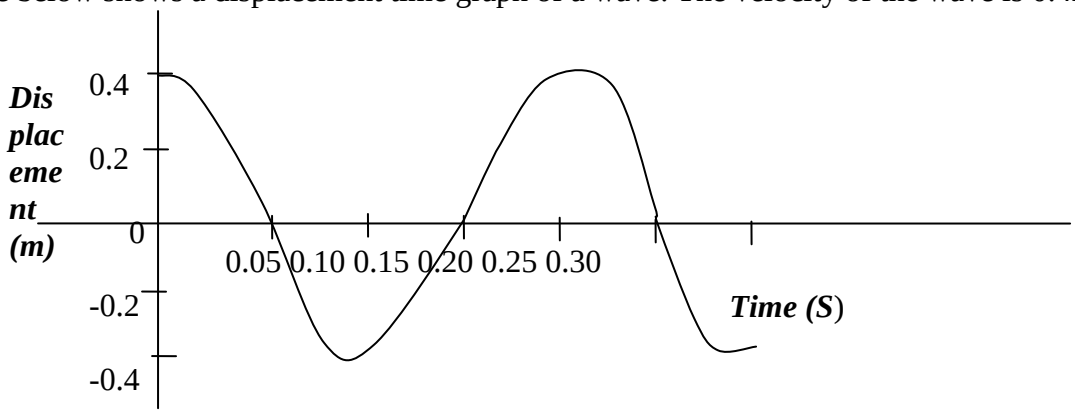
(b) The figure below shows a displacement time graph of a wave. The velocity of the wave is 0.4m/s



Determine;

(i) The amplitude (1mk)

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(ii) The period (1mk)

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(iii) The wavelength (2mks)

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(c) State **one** disadvantage of a convex mirror when used as a car driving mirror (1mk)

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(d) What property of light is suggested by the formation of shadows? (1mk)

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