THE SUCCESS PATH EXAMINATION COUNCIL (SPEC)

Paving the Way to Success

232/2 PHYSICS (Theory)

PRE-MOCK EXAMINATIONS 2026

MARCH 2026

Time: 2 hours

Paper 2

232/2
4992104

Name …… Admission Number ……..…

School ……Class ……

Candidate's Signature …… Date ……

Instructions to candidates

(a) Write your name and admission number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) This paper consists of **two** sections **A** and **B.**
(d) Answer **all** the questions in section A and B in the spaces provided.
(e) All working must be clearly shown in the spaces provided in this booklet.
(f) Non-programmable silent electronic calculators may be used.
(g) This paper consists of 12 printed pages.
(h) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

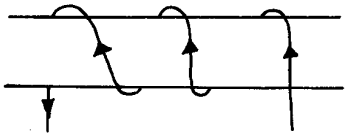
For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	1 - 13	25	
B	14	07	
	15	12	
	16	13	
	17	13	
	18	10	
	Total Score	**80**	

SECTION A (25 Marks**)**

Answer all the questions in this section in the spaces provided below each question

1. Sketch the magnetic field for a conductor shown in the **Figure 1** below. (2 marks)



2. State ***one*** similarity and ***one*** difference between a camera and a human eye. (2 marks)

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3. State ***one*** factor which does not change as water waves move from shallow to deep end. (1mark)

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4. A girl standing 200m from the foot of a high wall claps her hands and the echo reaches her 1.16 seconds later. Calculate the velocity of sound in air using this observation. (3 marks)

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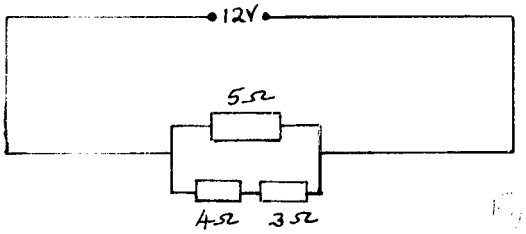
5. With the aid of a diagram, explain why convex mirror is preferred for use in supermarkets for surveillance to plane mirrors. (2 marks)

6. **Figure 2** is a circuit diagram of three resistors connected to a 12V battery.



Determine the potential difference across the 3Ω resistor. (3 marks)

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7. State the energy transformation that takes place in a hydroelectric power station. (2 marks)

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8. Name ***one*** type of electromagnetic radiation that ionizes air. (1 mark)

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9. When the moon comes between the sun and the earth in a straight line, an eclipse occurs. Name the eclipse. (1mark)

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10. Explain how polarization affects the working of a simple cell. (2 marks)

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11. Why is concave mirror used as a saloon mirror? (2 marks)

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12. Write ***one*** difference between a virtual and a real image. (1 mark)

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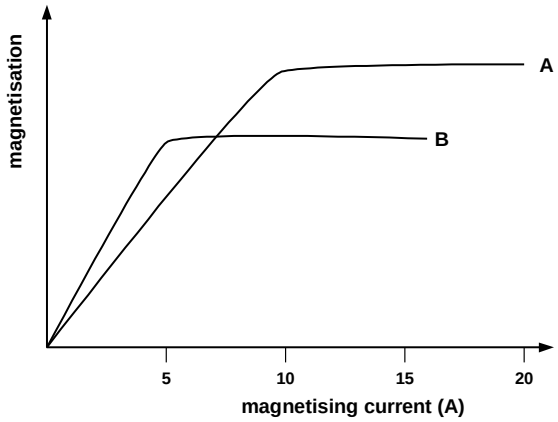
13. Figure 3 shows a graph of magnetisation against magnetising current for two materials A and B.



State with a reason, the material which is more suitable for use in a transformer to concentrate the magnetic fields. (3 marks)

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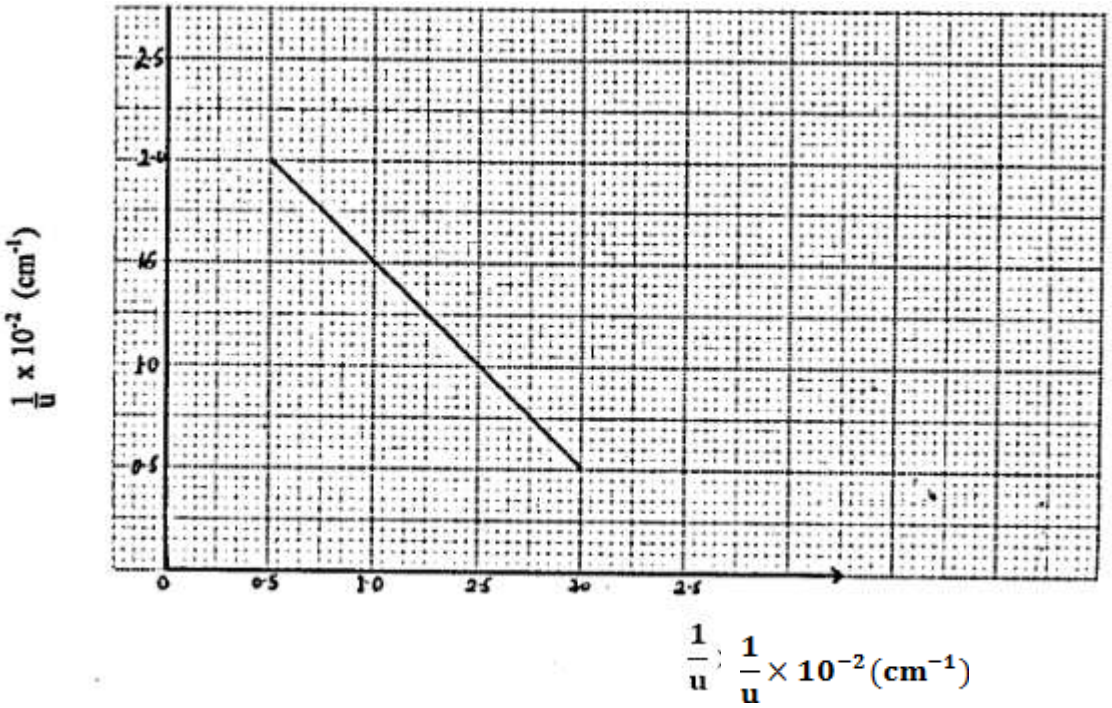
SECTION B (55 MARKS)

Answer all the questions in this section

14. a) The graph figure below shows the relationship between $\frac{1}{u}$ and $\frac{1}{v}$ for a converging lens where u and v are the object and image distances respectively.



From the graph, determine the focal length, *f* of the lens. (3 marks)

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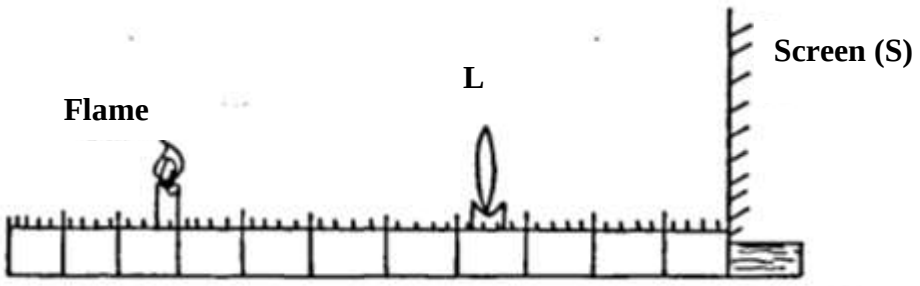
(b) **Figure 4** below shows an experimental set up consisting of a mounted lens, I, A screens, a metre rule and a candle



(i) Describe how the set up may be used to determine the focal length *f*, of the lens. (3 marks)

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(ii) State why the set up would not work if the lens were replaced with a diverging lens.

(1 mark)

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15. (a) Define refraction of light. (1 mark)

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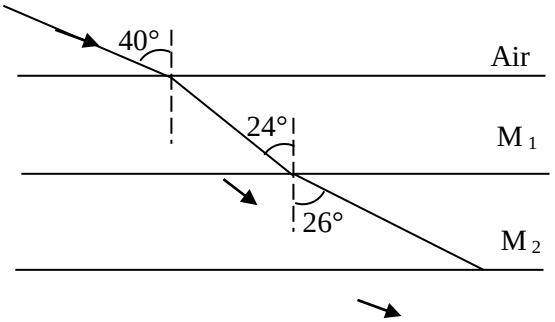
(b) A ray of light travels from air into medium 1 and 2 as shown in the **Figure 5** below.



Determine:

(i) the refractive index of medium (1) (η_1). (3 marks)

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(ii) the critical angle of medium 1. (3 marks)

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(iii) the refractive index of medium 2 relative to medium 1 ($_1\eta_2$). (2 marks)

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(iv) Velocity of light in medium 2 given that velocity of light in air = 3.0×10^8 m/s. (3 marks)

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16. (a) Distinguish between transverse and longitudinal waves. (1mark)

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(b) Water waves are observed as they pass a fixed point at a rate of 30 crests per minute. A particular wave crest takes 2s to travel between two fixed points 6m apart. Determine for the wave the:

i) Frequency. (2 marks)

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ii) Wavelength. (2marks)

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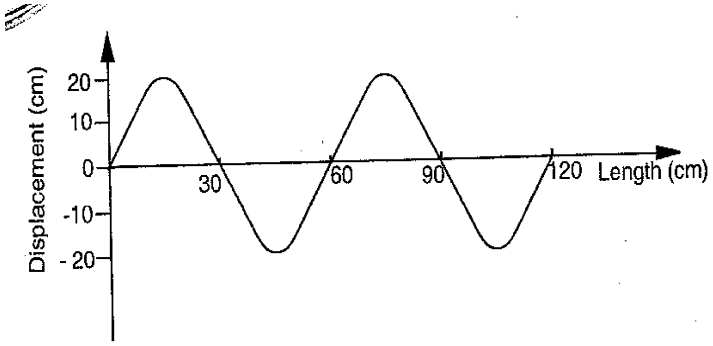
(c) **Figure 6 below** shows a displacement –position graph of a slinky spring as it is continuously vibrated at one end.



i) Name the type of wave generated. (1mark)

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ii) Determine the:

I. amplitude of the wave (1mark)

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II. wavelength of the wave (1mark)

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iii) On the same diagram draw a wave showing the wave when the frequency is doubled. (1mark)

(d) Explain what is meant by the principle of superposition of two waves. (1 mark)

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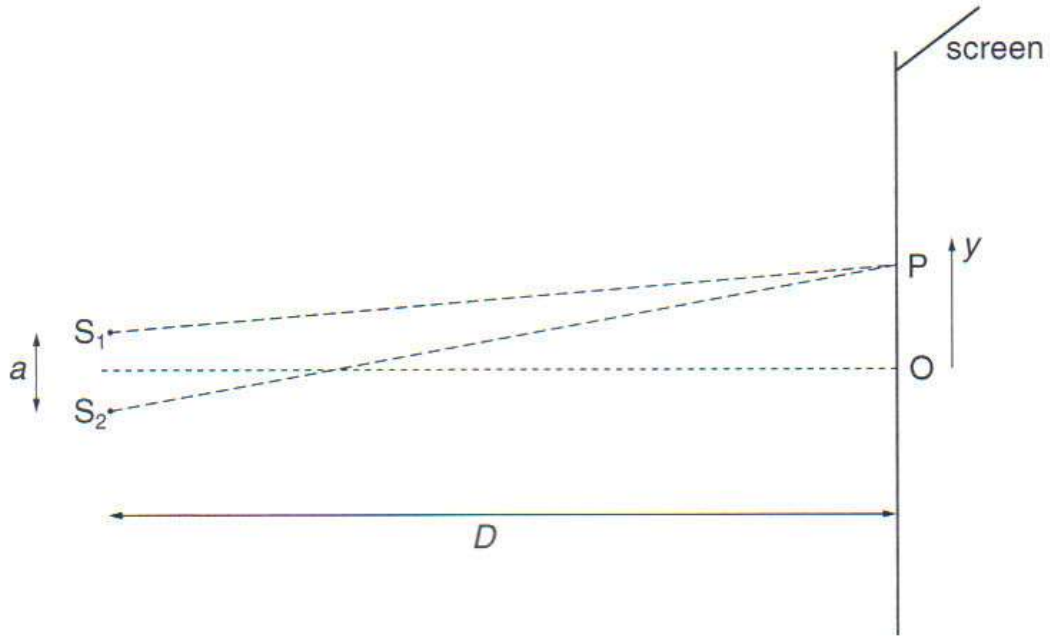
(e) In an experiment to try to produce an observable interference pattern, two monochromatic light sources, S_1 and S_2, are placed in front of a screen, as shown in **Figure 7.**



(i) In order to produce a clear interference pattern on the screen, the light sources must be *coherent*. State what is meant by *coherent.* (1 mark)

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(ii) In **Figure 7**, the central point O is a point of maximum intensity. Point P is the position of **minimum** intensity nearest to O. State, in terms of the wavelength λ, the magnitude of the path difference S_1P and S_2P. (2 marks)

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17. A set of Christmas tree lights consists of 40 identical filament lamps connected in series across a supply of 240V.

(a) Define *resistance.* (1 mark)

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(b) Each lamp when lit normally carries a current of 250mA. Calculate:

(i) The potential difference *V* across a lamp. (2 marks)

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(ii) The resistance *R* of a lamp. (3 marks)

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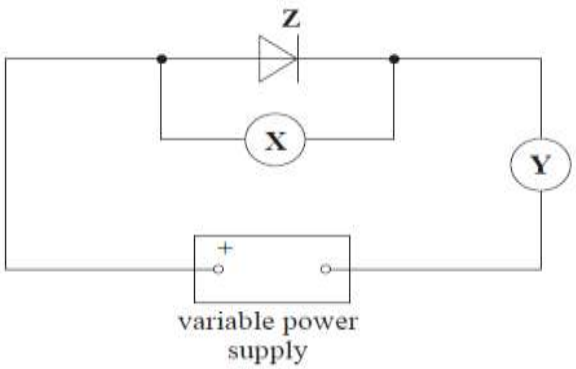
(c) The circuit shown is used to investigate how the current changes with voltage for component **Z**.



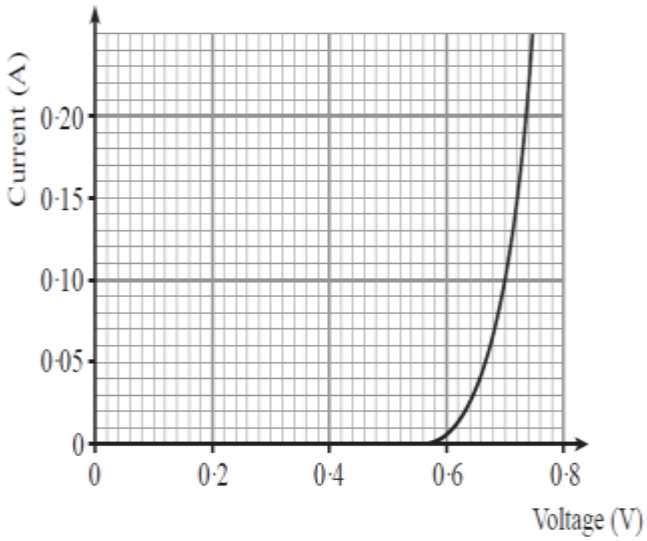
(i) Name the component: (3 marks)

X ……

Y ……

Z ……

(ii) The results from the investigation are shown on the graph.



I. Describe **carefully** how the current through **Z** changes as the voltage is increased from 0·0 to 0·7V**.** (2 marks)

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II. **Write down** in words an equation and use it to find the resistance of **Z** when the voltage is 0·7V. (2 marks)

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18. **Figure 8.1** shows two capacitors, **A** of capacitance 2μF, and **B** of capacitance 4μF, connected in parallel. **Figure 8.2** shows them connected in series. A two-way switch **S** can connect the capacitors either to a d.c. supply, of e.m.f. 6V, or to a voltmeter.

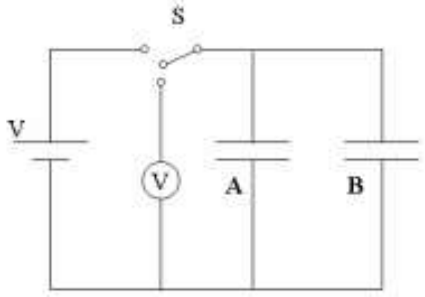
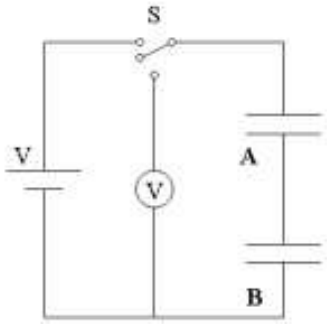


Figure 8.1



(V required in both circles)

Figure 8.2

(a) Calculate the total capacitance of the capacitors

(i) When connected as in **Figure 8.1** (2 marks)

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(ii) When connected as in **Figure 8.2** (2 marks)

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(b) The switch in the circuit shown in **Figure 8.1** is then connected to the battery. Calculate

(i) The potential difference across capacitor. (2 marks)

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(ii) The total charge stored on the capacitors. (2 marks)

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(c) The switch in the circuit shown in **Figure 8.2** is then connected to the battery. Calculate the total energy stored in the two capacitors. (2 marks)

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