Name …… Centre/Index No……/……

Signature ……

UGANDA CERTIFICATE OF EDUCATION

MOCK EXAMINATIONS 2013

535/1 PHYSICS

PAPER 1

TIME: 2 HOURS 15 MINUTES

Instructions to candidates

- Write your name, centre/Index number and signature in the space above
- Section A contains 40 objective type questions. You are required to write the correct answer A,B,C or D in the boxes at the right hand side
- Section B contains 10 structured questions. Answers are to be written in the spaces provided on the question paper.
- Acceleration due to gravity = $10ms^{-2}$
- Specific heat capacity of water = $4200Jkg^{-1}K^{-1}$

For Examiners use only

Qn41	Qn42	Qn43	Qn44	Qn45	Qn46	Qn47	Qn48	Qn49	Qn50	MCQ	Total

SECTION A (40 MARKS)

1. The rate of change of displacement is called?

   A. Speed B. Velocity

   C. Acceleration D. Momentum

2. Which one of the following factor determines heat radiation by a hot body?

   (i) Temperature of the body

   (ii) Color of the body

   (iii) The distance from the body

   A. (i) Only. B. (i) and (iii) only.

   C. (i) and (ii) only D. (i), (ii), and (iii)

3. A body is a stable equilibrium has?

   i. A small base

   ii. Its centre of gravity raised after a small displacement

   iii. It's a centre of gravity lowered after a small displacement

   iv. A wide base

   A. (i) and (ii) only B. (ii) and (iii) only

   C. (iii) and (iv) only D. (ii) and (iv) only.

4. Which of the following statements is correct about soft ferromagnetic materials?

   (i) They do not lose their magnetism easily

   (ii) They are easily and strongly magnetized

   (iii) They are used to make permanent magnets

   A. (i) and (ii) only. B. (ii) and (iii) only.

   C. (ii) only D. (iii) only

Turn Over

5. Which one of the following is a basic unit?

   A. Watt. B. Joule

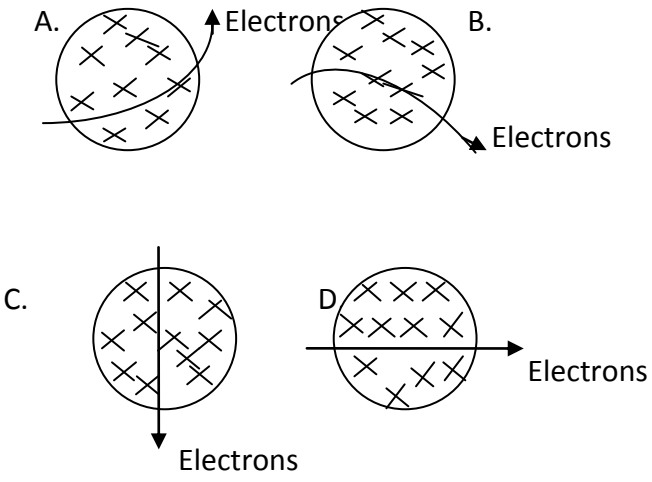
   C. Newton D. Kilogram.

6. A girder which is under tension is called a?

   A. Tie B. Beam

   C. Strut. D. Pillar

7. Which of the following diagrams shows the correct path of electrons through a magnetic field directed in to the page?



8. A transverse wave of wavelength 0.4 m and frequency of 2 Hz is sent down a slinky of length 2 m. Find the time the wave takes to traverse the slinky.

   A. 2.5 s B. 1.6 s

   C. 1.0 s D. 0.4 s

9. Short sightedness

   A. Is due to short eye balls.

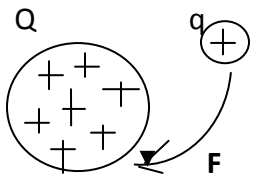
   B. Is when one has a clear view of distant objects.

   C. Can be corrected using a concave lens.

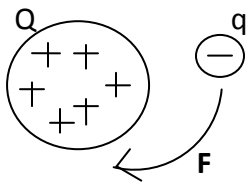
D. Is due to eye lenses whose focal length can be adjusted.

10. Which one of the following diagrams shows the correct direction of force, ***f*** between a point charge ***q*** and a large body with charge ***Q***?

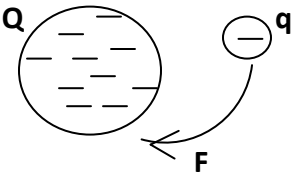
A.



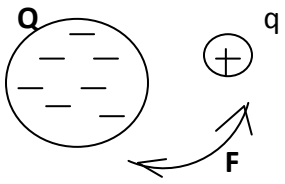
B.



C.



D.



11. X-rays differ from ultraviolet rays in that x-rays have,

A. Shorter wavelength B. lower frequency

C. Lower velocity D. No charge

12. The watt is given by

A. $\frac{\text{voltage}}{\text{Current}}$

B. Voltage x current

C. $\frac{\text{Current}}{\text{Voltage}}$

D. $\frac{\text{Current x Current}}{\text{voltage}}$

Turn Over

13. A Standing wave is found when,

A. constructive interference occurs.

B. Destructive interference occurs.

C. Two incident waves are reflected.

D. incident and reflected waves of the same frequency and amplitude combine.

14. A force that keeps a body moving in a circular path is called?

A. Gravitational force B. electrostatic force

C. Centripetal force. D. magnetic force

15. Which of the following is a renewable source of energy?

A. Wood B. Wind

B. Coal D. Geothermal

16. Find the power lost by a car if its engine loses 2000 kj of heat in $1^1/_2$ hours?

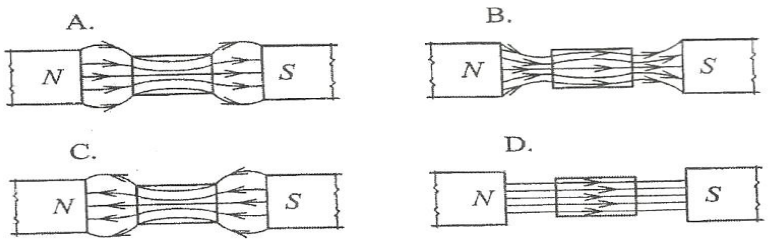
A. $\frac{2 \text{ x2 x } 10^3}{3}$ W

B. $\frac{2 \text{ x } 2\text{x } 10^6}{3 \text{ x } 60}$ W

C. $\frac{2 \text{ x } 2 \text{ x } 10^6}{3 \text{ x } 60 \text{ x } 60}$ W

D. $\frac{2 \text{ x } 3 \text{ x } 10^3}{2 \text{ x } 60 \text{ x } 60}$ W

17. Which one of the following diagrams below represents the magnetic field pattern when a piece of iron is placed between poles of permanent magnets?



Turn Over

18. Figure **1** shows a thin copper rod heated uniformly along its length

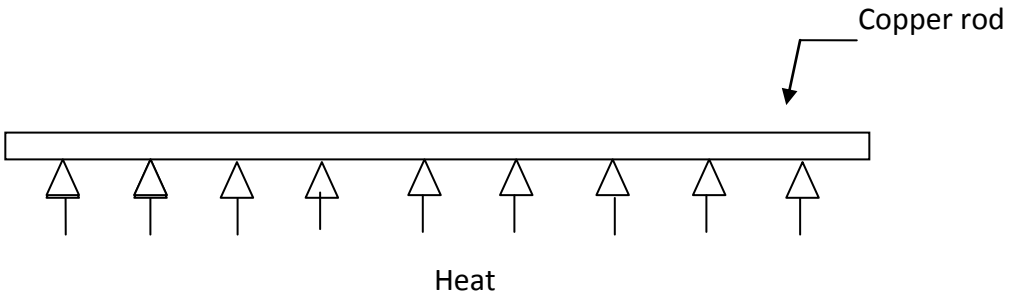


Figure 1

Which of the following statement is true about the rod?

(I) its mass decreases.

(ii) Its volume increases.

(iii) It will become longer.

A. (i) and (II) only.

B. (ii) and (iii) only.

C. (i) and (iii) only.

D. (i), (ii) and (iii)

19. When a sheet of paper is placed between a radioactive source and a detector, the count reduces. When the sheet of paper is placed with aluminum sheet, the count rate goes to zero. the source is emitting

A. Gamma radiation only

B. beta and gamma radiations only

C. Alpha and gamma radiations only

D. Alpha and beta radiations only

20. Which one of the following uses a convex lens to give a real, inverted and magnified image?

A. The eye
B. The projector
C. The lens camera
D. The magnifying glass

21. A steel needle floats on the surface of clean water because of

A. Cohesion.
B. Adhesive.
C. Capillarity.
D. Surface tension.

22. Three identical lamps ***P, Q*** and ***R*** are connected as shown in Figure 2.

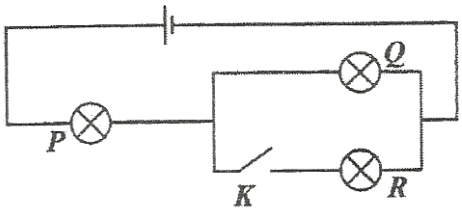


Figure 2

What happens to the brightness of ***P*** and ***Q*** when switch, ***K*** is closed?

	P	***Q***
A.	Increases	decreases
B.	decreases	increases.
C.	remains the same	increases
D.	remains the same	decreases.

23. Find the force required to accelerate a body of mass 100 g at a rate of 2 ms^{-2}

A. 2×10^2 N
B. 5×10^1 N
C. 2×10^1 N
D. 2×10^{-1} N

24. Which one of the following energy changes takes place in a generator?

A. Potential energy ⟶ kinetic energy ⟶ chemical energy

Turn Over

B. Potential energy ⟶ electrical energy ⟶ chemical energy

C. Chemical energy ⟶ electrical energy ⟶ kinetic energy

D. Chemical energy ⟶ kinetic energy ⟶ electrical energy.

25. Figure 3 shows a garden watering can in use.

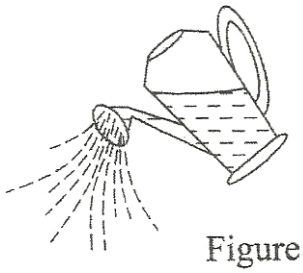


Figure 3

The property of liquid pressure applied when using the can is?

A. Pressure increases with path
B. A liquid finds its own level.
C. Pressure works equally in all directions
D. Pressure increases with density.

26. Figure 4 shows a graph of load against extension for a metal.

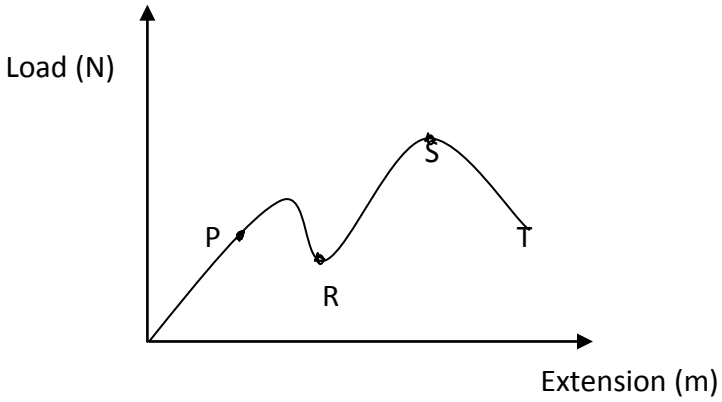


Figure 4

Identify a point where the metal is still elastic.

A. P

B. R

C. S

D. T

27. Two atoms of hydrogen $^{2}_{1}H$ combined to form a helium atom and a neutron. Which one of the following equation represents the reaction?

A. $^{2}_{1}H + {}^{2}_{1}H \longrightarrow {}^{4}_{2}He + {}^{1}_{0}n$

B. $^{2}_{1}H + {}^{2}_{1}H \longrightarrow {}^{3}_{2}He + {}^{1}_{0}n$

C. $^{2}_{1}H + {}^{2}_{1}H \longrightarrow {}^{5}_{2}He + {}^{-1}_{0}n$

D. $^{2}_{1}H + {}^{2}_{1}H \longrightarrow {}^{4}_{2}He + {}^{1}_{0}n$

28. Which of the following statements is correct about electric charge?

(i) Charge resides only on the inside of a hallow conductor.

(ii) charge is concentrated at the pointed end of a conductor

(iii) Like charges attract each other

(iv) A high concentration of a charge on a conductor leads to ionization of air.

A. (i) ,(ii) and (iv) only B. (ii) ,(iii) and (iv) only

C. (i) and (ii) only D. (ii) and (iv) only

29. Find the force that would cause the momentum of a body to change from 80 kg ms^{-1} to 100kgms^{-1} in 5 s.

A. 4N B. 16N

C. 20N D. 36N

30. Figure **5** shows two waves representing two musical notes.

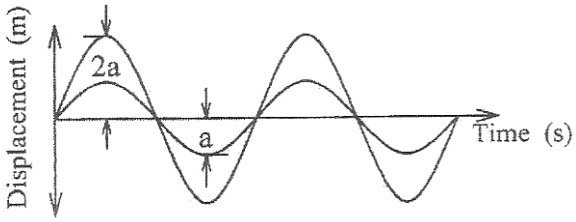


Figure 5

Which of the following statement is **true?**

A. The two waves produce sound of different pitch.
B. The two waves produce sound of different wavelength
C. The two waves produce sound of the same loudness
D. The two waves produce sound of different loudness

31. In domestic wiring ,bulbs are connected in parallel,

A. To avoid short circuiting
B. In order to use one switch for all the bulbs.
C. So that they are all connected to the same fuse
D. So that a fault in one bulb does not affect the working of the other bulbs.

32. Which of the following is due to cohesive forces being stronger than adhesive forces?

I. Capillarity rise in a narrow tube
II. Capillary depression in a narrow tube.
III. Formation of spherical drops on a dry glass plate

A. (I) and (iii) only B. (i) and (ii) only
C. (ii) and (iii) only D. (iii) Only

Turn Over

33. a red filter appears in white light because

A. It absorbs red colour and transmits the other colours of white light.

B. It transmits the red colour and absorbs the other colours of white light

C. The red light is dispersed more than the other colours.

D. Red is a dominant colour in the spectrum.

34. the inner walls of the vacuum flask are highly polished to,

A. Reduces heat loss by convection

B. Reduces heat loss by evaporation

C. Prevent heat loss by radiation

D. Reduces heat loss by conduction.

35. Figure **6** show levels of water in measuring cylinder before and after immersing a solid ***X*** of mass 40 g.

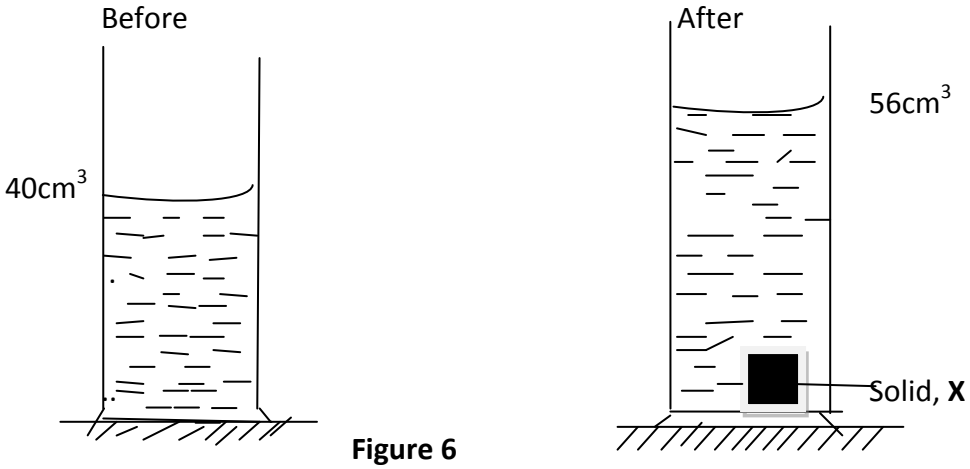


Figure 6

Find the density of solid X in gcm^{-3}

Turn Over

A. 1.0 B. 1.4

C. 2.4 D. 2.5

36. When a substance is boiling ,its saturation vapour pressure is,

A. Maximum

B. Minimum

C. Above the atmospheric pressure

D. Equal to the atmospheric pressure.

37. A 12 V bulb is connected to a coil of 100 turns wound on an iron rod. The bulb lights when a second coil wound on the same iron rod is connected to a 240 V mains supply. Calculate the number of turns of the second coil.

A. 2000

B. 288

C. 5

D. 2

38. A balloon rises in the atmosphere when,

A. The up thrust is less than its weight

B. The upthrust equals to its weight

C. The density of the air reduces

D. The upthrust is greater than its weight

39. Inertia is a property of a body which

A. Makes a body continue to accelerate

B. Enables a body to continue moving with a constant velocity

C. Makes the momentum of the body to decrease

D. Define the rate of change of the velocity

40. Figure 7 shows a ladder leaning against a wall with forces ***P,N,W*** and ***M*** acting on it

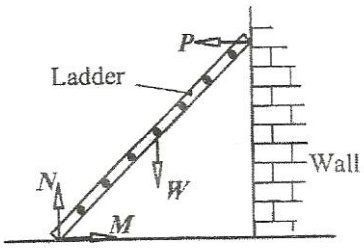


Figure 7

The force that would cause the ladder to slide is,

A. P

B. W.

C. N

D. M.

Turn Over

SECTION B (40 MARKS)

Answer ***all*** questions in this section. All workings must be clearly shown in the spaces provided.

41. (a) What is an **electromagne**t? (01 mark)

……

(b) State two ways of minimizing energy losses in a transformer (2 marks)

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(c) What is the use of a transformer? (1mark)

……

42. (a) Define **the power of a lens**. (01 mark)

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(b) In figure 8, a lens ***L*** forms an image of an object, O at I,60 cm from the lens. ***F*** is the principal focus of the lens.

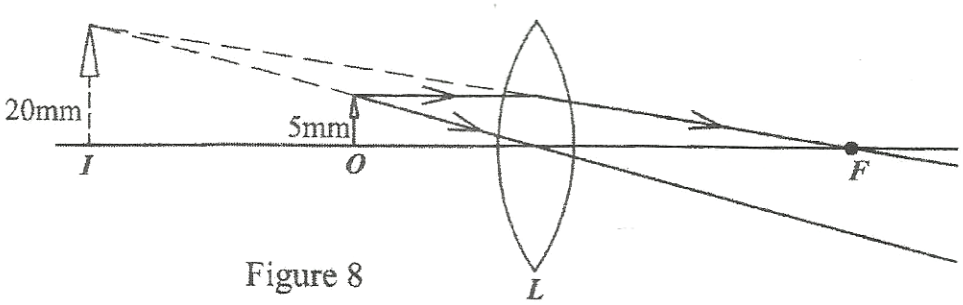

Figure 8

If the height of O is 5 mm and height of ***I*** is 20 mm, find the distance of the object, O from the lens. (03 marks)

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43. (a) Figure 9 shows the structure of a simple cell.

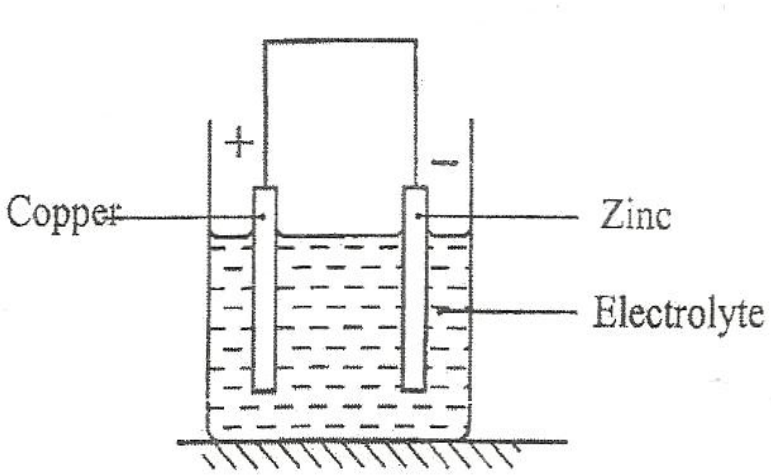

Figure 9

(i) Show on the diagram, the direction of conventional current (01 marks)

(ii) Name the electrolyte (01 marks)

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(b) (i) what is meant by **polarization** as applied to the cell? (01 marks)

……

……

(ii) State the effect of polarization on the cell. (01 marks)

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44. (a) Define **kinetic energy**?

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(b) A car of mass 900 kg is brought to rest from a speed of 36 kmh^{-1} over a distance of 15 m. F ind the breaking force. (03 marks)

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45. (a) what is a saturated vapour? (01 marks)

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(b) State **two** ways of increasing the rate of evaporation. (01 mark)

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(c) Sketch the variation of pressure with temperature at constant volume for argon of fixed mass. (02 marks)

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46. (a) Draw diagrams to illustrate what happens to plane waves incident on a slit when

(i) the width of the slip is large compared to the wavelength of the waves.

(01 marks)

(ii) the width of the Slit is small compared to the wavelength of the wave.

(01 mark)

(b) Water waves are made by a plane dipper moving up and down 3 times every second. If the velocity of the waves is 12 cm^{-2}, what is the wavelength of the wave?

(02 marks)

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47. (a) what are **isotopes**? (01 mark)

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(b) State what happens to both the mass number and atomic number of a radioactive nuclide when it decays by

(i) beta emission. (01 mark)

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……..

(ii) Alpha emission (01 mark)

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(c) State two uses of radioactivity. (01 marks)

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48. (a) An electric kettle is rate 240V, 2000 W. what does this statement mean?

(01 mark)

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(b) The graph in figure 10 shows the variation of temperature with time when a 500 W heater is Immersed in water at $0^{o}C$.

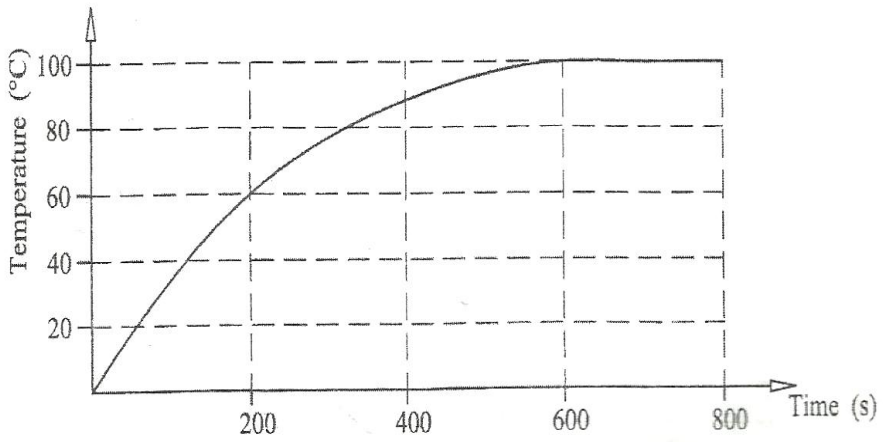

Figure 10

(i) Find the energy supplied by the heater in 400s. (02 marks)

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(ii) After how long does the water start boiling? (01 mark)

……

49. (a) state four properties of electric field lines. (02 mark)

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(b) Draw electric field patterns between

(i) two identical point charges which are positively charged and close to each other.

(01 mark)

(ii) a point charge which is negatively charged and a positively charged parallel plate.

(01 mark)

50. (a). Define the term **pressure**. (01 mark)

……

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(b) Find the pressure exerted by a person standing if his mass is 100 kg and the total area his shoes makes with the ground is 400 cm^2. (03 marks)

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END