

535/1

PHYSICS

Paper1

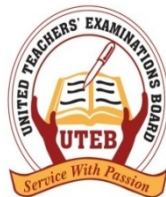
July / Aug. 2019

2 hours 15 minutes

Name of School:.....

Name of Student:.....

Signature:.....Personal No.....



JOINT MOCK EXAMINATIONS 2019

Uganda Certificate of Education

PHYSICS

Paper 1

2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

Section A contains 40 objective type questions. You are required to write the correct answer, A, B, C or D in blue or black ink against each question in the box on the right hand side.

Section B contains 10 structured questions. Answers are to be written in the spaces provided on the question paper.

Mathematical tables and silent non-programmable calculators may be used.

Acceleration due to gravity, g = 10 ms^{-2}

Specific heat capacity of water = $4200 \text{ Jkg}^{-1}\text{K}^{-1}$

Specific latent heat of vaporization of water = $2.3 \times 10^6 \text{ Jkg}^{-1}$

For Examiners' Use Only

Q.41	Q.42	Q.43	Q.44	Q.45	Q.46	Q.47	Q.48	Q.49	Q.50	MCQ	Total

1. The following are fundamental quantities except;

A. Quantity of charge

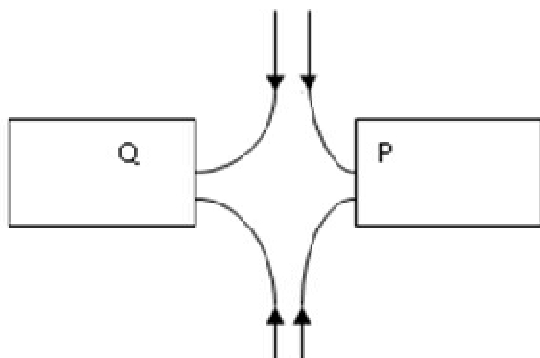
C. Quantity of heat

B. Luminous intensity

D. Length

☐

2. The figure below shows two bar magnets



Name the poles of Q and P of the bar magnets shown in figure above.

Q

P

A. North

North

B. South

South

C. North

South

D. South

North

☐

3. A solid weighs 7N in air and 3N when completely immersed in water. If the density of water is 1000kgm^{-3} , determine the density of the solid in kgm^{-3} .

A. 1700

C. 1800

B. 1750

D. 1900

☐

4. In a wet Leclanché cell, the carbon powder:

A. Increases the conducting surface of the carbon rod.

B. Connects the carbon rod to the zinc rod.

C. Acts as an electrolyte.

D. Prevents polarization.

☐

5. One of these can give a uniform electric field:

A. an isolated point positive charge.

B. an isolated point negative charge.

C. two point charges of opposite nature near each other.

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D. two plates of opposite charges near each other.

6. Like poles of a magnet

A. like each other.

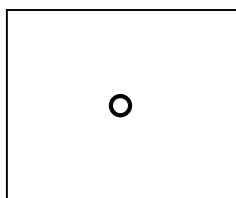
C. oppose each other.

B. attract each other.

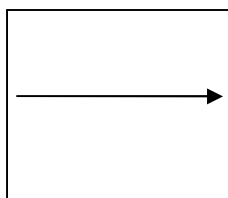
D. collide with each other.

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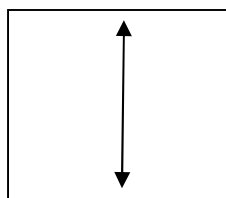
7. The diagrams below show traces of a cathode beam on the screen of a CRO when there is no input on the Y plates and time base is on.



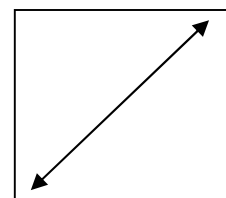
A



B



C



D

☐

8. The function of a lens in a CRO is carried out by

A. the anodes.

C. deflecting system.

B. the control grid.

D. the electron gun.

☐

9. Conduction of heat takes place

A. through solids only.

C. through solids and liquids only.

B. through gases only.

D. through solids and gases.

☐

10. The temperature at which all energy is removed from a substance is

A. its freezing point.

C. zero degrees Celsius.

B. its melting point.

D. absolute zero temperature

☐

11. At terminal velocity,

A. a body has zero velocity.

C. a body has zero acceleration.

B. a body has zero displacement.

D. a body has zero weight.

☐

12. Stress is

A. too much work.

C. strength.

B. force x area.

D. force over area.

☐

13. A red dress with green stripes in blue light will appear

A. blue.

C. black.

B. blue with yellow stripes.

D. red with blue stripes.

☐

Turn Over

14. This is not a reason for using a convex mirror as a driving mirror:

- A. it gives upright images.
- B. it has a wide field of view.
- C. it gives only virtual images.
- D. all its images are behind the mirror.

☐

15. A bulb rated 4v works at maximum capacity at a power of 6W. Its resistance is

- A. 1.5Ω .
- B. 2.67Ω .
- C. 90.0Ω .
- D. 2400Ω .

☐

16. A household uses 12 bulbs each rated 100W for three hours a day for five days. How many units does it use?

- A. $1.2 \times 3 \times 5$
- B. $\frac{1.2 \times 3}{5}$
- C. $12 \times 3 \times 100 \times 5.0$
- D. $\frac{1200 \times 3}{5}$

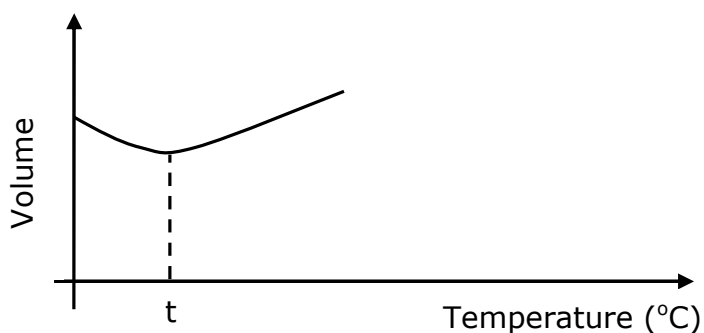
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17. One of these is the odd man out.

- A. Nickel
- B. Cobalt
- C. Iron
- D. Copper

☐

18.



The figure above shows the volume of water as it is cooled. The temperature is

- A. 0
- B. 100°C
- C. 37°C
- D. 4°C

☐

19. A fish in water attains a wide field of view due to

- A. refraction only.
B. total internal reflection.

- C. reflection only.
D. interference.

☐

20. One of these does not change when a wave moves from deep to shallow water.

- A. Amplitude
B. Frequency

- C. Wavelength
D. Period

☐

21. One of these is an isotope of ${}_{12}^{25}\text{X}$.

- A. ${}_{125}^{12}\text{Y}$
B. ${}_{12}^{26}\text{Y}$

- C. ${}_{11}^{25}\text{Y}$
D. ${}_{36}^{25}\text{Y}$

☐

22. A newton is defined as

- A. the S.I unit of force.
B. a force that accelerates a body at 1ms^{-2} .
C. a force that accelerates a 1kg mass at 1sm^{-2} .
D. a force that decelerates any body at 1ms^{-2} .

☐

23. An elastic body under deformation possesses

- A. kinetic energy.
B. potential energy.

- C. electrical energy.
D. heat energy.

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24. Loudness of sound depends on

- A. amplitude.
B. velocity.

- C. frequency.
D. wavelength.

☐

25. A girl at a distance of 340m from a tall wall heard her echo 2s after clapping. What is the speed of sound in air?

- A. 85ms^{-1}
B. 170ms^{-1}

- C. 340ms^{-1}
D. 510ms^{-1}

☐

26. Sound can be heard more clearly at night than during day due to

- A. reduction in noise.
B. interference.

C. refraction of sound towards the ground.

D. diffraction.



27. In photoelectric effect the rate at which electrons are produced is

A. increased as light intensity is increased.

B. decreased as light intensity is increased.

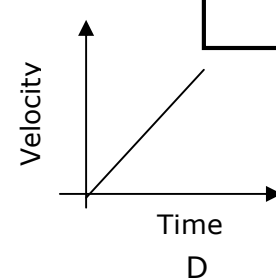
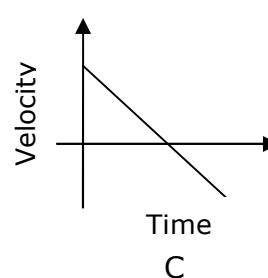
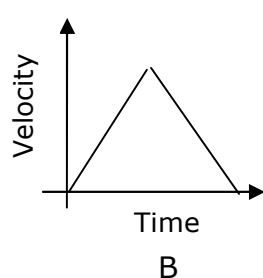
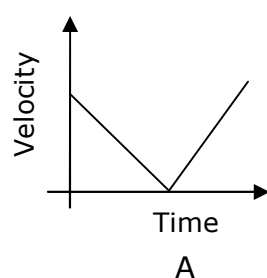
C. not affected by increases in light intensity.

D. not important.

Turn Over



28. One of these graphs shows the motion of a body thrown vertically upwards.



29. Cooling fins in a refrigerator are hot due to

A. heat from electricity.

B. latent heat of vaporization from the gas.

C. friction from the gas.

D. friction from the pump.



30. The velocity ratio for a gear train with a driving wheel of 20 teeth and driven wheel of 8 teeth is

A. 0.4.

C. 12.

B. 28.

D. 2.5.



31. A convex lens can be used as a telescope when the object is

A. at infinity.

C. between C and F.

B. at F.

D. at C.



32. The image formed by a plane mirror is

A. real and upright.

B. real and the same size as the object.

C. real but laterally inverted.

D. upright and same size as the object.

☐

33. These rays are used in florescent tapes.

A. Gamma

C. W-rays

B. X-rays

D. Rooho-waves

☐

34. This is not an example of a connection current.

A. Sea breeze

C. House ventilation

B. Land breeze

D. Floating of ice on water.

☐

35. Friction

A. is inversely proportional to the load.

B. is inversely proportional to the area of contact.

C. is directly proportional to the area of contact.

D. is independent of area of contact.

☐

36. Centripetal force

A. increases with increase in the radius.

B. increases with increase in speed.

C. increases with a decrease in mass.

D. is determined by the direction of motion.

☐

37. The earth behaves as if it contains a short but very strong bar magnet with

A. its north pole in the southern hemisphere.

B. its north pole in the east.

C. its north pole in the west.

D. its north pole in the northern hemisphere.

☐

38. This is potential difference.

A. $\frac{\text{Charge}}{\text{Workdone}}$

D. Work done + Charge

B. Charge x Work done

Turn Over

C. $\frac{\text{Workdone}}{\text{Charge}}$

39. Electric transmission is done ☐ very high voltage to

A. avoid danger to humans.

B. avoid power loss.

C. avoid use of very expensive wires.

D. avoid use of transformers.

☐

40. The frequency of vibration of a string is determined by

A. length only.

C. length, tension and thickness.

B. length and tension only.

D. none of these.

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SECTION B

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

41. (a) What is a harmonic? (01 Mark)

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(b) Determine the frequency of the second over time of a closed pipe of length of 24cm given speed of sound in air is 320ms⁻¹. (03 Marks)

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42. (a) Define the term 'internal resistance' with respect to a cell. (01 Mark)

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- (b) A cell of internal resistance, r , and emf E gives a current $I = .12A$ when connected to a one ohm resistor and a current $I = 0.4A$ when connected to a four ohm resistor. Determine the value of E . (03 Marks)

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43. (a) State one use of the following;

(i) x-rays (01 Mark)

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(ii) cathode rays (01 Mark)

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- (b) List down the energy changes that take place in an X-ray tube. (02 Marks)

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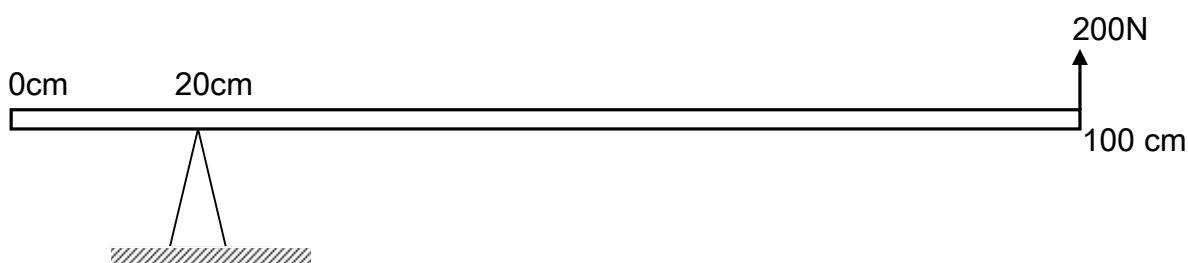
44. (a) State the principle of moments.

Turn Over

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- (b) The diagram below is of a uniform meter rule is pivoted at the 20 cm mark.



When a force of 200N acts on it at the 100 cm mark, the metre rule remains in a horizontal position. Find the weight of the metre rule.

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45. (a) What is heat capacity?

(01 Mark)

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- (b) Determine the temperature rise of a substance of 500g and specific heat capacity $400\text{Jkg}^{-1}\text{K}^{-1}$ and heat capacity of heat is of 800J of heat supplied to it.

(03 Marks)

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46. (a) What is Brownian motion? (01 Mark)

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(b) An oil drop of volume 10^3cm^3 forms an oil patch of 0.785cm^2 on water. Estimate the size of the oil molecule. (03 Marks)

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47. (a) A stone weighs 12N in air, 9N in water and 8N in a liquid X. Determine the Rd of X. (01 Mark)

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(b) Give a reason for the shape of each of the parts of a hydrometer: **Turn Over**

(i) Stem (01 Mark)

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(ii) the bulb (01 Mark)

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(iii) the lead shut (01 Mark)

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48. (a) Draw a diagram to show reflection of light from the focal point of a parabolic mirror. (02 Marks)

(b) Use the diagram to explain why this mirror can be used as a car headlamp. (02 Marks)

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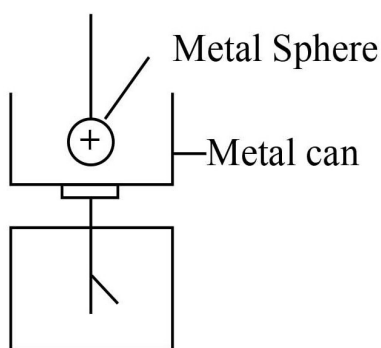
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49. (a) State the law of **electrostatics**. (01 mark)

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(b) A small metal sphere carrying a positive charge is lowered gently into a metallic can placed on the cap of an uncharged gold leaf electroscope as shown below.



(i) State what happens to the leaf of the electroscope. (01 mark)

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(ii) Explain the observation in (b) (i) above. (02 marks)

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50. (a) What is a **neutral point** as related to an electric field? (01mark)

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(b) State **three** properties of electric field lines. (c Turn Over

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(c) Explain what happens when an ebonite rod is rubbed with fur. (01½ marks)

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End