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535/1

**PHYSICS**

**PAPER 1**

JULY, 2017

2 ¼ HOURS

**RESOURCEFUL MOCK EXAMINATIONS 2017**

**Uganda Certificate of Education**

**Physics**

**Paper 1**

**2 Hours 15 Minutes**

**INSTRUCTIONS**

* *Write your name, signature, centre and index number clearly in the space above.*
* *Section* **A** *contains* **40** *objective type of questions.*
* *You are required to write the correct answer* **A***,***B** *,***C** *or* **D** *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 questions paper.*
* *Mathematics tables, slides rulers and silent non – programmable calculators may be used.*
* *Acceleration due to gravity = 10ms-2*
* *Specific heat capacity of water = 4200JKg-1K-1*

**FOR EXAMINER’S USE ONLY**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Q .41** | **Q .42** | **Q .43** | **Q .44** | **Q. 45** | **Q .46** | **Q .47** | **Q .48** | **Q .49** | **Q. 50** | **MCQ** | **Total** |
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**SECTION A (40MARKS)**

**Answer all questions in this section**.

1. Which one of the following fluid is the best conduct of heat?

A. water

B. alcohol

C. mercury

D. air

2. The force that gives a body of mass 1 kg an acceleration of 1ms-1 is called

A. weight

B. newton

C. gravity

D. friction

3. The particles that are emitted from a hot metal surface are called

A. electrons

B. neutrons

C. protons

D. alpha

4. A vibrator produces a sound wave that travels 900m in 3s. if the wavelength of the wave is 10m, find the frequency of the vibrator.

A. 30HZ

B. 270HZ

C. 300HZ

D. 3000HZ

5. Which of the following are true statements about evaporation?

(i) it occurs inside the liquid

(ii) it takes place at the surface of the liquid

(iii) it takes place above 1000C

(iv) it occurs at any temperature

1. (i) only
2. (i) and (ii)
3. (i) and (ii)
4. (ii) and (iv)

6. A car accelerates at a constant rate during a period starting from t = 0. Referring to the figures below , which is the correct velocity –time graph?

V

V

B

t

t

A

t

D

V

C

V

t

7.

C

Figure 1 shows the path of a ray of light from a transparent material to air. The angle c = 450. Refractive index of the material is............

1. 0.71
2. 1.41
3. 1.50
4. 2.00

8. Which one of the following does not affect the rate at which a gas diffuse through a porous partition?

A. temperature of the gas

B. volume of the gas

C. size of the gas molecules

D. size of the pore

9. Charge distribution on a conductor depends on

A. the material out of which the conductor is made.

B. shape of conductor

C. quantity of charge

D. nature of charge

10. The transformer cores are laminated in order to

A. reduce eddy current

B. decrease electric resistance

C. strengthen the magnetic flux

D. improve the magnetic flux linkage

11. Three resistors each of 2Ω are connected as shown in figure 2

2Ω

2Ω

2Ω

**Fig.2**

The effective resistance is

1. 1.5Ω
2. 2.0Ω
3. 3.0Ω
4. 6.0Ω

T

12.

L

Q

S

R

**Fig . 3**

Figure 3 shows wooden beams supporting a load L. which of the beam are struts

A. T,S and Q

B. S,R and Q

C. T,R and Q

D. T,S and R

13. Which of the following is true about magnets

(i) heating can magnetise a steel bar.

(ii) the neutral point in a magnetic field is the point

(iii) a paramagnetic material is a material from which a strong magnet can be made.

(iv) magnetic poles can be separated.

1. (i) and (ii)
2. (ii) and (iii)
3. (iii) and (iv)
4. (ii), (iii) and (iv)

14. An electric fan rated 240V,1.5kW runs for 10hours a day. If the cost per unit electricity is shs. 380, find the daily cost of running the fan.

A. shs. 570

B. shs.2400

C. shs.3800

D. shs.5700

15. A tank 2m tall and base area 2.5m2 is filled with a liquid up to the brim. The thrust exerted at the bottom of the tank is 40,000N. Calculate the density of the liquid.

A. 8kg-3

B. 80kgm-3

C. 900kgm-3

D. 8000kgm-3

16.

Q

P

X

**Fig.4**

Figure 4 shows a pattern of iron fillings between tow magnetic poles P and Q. which of the following is true?

1. P and Q are like poles
2. Pole P is stronger than pole Q
3. X is a neutral point
4. (i) only
5. (i) and (ii) only
6. (ii) and (iii) only
7. (i) , (ii) and (iii)

17. The ticker tape shown in figure 5 was pulled through a ticker timer of frequency 2Hz. three consecutive dots. A , B and C were made as shown.

A

C

B

4cm

1cm

**Fig.5**

Acceleration of the tape was;

1. 12 cm-2
2. 10cm-2
3. 8cm2
4. 6cms-2

18. Surface tension is a demonstration of ;

A. adhesive forces

B. cohesive forces

C. collision among molecules

D. random motion of molecules

19. A block is pulled with a force of 30N at constant velocity of 20m/s for a time of 2s. The power developed is

A. 600W

B. 300 W

C. 1200W

D. 15W

20. The mass of a radioactive element is 48g, at two minutes the mass is 3g. What is the half – life of the element ?

A. 30 s

B. 8 hours

C. 1 hour

D. 2 hours

21. One kilogramme of water was completely changed to steam. Which of the following did not change.

A. the number of molecules

B. the speed of the molecules

C. the temperature of water

D. the volume of water

22. A galvanometer has a full scale deflection f 0.05A and a coil resistance of 20.0Ω. What is the value of the resistance that should be the value of the resistance that should be connected in series with it to convert it into a voltmeter reading up to 15V?

A. 280Ω

B. 293Ω

C. 980Ω

D. 10Ω

23. When a negatively charged body is brought near the cap of a positively charged electroscope , the gold leaf

A. remains uncharged

B. decreases in divergence

C. increases in divergence

D. gains a positive charge

24. A voltage of 440V is applied to the primary of a transformer of 200 turns. If the voltage across the secondary is 11KV, what is the number of turns in the secondary coil.

A. 50

B. 80

C. 5.00x104

D. 8.00x104

25. A hydraulic brake works on the principle of

A. transmission of pressure in liquids

B. distribution of force in a liquid

C. existence of viscosity in a liquid

D. high density of a liquid

26. An object 6cm high is placed 24cm from a tiny hole in a pinhole camera. If the distance form the hole to the screen is 8cm, find the size of the image on the screen

A. 0.2cm

B. 2.0cm

C. 18.0cm

D. 32.0cm

27. Which one of the following bands has a wave length greater than that of visible spectrum?

A. gamma

B. x- rays

C. ultra – violet

D. infrared

28. How long does it taken an alternating p.d of beak value 10V and frequency 50Hz to mark one cycle?

A. 0.02s

B. 0.20s

C. 5.00s

D. 500.00s

29.

|  |  |  |  |
| --- | --- | --- | --- |
| **Element** | **Neutrons** | **Protons** | **Elements** |
| P  Q  R  S | 6  8  2  2 | 6  6  2  3 | 6  6  2  3 |

The table shows the structure of four atoms P,Q ,R and S . which ones are             isotopes.

1. P and Q
2. Q and R
3. P and S
4. P and R

30. Which of the following parts of the cathode ray tube form the electron gun?

A. cathode, metal anode, heater , grid

B. grid, metal anode , cathode , y-plates

C. cathode , metal anode, grid , heater , x – plates, Y-plates.

D. cathode, grid, heater, x – plates

31. Two solid cubes have the same mass but their edges are in the ration 4:1. What is the ratio of their densities?

A. 1:4

B. 1:8

C. 1:16

D. 1:64

32. The induced current in a generator

A. is a maximum when the coil is vertical

B. is a maximum when the coil is horizontal

C. changes direction when the coil is horizontal

D. increases when the speed of rotation increases.

33. In an atomic bomb, energy is produced by

A. fusion

B. fission

C. radioactivity

D. thermionic emission

34. Which of the following shows a piece of material in a magnetized condition

D

C

B

A.

35. 238 A

Alpha particle

+

**X**

**Th**

90 Z

The above equation represent an activity in which thorium decays and emits an alpha particle . find the value of Z

1. 88
2. 89
3. 91
4. 92

36. In a simple cell, the source of electrons which constitute the electrons currents is

A. the zinc plate

B. the copper plate

C. dilute sulphuric acid

D. potassium didromate

37. Which of the following graphs shows the variation of the pressure of a gas as the volume changes at a constant temperature.

P

P

P

P

D.

V

V

C.

B.

V

A .

t

38. A non – uniform tube with a narrow middle part has three identical manometers attached to it as shown in figure 5.

X

Y

Z

If a steady flow of a liquid is maintained in the direction indicated by the arrows, the height of the liquid will be.

1. Greater in X
2. Greater in Y
3. Greater in Z
4. Equal X,Y and Z

39. Loudness of a musical note depends on

A. pitch

B. velocity

C. frequency

D. amplitude

40. Which of the following are attracted towards the negative plate in an electric field?

A. beta particles

B. alpha particles

C. gamma rays

D. neutron

**SECTION B (40 MARKS)**

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

41. (a) Define **pressure** ***(01marks)***

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1. Explain why sleeping on a sponge mattress feels more comfortable than sleeping on a hard board. ***(02marks)***

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1. State two factors affecting pressure in fluids. ***(01mark)***

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42. (a) What is **an echo**? ***(01mark)***

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(b) An echo sounder on a boat sends down a pulse through the water and receives its echo 0.9s later. If the velocity of sound in water is 1450ms-1, calculate the water depth. ***(02marks)***

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(c) State any two factors which determine the frequency of a note produced when a guitar string vibrates. ***(01marks)***

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43. (a) What is meant by boiling point of a liquid? ***(01mark)***

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(b) Why is cooking is faster with a pressure cooker?  ***(02marks)***

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(c) State two differences between boiling and evaporation. ***(01mark)***

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44. (a) State two differences between a.c and d.c generators. ***(02marks)***

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(b)

N

S

V

Briefly describe what happens when a magnet is moved into the coil as shown in             figure .1 ***(02marks)***

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45. (a) State two conditions for total internal reflection. ***(02marks)***

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(b) Draw a diagram to show how a fish in water attains a wide field of view.                                                                                                                                        ***(02marks)***

46. (a) State **Ohm’s law**. ***(01mark)***

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K

6V

V

4Ω

4Ω

2Ω

Fig .2

1. What is the effective resistance in the circuit in fig.2? (the cell has negligible resistance ) ***(02marks)***

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1. What will be the reading of the voltmeter when the key, K is closed?                                                                                                                   ***(02marks)***

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47. (a) Why is a petrol engine referred to as a four stroke engine? ***(02marks)***

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(b) State two reasons why the efficiency of a petrol engine is quite low.                                                                                                                                           ***(02marks)***

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48. (a) Define **moment of a force**. ***(01mark)***

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(b) A uniform metre – rule is balanced at the 30cm mark when a load of 0.8N                         is long at the zero mark.

100cm

30cm

O

0.8N

Find the weight of the meter rule.       ***(03marks)***

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B

A

C

**Fig . 3**

Figure 3 shows the main feature of a cathode ray oscilloscope (C.R.O)

1. (i) Name the parts labelled A,B and C ***(1 ½ mark)***

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(ii) State the function of part labelled B. ***(01mark)***

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1. State three applications of a C.R.O ***(1 ½ mark)***

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50. (a) State Archimedes’ principles. ***(01mark)***

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(b) A solid weighs 25.0g in air and 19.0g when sub merged in water. Find the density of the material of the solids

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**END**