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535/1
Physics
Paper 1
July/August 2022
2 hours 15 minutes

KAMSSA JOINT MOCK EXAMINATIONS

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 the box on the right hand side of each page.*
- *Section B contains 10 structured questions. Answers* ***are to be*** *written in the spaces provid ed on the question paper.*
- *Mathematical tables, slide rules and silent non programmable calculators may be used.*

-Acceleration due to gravity = $10ms^{-2}$
-Specific heat capacity of water = $4200JKg^{-1}k^{-1}$
-Specific latent heat of fusion of ice = $3.36x10^{5}Jkg^{-1}$

FOR EXAMINER'S USE ONLY											
41	42	43	44	45	46	47	48	49	50	MCQ	TOTAL

1. Which of the following is likely to take place when a substance loses heat?

A. Melting **B.** Evaporation **C.** Boiling **D.** Condensation

2. Which of the following instruments is used for measuring pressure gas?

A. Burdon gauge **C.** Hydrometer

B. Hyposemeter **D.** Manometer

3. A material which undergoes a large amount of extension before it breaks is called

A. Brittle **B.** Plastic **C.** Ductile **D.** Elastic

4. A force of 10N its acts at a distance of 5cm from a point and perpendicular from it as shown below.

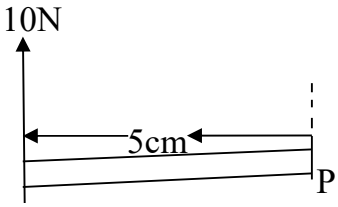


Fig:1

Calculate the moment of the force from p.

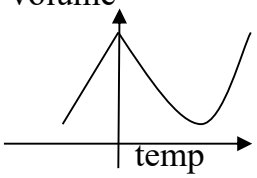
A. 50Nm **B.** 0.5Nm **C.** 5Nm **D.** 0.05Nm

5. Convert $65cm^3$ into m^3

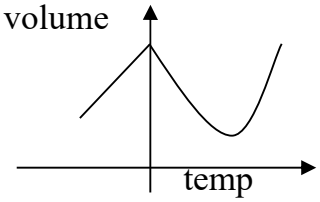
A. 6.5×10^5 **B.** 6.5×10^{-1} **C.** 6.5×10^2 **D.** 6.5×10^{-5}

6. Which of the following graphs shows the variation of volume with temperature for water temperature changing from $^{-}5^0$c to 20^0c.

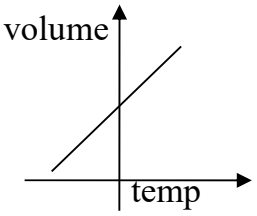
A volume



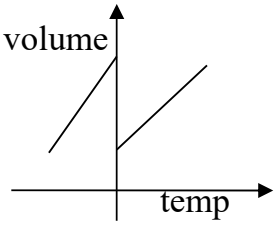
B volume



C



D



7. A vibrator produces waves which travel a distance of 35cm in 2seconds. If the distance between three consecutive crests is 10cm. what is the frequency of the vibrator?

A. 3.5Hz **B.** 7.0Hz **C.** 14.0Hz **D.** 87.5Hz

8.

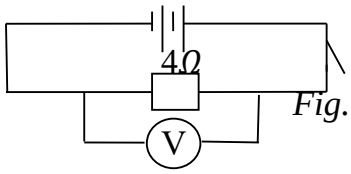


Fig. 2

Fig. 2 shows two cells each of emf 1.5v and internal resistance 0.5Ω connected to a 4Ω resistor. What will be the reading of the voltmeter when, k is closed?

A. 3.0v **B.** 2.4v **C.** 1.5v **D.** 1.0v

9. Power losses in a transformer is minimized by

i. Laminating the iron core
ii. Using thick copper wire in winding
iii. Using wire with high resistance in winding
iv. Using different number of turns of primary and secondary coils.

A. (i) and (ii) **C.** (i), (iii) and (iv)
B. (i), (ii) and (iv) **D.** (i), (ii),(iii) and (iv)

10. Which of the following can be used in a periscope?
A. Concave mirror **C.** Convex lens
B. Convex mirror **D.** Glass prism

11. A force of 2.0N causes a trolley to accelerate at a rate of $0.5ms^{-2}$. Find the acceleration of the trolley when a force of 8.0N acts on it.
A. $0.125ms^{-2}$ **B.** $2.000ms^{-2}$ **C.** $0.500ms^{-2}$ **D.** $32.000ms^{-2}$

12. An isotope of nuclide, $^{35}_{17}X$, has;
A. 18protons and 17 neutrons **C.** 17 protons and 20 neutrons
B. 17 electrons and 18 neutrons **D.** 18 protons and 18 neutrons

13. The device which disconnects the mains when there is a sudden increase in voltage is;
A. Fuse **B.** Earth wire **C.** Switch **D.** Circuit breaker

14. A purple potassium permanganate crystal placed at the bottom of a beaker containing water is found to spread throughout the water after some time due to;
A. Diffusion **C.** Capillarity
B. Osmosis **D.** Surface tension

15. A beam of light is passed through a combination of two filters. Which filter combination allows only red light?
A. Yellow and magenta **C.** Blue and red
B. Cyan and magenta **D.** Cyan and red

16. Four non- metallic rods W, X, Y and Z are tested for charges. X attracts W and Y, repels Z.Z repels W and y. W and Y repel each other. Which of the following statements is true about W, X, Y and Z?
A. X is charges, Y is uncharged
B. X is uncharged, W and Y are charged
C. W, Y and Z carry the same charge
D. X,Y and Z carry the same charge

17. Uganda needs to produce nuclear energy for industrial use the process that is employed is;
A. Thermo electricity **C.** Ionization
B. Radiology **D.** Fission

18.

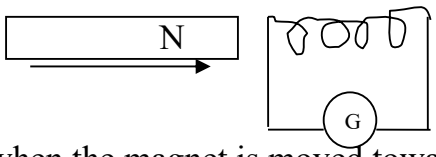


Fig: 3

In Fig: 3, when the magnet is moved towards the cell;
A. Its attracted **C.** Nothing happens
B. Its repelled and emf induced **D.** Galvanometer doesn`t deflect

19. Hot water pipes are designed with bends in them in order to;
A. Reduce the speed of water
B. Allow pressure changes
C. Give the pipe more rigidity
D. Allow free expansion of the pipe

20. A ball falls from rest through a height of 92.5cm in 0.45s. Find the acceleration due to gravity;
A. $\frac{0.45^2\times100}{2\times92.5}ms^{-2}$ **C.** $\frac{92.5}{0.45^2\times100}ms^{-2}$
B. $\frac{0.45^2\times100}{92.5}ms^{-2}$ **D.** $\frac{2\times92.5}{0.45^2\times100}ms^{-2}$

21. Fig: 4 shows a wave trace when a.c is applied to the y-plates and time base voltage to the x-plates of a C.R.O.

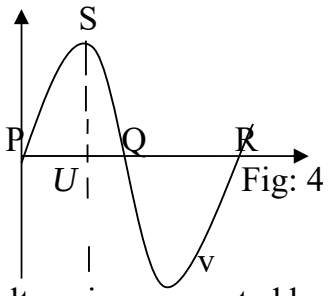


Fig: 4

The peak voltage is represented by;

A. PQ **B.** PR **C.** SU **D.** ST

22. Which of the following are second class levers?

i. See Saw
ii. Wheel barrow
iii. Pair of tongs
iv. Nut cracker

A. (i) and (ii) only **C.** (iii) and (iv) only
B. (ii) and (iii) only **D.** (ii) and (iv) only

23. Which of the following electromagnetic waves has a frequency higher than the frequency of visible light?

A. Infrared **C.** X-ray
B. Radio waves **D.** Micro waves

24. A S.I student made a record of 1.34cm in a lesson on measurements. If the value is correct, which instrument did the student use to make the measurement?

A. Meter rule **C.** Micrometer screw gauge
B. Vernier caliper **D.** Tape measure

25. Which of the following properties makes the clinical thermometer to measure temperature accurately?

A. Narrow stem **C.** Large stem
B. Large bore **D**. Narrow bore

26. A concrete bridge develops a notch when over loaded because it is

A. Stiff **B**. Brittle **C.** Elastic **D**. Ductile

27. A boat in a river flowing Eastwards at a $2ms^{-1}$ is acted upon by wind blowing Northwards at a velocity of $5ms^{-1}$. Find the resultant velocity of the boat.

A.$7.0ms^{-1}$ **B**.$13.0ms^{-1}$ **C**.$17.0ms^{-1}$ **D**.$169.0ms^{-1}$

28. How many lamps marked 75w,240v could light normally when connected in parallel having a 5A fuse.

A. 1 **B.** 3 **C.** 16 **D.** 26

29. Which of the following represents the appearance on the screen of a cathode ray oscilloscope when a d.c voltage is connected across the y-plates with the time base switch on?

A. 
C. 
B. 
D. 

30. The direction of motion of motion carrying current in a magnetic field can be predicted by applying

A. Faraday's law C. Fleming's left hand rule
B. Maxwell's screw rule D. Fleming's right hand rule

31. Permanent magnets are made from

A. diamagnetic materials
C. paramagnetic materials
B. ferromagnetic materials
D. dielectric materials

32. Streams of electrons moving at high speed are called

A. x-rays
C. cathode rays
B. gamma rays
D. alpha particles

33. The transfer of heat by actual movement of molecules of matter takes place

A. only in liquids
C. in solids and liquids
B. only in gases
D. in liquids and gases

34. An oil drop of volume $0.001cm^3$ forms a path of $0.785cm^3$ on water surface during an experiment to estimate the size of oil molecule. If the film is one molecule thick, What is the size of the molecule in cm^3?

A. 4.06×10^{-4} B. 7.85×10^{-4} C. 9.52×10^{-4} D. 1.27×10^{-4}

35. Which one of the following is true about a periscope?

A. gives a laterally inverted image
B. is used to observe an obstructed object
C. is used for viewing distant objects
D. gives a magnified image of the object

36. Find the force that would give a mass of 400g cm an acceleration of $8ms^{-2}$

A. 0.05 N
C. 20.00N
B. 3.20 N
D. 50.00 N

37. A material stretched by 6cm develops a strain of 4.8×10^{-2}. Find the original length of the material.

A. $6 \times 4.8\ 10^{-2}$m
B. $\frac{6x10^{-2}}{4.8x10^{-2}}$m
C. $\frac{6x10^{-2}}{4.8x10^{-2}}$m
D. $\frac{6}{4.8x10^{-2}}$m

38. which of the following are longitudinal waves?

A. water waves
C. sound waves
B. light waves
D. radio waves

39. which one of the following are true about a hydrometer?

i. It measures density of liquids
ii. Its sensitivity is improved by narrowing its stem
iii. Its readings increase upwards on the stem
iv. Its buoyancy is provided by the large bulb

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

40. The energy transformations involved in a bicycle dynamo is

A. electrical to chemical energy
C. chemical to light energy
B. potential to chemical energy
D. kinetic to electric energy.

SECTION B (40 marks)

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

41. Define the terms as applied to machine

(i).Load **(01 mark)**

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(ii).Efficiency **(01 mark)**

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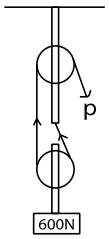
(b).Figure 5 below shows a pulley system supporting a load of 600N.



(i) . Find the tension in the string **(02 marks)**

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42.(a). Define the term **acceleration due to gravity** **(01 mark)**

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(b). Draw a velocity-time graph of a body thrown vertically upwards .

(01 mark)

C. A stone is thrown vertically upwards with a velocity of $15ms^{-1}$. Calculate the time taken to reach the maximum height. **(02 marks)**

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43. Define **specific heat capacity**? **(01 mark)**

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(b). An immersion heater rated 1000w, 250v supplies heat to 80kg of liquid in a tank. If the temperature of the liquid rises from 25^0c to 65^0 c in 48 minutes. Determine the specific heat capacity of the liquid. (03 marks)

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44.(a).State **faraday's law** of electromagnetic induction. **(01 mark)**

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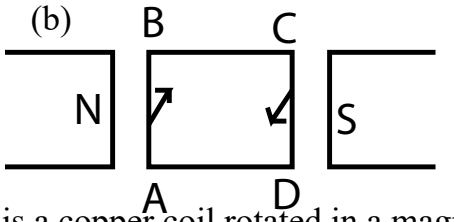
(b)



ABCD is a copper coil rotated in a magnetic field indicate on the diagram the direction of the induced current. **(02 marks)**

(c) How are eddy current losses reduced in motors and generators. **(01 mark)**

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45.(a) Define the term **rectilinear propagation of light**. **(01 mark)**

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(b). State **two** instances that show that light travels in a straight line. **(01 mark)**

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

46.(a). What is meant by **frequency**? **(01 mark)**

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(b). A sound source produces 160 compressions in 10s.the distance between successive compressions is 20 cm. Calculate the;

(i). frequency of sound **(01 mark)**

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(ii). Wave speed **(02 marks)**

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47.(a). Draw a well labeled diagram of a gold leaf electroscope.

(02 marks)

(b). Give **two** uses of a gold leaf electroscope . **(02 marks)**

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48.(a). State **two** advantages of nicked iron accumulator over a lead acid accumulator.

(02 marks)

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(b). Name the gases evolved during the charging of the lead acid accumulator. **(01 mark)**

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(c). Why is a dry cell called a primary cell. **(01 mark)**

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49.(a).Define **volume** and state its S.1 unit. **(01 mark)**

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(b). A cuboid has dimensions 2cm by 10cm. find its width in meters if it occupies a volume of $80cm^3$. **(03 marks)**

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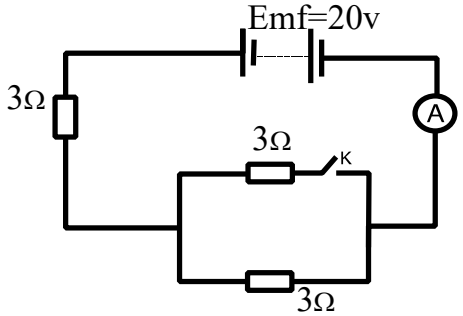
50.(a). A source of emf 20v and negligible internal resistance is connected to resistors of 2 Ω and 3 Ω as shown in figure 7.



Find the ammeter reading when switch ,k is

(i). open **(02 marks)**

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(ii). Closed **(02 marks)**

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END