**Candidate’s Name:**

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| **Random No.** | | | | | | **Personal No.** | | |
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**Signature:………………………………………...**

***(Do not write your School / Centre Name or Number anywhere on this booklet.)***

**535/1**

**PHYSICS THEORY**

**Paper 1**

**July. / Aug. 2019**

2 1/4 hours

**JINJA JOINT EXAMINATIONS BOARD**

**Uganda Certificate of Education**

**MOCK EXAMINATIONS 2019**

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*** *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 maybe used.*

*Acceleration due gravity, g = 10 m s -2*

*Specific heat capacity of water = 4200 J kg -1 K -1*

*Velocity of light in air, c = 3.0 x 10 8 m s -1*

*Density of water = 1000 kg m -3*

**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** | **MCQs** | **Total** |
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**SECTION A (40 MARKS)**

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

1. The gradient of a velocity – time graph represents
2. speed of a body C. velocity of a body
3. distance of a body D. acceleration of a body.
4. A glass block weighs 25.0N. When wholly immersed in water, the block appears to weigh 10N. What is the upthrust on it.
5. 10 B. 15N C. 2.5 D. 250N
6. Which of the following groups consit of scalars only.
7. Momentum, acceleration, work C. Time, work, power, distance
8. Speed, velocity, time, energy D. velocity, force, displacement, energy.
9. A force of 10N acts on a body and produces an acceleration of 2ms-2. The mass of the body is
10. 0.2Kg B. 5.0Kg C. 20.0Kg D. 50Kg
11. Athermopile system converts;
12. Heat energy to electrical energy C. Light energy to electrical energy
13. Electrical energy to light energy D. Chemical energy to heat energy
14. When a mental sphere is dropped in a viscous fluid, it eventually attains a steady velocity called.
15. Turbulence velocity C. Viscous velocity
16. Terminal velocity D. Streamline velocity
17. An object 2cm tall is made to stand perpendicularly on the axis of a concave mirror of radius of curvature 20cm at a distance of 25cm from the mirror, the image formed will be;
18. Diminished in size and real C. Same size as object and real
19. Magnified in size and real D. Virtual and magnified.
20. A girl stands in between two tall cliffs and claps her hands. She hears the first echo after 1.0 seconds and the second echo after 2 seconds. If the speed of sound is 300ms-1, the distance between the cliff is;
21. 300m B. 450m C. 900m D. 1200m
22. The Image of a distance object formed by a pin-hole camera is
23. Real (ii) diminished (iii) erect
24. (i) only C. (i), (ii) and (iii)
25. (i) and (ii) D. (i) and (iii)
26. When smoke is introduced in a smoke cell and observed under a microscope, it is observed as a particle moving at random. This is mainly because the particles
27. Are hot C. collide with air molecules
28. Collide with walls of the smoke cell D. collide with one another
29. A vibrator produces waves which travel a distance of 12m in 4.0s. If the frequency of the vibrator is 2Hz. What is the wave length of the wave?
30. 1.5m B. 3m C. 6m D. 24m
31. A 100g quantity of water at 240C is added to 50g of water at 360C. The final temperature of the mixture is

A. 340C B. 320C C. 300C D. 290C

1. What is the process by which electrons are emitted from a hot filament of a C,R.O?
2. Radioactivity C. Thermionic emission
3. Nuclear fission D. Photoelectric effect
4. When a car is suddenly brought to rest, a passenger jerks forward because of ; ….

A. gravity B. inertia C. friction D. momentum

1. The distance between the lower and the upper fixed points on a Celsius scale in un marked mercury – in – glass thermometer is 25cm. If the mercury level is 5cm below the upper fixed point, then the temperature is

A. 50C B. 800C C. 950C D. 200C

1. + P

In the above reaction P is likely to be;p

1. An alpha particle C. Thermionic emission
2. A neutron D. A gamma ray
3. The frequency of a vibrating string depends on;
4. Length C. Amplitude
5. Pitch D. Medium
6. Which of the following is the best conduct of heat
7. Iron B. Copper C. Silver D. Aluminum
8. A load of 4N stretches a spring by 0.5cm. What extension corresponds to a load of 8N?

A. 0.25cm B. 20cm C. 1.0cm D. 4.0cm

1. An electroscope becomes Negatively charged when it;
2. Loses electrons C. Gains protons
3. Loses protons D. Gains electrons
4. The half life of a radioactive element is 4 minutes. Find the mass of element that decays after 24 minutes if the initial mass is 9.6g?
5. 1.6g B. 4.8g C. 9.45g D. 0.15g

Cell

4Ω

I = 0.3A

Given that the electromotive force of the cell in the diagram above is 1.5V, then the internal resistance of the cell is;

1. B. C. D.

23. The following are some of the uses of x-rays except;

1. treatment of cancer C. archaeological dating
2. detection of fractures in bones D. preservation of food

24. Which of the following does not change when water waves travel from deep to shallow water?

1. Amplitude B. Frequency C. velocity D. Wavelength

25. An electric heater which operates from 240V mains draws 15A for 40 minutes.

Calculate the cost of electricity given that electricity costs shs. 9,000 per Kilowatt hour.

1. Shs. 2, 1600 B. Shs, 144 C. Shs. 960 D. shs. 1,296

26. Which metal is strongly attracted by a bar magnet?

1. Tin B. Copper C. Iron D. Manganese

27. Which one of the following is most suitable for us for shaving?

1. Convex mirror C. Convex lens
2. Concave mirror D. Plane mirror

28. Force is given by the product of;

1. Displacement and velocity C. displacement and mass
2. Velocity and mass D. acceleration and mass

29. The width of a metre rule is accurately measured by a;

1. Micrometer screw gauge C. tape measure
2. Vernier caliper D. metre rule

Air

30.

400

material

A ray of light travelling from a certain material to air behaves as shown in the figure

above. The refractive index of the material is

1. 2.5 B. 1.31 C. 1.56 D. 0.025

31. When a body is set in oscillation at its own natural frequency as a result of impulses received from another body, this is called;

1. Resonance C. Forced vibration
2. Beats D. Displacement

32.

10N

40N 60N

10N

In which direction does the body move?

1. To the right C. Downwards
2. Upwards D. To the left

33. The direction of induced current in a conductor in a magnetic field can be predicted by applying;

1. Faraday’s law C. Fleming’s right hand rule
2. Maxwell’s rule D. Fleming’s left hand rule

34. By which one of the following methods does energy travel through the vacuum?

1. Conduction only C. Convection only
2. Radiation only D. Convection and radiation

35. A rectangular block tin is 0.5m long and 0.01 thick. Find the width of the block if its

mass and density are 0.45kg and 9,000kgm-3 respectively.

1. C.
2. D.

36. A charged conductor usually loses charge gradually by a process called;

1. Induction C. Conduction
2. Leakage D. Insulation

37. A cork held under water rises to the surface when released because the up thrust on it is

1. greater than weight C. equal to the weight
2. less than the weight D. equal to the weight of water displaced

38. A body moves with uniform acceleration if;

1. its movement remains constant
2. it covers equal distances in equal times
3. the velocity changes by equal amounts in equal times
4. the net force on the body is zero

39. A cyclist travelling at a constant acceleration of 2ms-2 passes through two points A and

B in a straight line. If the speed at A is 10ms-1 and the points are 75m apart, find the speed at B.

1. 15.8ms-1 B. 17.3ms-1 C. 4000ms-1 D. 20.0ms-1

40. Power loss due to eddy currents in the core of a transformer can be minimized by

1. using thick copper wires in the windings
2. laminating the core
3. using a soft iron core
4. Winding the secondary coil on top of primary coil.

**SECTION B**

41. a) (i) State the principle of moments. (01 mark)

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(ii) State the conditions for a body to be in equilibrium. (02 marks)

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b) What is meant by the term centre of gravity? (01 mark)

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42. a) State Archimedes principle. (01 mark)

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b) A balloon of volume 1000m3 contains helium gas of density 0.18Kgm-3. It carries a basket whose contents weigh 7200N. Determine the tension in the rope used to

hold it to the ground if the air is of density 1.2Kgm-3. (03 marks)

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43. a) Explain why gaps are left between rails in a railway line. (1½ marks)

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b) Why do gases expand much more than solids for the same temperature change? (1½ marks)

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c) Name one application of a bimetallic strip. (01 mark)

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44. a) Draw a labeled diagram of a vacuum flask. (02 marks)

b) (i) Name two physical properties which change with temperature. (01 mark)

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(ii) Convert a temperature of -730C to Kelvin. (01 mark) …………………………………………………………………………………………….

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45. a) Distinguish between potential energy and kinetic energy. (02 marks)

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b) A block of mass 2Kg, dropped from the top of a building hits the ground with

kinetic energy of 900J. Calculate the height of the building. (02 marks)

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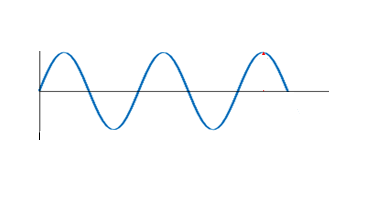
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46. a) What is a transverse wave? (01 mark)

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b) The diagram below represents a wave travelling in water.



N

Displacement

Distance along the direction of propagation.

M

1. Name the part labeled N. (01 mark)

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1. If the distance represented by M is 20cm and the speed of the wave is 18ms-1,

what is the frequency of the wave? (02 marks)

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47. a) Define the terms;

(i) atomic number (01 mark)

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(ii) mass number. (01 mark)

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b) A radiaoactive nuclide X of atomic number 92 and mass number 238 decays by emission of an alpha particle and turns into another nuclide Y. Write an equation to

represent this nuclear reaction (02 marks)

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48. a) State the laws of reflection of light. (02 marks)

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b) Use labeled diagrams to distinguish between regular and diffuse reflection.

(02 marks)

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49. a) What is a transformer? (01 mark)

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b) A transformer whose efficiency is 80% has an output of 12V. Calculate the input current if the input voltage is 240V and the current in the output is 2A. (02 marks)

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50. a) Give two observations which show the existence of surface tension. (01 mark)

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b) State two factors which affect tension of a liquid. (01 mark)

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c) In an oil drop experiment, the radius of the film is 10cm and the volume of the drop

used is 1.1 x 10-5cm3. Find the thickness of the oil molecule. (02 marks)

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