

C. Flight velocity

D. Turbulent velocity

2. Two forces of 24N and 32N acts at right angle on A body of mass 2kg. Calculate the acceleration of the body in ms^{-2} .

A. 10

B: 40

C: 20

D: 60

3. Which of these waves has the shortest wavelength and is the strongest

A. X – rays

C. Ultra violet

B. Gamma rays

D. Intra – red radiation

4. A spring balance reads 2.42 N .when a metal cube of side 3,0cm is suspended in air from the spring balance. Find the density of the metal in kgm^{-3}

A. 1200

B: 8963

C: 324

D: 9867

5. Which one of the following is NOT true about light waves?

A. It is transverse in nature

C. Can travel through A vacuum

B. It is electromagnetic waves

D. It is longitudinal in nature

6. The activity of a radioactive sample is 4 minutes. After 12 minutes, the activity will have fallen to a fraction of the initial value equal to

A. $\frac{1}{4}$

B: $\frac{1}{8}$

C: $\frac{1}{16}$

D: $\frac{1}{32}$

7. A radioactive nuclide x emits an alpha particle and turns into another nuclide as in the equation below



A: ${}_{86}^{222}X$

B: ${}_{86}^{225}X$

C: ${}_{88}^{226}X$

D: ${}_{88}^{222}X$

8. A power of 100W is supplied to an electric motor to operate a pump if the pump raises 0.9kg of water through 10m every second. What is the efficiency of the pump?

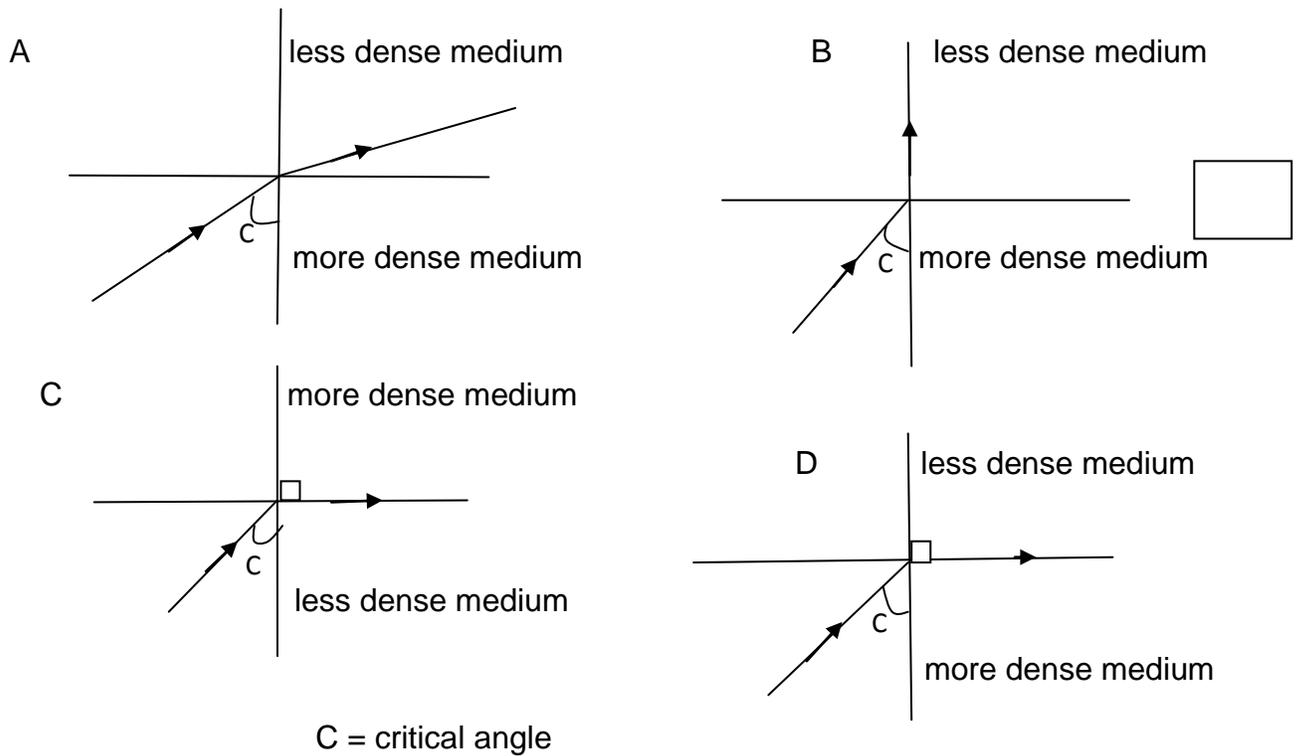
A. 90%

B: 100%

C: 80%

D: 50%

9. Which one of the diagrams best explain the term critical condition?



10. The main advantages of alternative current over direct current in A power transmission are

- (i) The a.c. can be step up and down
- (ii) The a.c. can easily be converted to d.c.
- (iii) There is no eddy current in the production of a.c.

- A. i only B: i and ii only C : i, ii and iii only D: ii and iii only

11. When a stone is thrown horizontally from a high tower which of the following describes the motion?

- A. Vertical acceleration increases
- B. Vertical acceleration decreases
- C. Horizontal velocity increases
- D. Horizontal velocity decreases

12. At A pressure of 1 atmosphere A mass of a gas a volume of 5m^2 and temperature 102°C . What will be the new volume if the temperature is lowered to 27°C and a pressure raises to 2 atmosphere?

- A. 2 m^3 B: 0.66 m^3 C: 7.4 m^3 D: 1.8 m^3

13. A thermophile converts

- A. Chemical energy to electrical energy.
- B. Heat energy to electrical energy
- C. Electrical energy to heat energy
- D. Electrical energy to chemical energy

14. What is the function of the grid in A C.R.O

- A. Deflects the beam in a vertical plane
- B. Deflects the beam in a horizontal plane

- C. Controls the brightness of the screen
- D. Emits electrons due to thermionic emission

15. A boy standing 80 m from a vertical wall claps his hands and hears an echo 0.5 S later. From this information the speed of sound in air is

- A. 340mm^{-1}
- B. 330mm^{-1}
- C. 320mm^{-1}
- D. 310mm^{-1}

16. The vapour which is in a state of dynamic equilibrium with its liquid is said to be

- A. Unsaturated
- B. Saturated
- C. Disequilibrium
- D. Motion

17. When boiling cassava, it is covered with banana leaves to

- A. Reduce the pressure inside
- B. Increase on the melting point
- C. Increase on the boiling point of water
- D. Increase on the saturation vapour pressure

18. An electrical energy consumed when 1000W is used in 3600S is known as

- A. Joule
- B. Kilowatt hour
- C. kilo watt
- D. Joule per second

19. A house has 100W bulb two 75W bulbs and five 40W bulbs. Find the cost of having all these bulbs switched on for 2 hours every day for 30 days at a cost of 20 Sh per unit.

- A. 540 shs
- B. 27 shs
- C. 450 shs
- D. 450 shs

20. Which one of this material is NOT attracted by a magnet?

- A. Copper
- B. cobalt
- C. Nichel
- D. iron

21. In a direct current, motor back e. m. f is due to

- A. Rotation of the coil
- B. Resistance of the windings
- C. Current supplied by the battery
- D. Power wasted heat in the winding

22. The length of air column in a pipe is 1.47m. Find the wavelength of the wave for third harmonic if the frequency of the wave is 280Hz.

- A. 1.18 m
- B. 1.84 m
- C. 1.47 m
- D. 2.23 m

23. An object 9 mm tall is placed 12 cm in front of a convex lens. A real image the object, 18 mm tall is produced by the lens. Calculate the distance of the image from the lens.

- A. 30 cm
- B. 27 cm
- C. 24 cm
- D. 21 cm

24. Which one of the following makes pair of complementary colours?

- A. Blue and yellow
- B. Green and red

C. Green and yellow

D. Yellow and margarita

25. A heater with a power rating 100W is placed in 0.5kg of ice at 0°C . How long will it take to melts all the ice?

- A. 1.68×10^3 S B: 3.36×10^3 S C: 1.68×10^3 S D: 3.36×10^3 S

26. A 5 kg mass is dropped from a height above the ground and hits the ground after 4.5 S what is the velocity of the mass as it hits the ground.

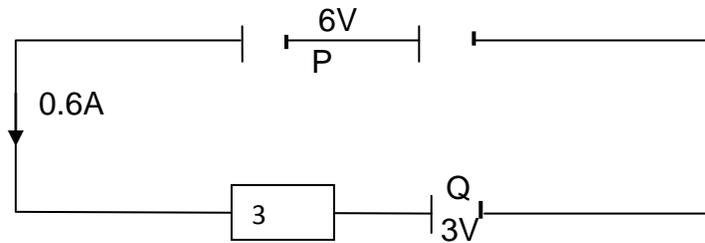
- A. 50.0ms^{-1} 101.3ms^{-1} C: 55.0ms^{-1} D: 45.0ms^{-1}

27. Which one of the following is NOT true about hard X – rays?

- A. Have high penetrating power C. Have long wavelength
B. Have short wavelength D. Have high frequency

28. The increase in cross – sectional area of a conductor

- A. Increases its resistance C. Decreases its temperature
B. Increases its temperature D. Decreases its resistance



29. In the circuit P is a battery of e. m. f 5v and internal resistance 0.5 while Q has e. m. f. 3V and internal resistance r . Find r.

- A. 0.5 B: 1.5 C: 11.0 D: 2.9

30. The energy transformation that takes place when an electrophorus is used to charge bodies are

- A. kinetic to potential energy C. Mechanical to heat energy
B. Mechanical to electrical energy D. Heat to mechanical energy

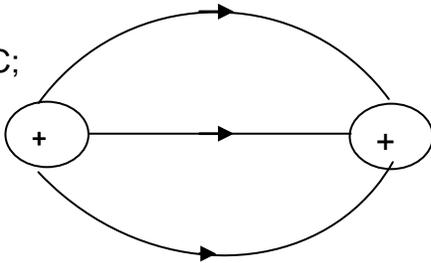
31. the vertical plane through which the magnetic dip needle freely turns through is called

- A. magnetic dipoles C. magnetic axis
B. magnetic meridian D. magnetic dip cycle

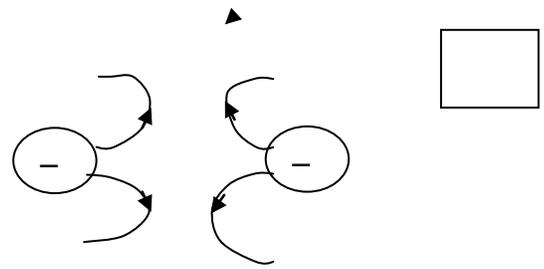
32. Which one of the following represents the electric fields on two like charges on point electrodes



C;



D:



33. A bullet of mass 0.006kg travelling at 120 ms^{-1} penetrates deeply into a fixed target and is brought to rest in 0.01S . Calculate the distance of penetration into the target

- A. 0.6m B: 1200m C: 6.00m D: 1.2 m

34. When converting a millimeters (galvanometer) into an ammeter

- A. A shunt (a resistor of low resistance) is connected in series
B. A multiplies (a high resistance wire) is connected in series with the galvanometer.
C. A shunt (a resistor of low resistance) is connected in parallel with the galvanometer
D. A multiplies (A high resistance wire) is connected in parallel with the galvanometer

35. An electric iron is rated at 2 kw . When connected to 240V mains supply, calculate the current it takes

- A. 8.33A B: 28.9A C: 2.98A D: 83.3A

36. A block exerts a pressure of $40,000\text{pa}$ on the ground. Calculate its mass if its area in contact with ground is 6 cm^2

- A. 24 kg B: 4.8 kg C: 2.4 kg D: 48 kg

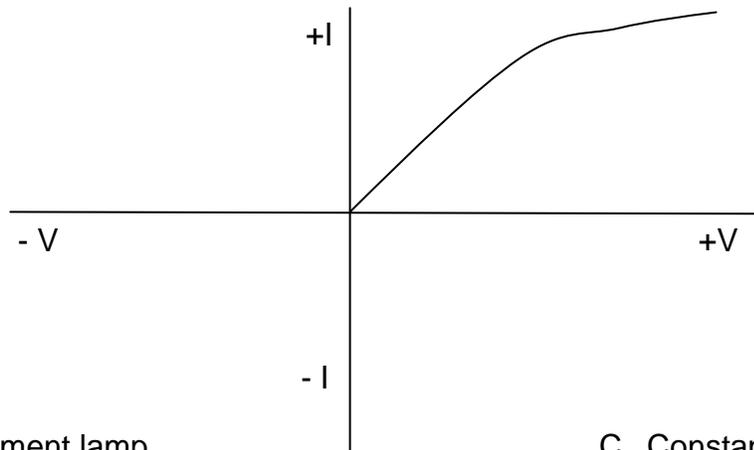
37. Which of the following radiation is deflected most in A magnetic field

- A. Alpha particles C. Beta particles
B. Gamma rays D. X –rays

38. It is difficult to start a punching bag moving and it is difficult to stop it once it begins to move. This tendency is called its

- A. Momentum B: impulse C: inertia D: mass

39. The current (I) – voltage (V) graph below is a characteristics of



- A. Filament lamp
- B. Thermionic diode

- C. Constantan wire
- D. Tungsten filament

40. A concave mirror of focal length 10 cm forms an erect image 30cm from the mirror. What is the object distance from the mirror?

- A. 7.5cm
- B. 15.0 cm
- C. 10.0 cm
- D. 1.5cm

SECTION B

41. (a) (i) What are beta particles? (1 mark)

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(ii) What changes occur in a proton number when a beta particle is emitted? (1 mark)

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(b) The half life of uranium is 24 days. Calculate the mass of uranium which remains after 120 days if the initial mass is 64g. (2 marks)

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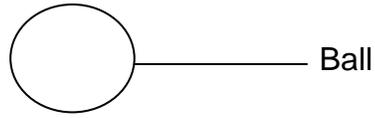
42. (a) Define the following (1 mark)

(i) potential energy

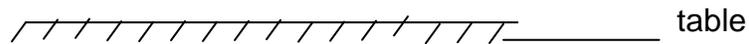
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(ii) Joule

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_____ spring



(b) A ball of mass 100g falls from rest through a height of 2m onto the top of spring of length 1m, placed on the table as above. If the spring is compressed by 14cm what is its spring constant? (2 marks)

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43. Define

(i) Wavelength (1 mark)

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(ii) Frequency (1 mark)

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(b) The wavelength of a radio wave is 100 cm. Calculate the

(i) The frequency (1 mark)

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(ii) The period of the wave

(1 mark)

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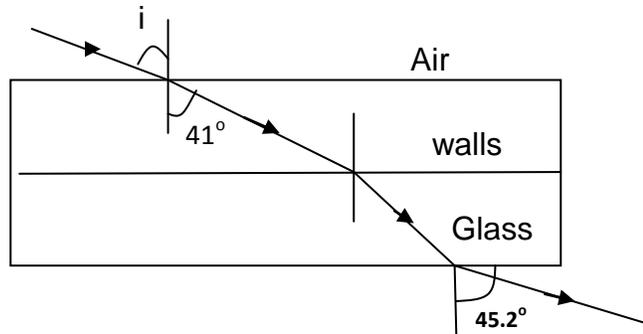
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44. (a) What is meant of a refractive index of a medium?

(1 mark)

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The diagram shows a ray of light incident from air to a layer of water placed on the surface of a glass block of uniform thickness. Given that the refractive index of water is 1.33 and for glass is 1.50. Calculate the refractive index for a ray of light travelling from water to glass (3 marks)

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45. Define

(i) Lost volt

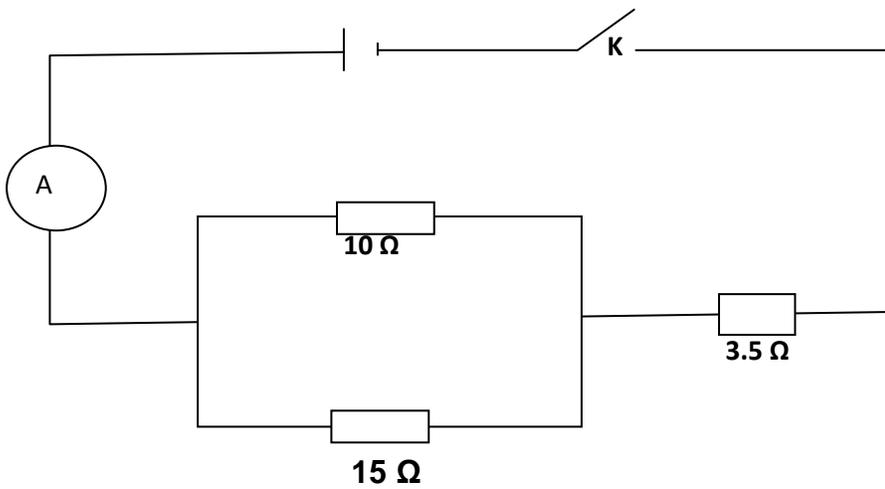
(1 mark)

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(ii) Internal resistance (1 mark)

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The figure above shows a circuit. The e. m. f of the battery is 2.1V and has internal resistance of 0.5 Ω. Determine the ammeter reading when the switch (K) is closed

(2 marks)

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46. (a) State the principle of conservation of the linear momentum. (1 mark)

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(b) A bullet of mass 100g is fired with a velocity of 700 ms⁻¹ from a gun of mass 5 kg. Calculate the recoil velocity of the gun (3 marks)

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47. (a) What is diffraction in waves? (1 mark)

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(b) A wave covers 20m in 2.5 seconds. If the distance between two successive crests is 20cm. Calculate

(i) Velocity of the waves (1 ½ mark)

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(ii) Frequency of the waves (1 ½ marks)

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48. (a) (i) State the law of electrostatics (1 mark)

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(ii) Give any two applications of electrostatics (1 mark)

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(b) Draw the electric field pattern for

(i) An isolated point negative charge. (1 mark)

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(ii) Two oppositely charged parallel electrodes (1 mark)

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49. (a) State the law of floatation (1 mark)

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(b) A man of mass 60kg stands in a stationery8 lift on earth. Calculate his apparent weight when the lift accelerates upwards at a rate of 2 ms^{-2} (3 marks)

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50. (a) give any one ways of reducing power loss in A transformer (1 mark)

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(b) A step up transformer has 10,000 turns on its secondary coil and 100 turns on its primary coil. An a.c of 5.0 A flows in the primary coil when it is connected to 12V a.c supply. If the transformer is 90% efficient. Calculate the current in the secondary coil (3 marks)

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THE END