

BALDWIN GIRLS' HIGH SCHOOL

II nd SEMESTER MODEL EXAMINATION

SUBJECT : (SCIENCE PAPER 1) PHYSICS

FEBRUARY 2022

CLASS :10

MAX:MARK 40.

TIME: 11/2 HOURS

(Attempt all questions from section I. And any three questions from section II)

SECTION I

All questions are compulsory.

Question 1.

1. A wire stretched between two fixed support is plucked at the middle and released . It executes-----.

(i) resonant vibrations of decreasing amplitude (ii) free vibration (iii) damped vibration (iv) forced vibration (1)

2. The quality of the note from a particular string on a guitar is determined by the -----

(i) frequency of vibration (ii) amplitude of vibration (iii) length of the string (iv) wave form of the sound . (1)

3. The specific resistance of any unknown material is not affected by change in -----

(i) temperature (ii) pressure (iii) applied magnetic field (iv) dimensions (1)

4. Which of the following quantities has the same value for all electrical appliances connected to the ring main circuit?

(i) power (ii) resistance (iii) energy (iv) voltage (1)

5. An electric bulb is rated 60 W ,240 V. when its switch is on , the current flowing through it is -----

(i) 0.25 A (ii) 0.50 A (iii) 0.75 A (iv) 1A (1)

6. When a current flows in a wire, it creates
- (i) an electric field outside (ii) a magnetic field around it (iii) both electric and magnetic field (iv) neither the electric field nor the magnetic field (1)
7. Lenz's law gives the direction of -----
- (i) magnetic field (ii) motion of conductor (iii) induced current (iv) current in any electrical circuit. (1)
8. The S.I unit of specific latent heat is -----
- (i) Cal. Kg⁻¹ (ii) JKg⁻¹ (iii) Cal °C⁻¹ (iv) J Kg⁻¹ °C⁻¹ (1)
9. The melting point of a substance -----
- (i) increases by the addition of impurities in it. (ii) decreases by the addition of impurities (iii) remain the same (iv) first increases and then decreases. (1)
10. Which of the following radiations suffers maximum deflection in a magnetic field?
- (i) α - particle (ii) β - particles (iii) X-rays (iv) γ - rays (1)

SECTION II

Select any three main questions

Question 2.

- a) (i) Is it possible to detect the filling of a bottle under a tap by hearing its sound at a distance? Give a reason for your answer. (ii) State the condition for resonance to occur. (3)
- b) (i) What are damped vibrations ? Give one example. (ii) What is the subjective nature of amplitude? (3)
- c) (i) Why does weather becomes pleasant ,when it starts freezing in cold countries? (ii) On the basis of high specific heat capacity of water, explain the formation of sea breeze. (2+2)

Question 3

- a) (i) Draw a V-I graph for a conductor obeying Ohm's Law. (ii) What does the slope of V-I graph for a conductor represent? (3)

b) (i) Express kilowatt hour in joule. (ii) An electric bulb of resistance $500\ \Omega$, draws a current of 0.4 A . Calculate the power of the bulb and the potential difference at its end. (3)

c) (i) What do you understand by 'earthing'? (i) Explain the function of the following in the household wiring. 1. Fuse wire 2. Main switch 3. Three pin plug. (4)

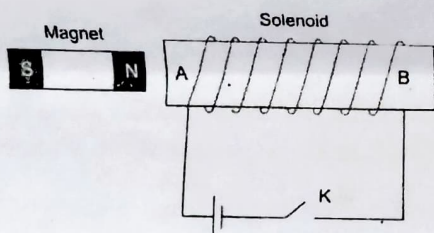
Question 4

a) In the nuclear reaction given, nucleus X changes to another nucleus Y,

${}_{88}\text{X}^{226} \longrightarrow \text{Y} + \alpha + \text{energy}$. (i) what are the atomic number and mass number of Y? (ii) Name the gas formed when α particle acquires two electrons. (3)

b) How is a negatively charged β particle emitted from a positively charged nucleus.? Explain. (3)

c) The diagram below shows a small magnet placed near a solenoid AB. Current is switched on in the solenoid by pressing the key K. (a) State the polarity at the ends A and B. (b) Will the magnet be attracted or repelled? Give a reason for your answer. (4)



Question 5,

a) How does the heat produced by the passage of current in a metallic wire depend on (i) the current in the wire. (ii) the resistance of the wire (iii) the time of passage of current in the wire. (3)

b) A geyser is rated '1500 W, 250 V'. This geyser is connected to 250 V mains. Calculate; (i) the current drawn (ii) the energy consumed in 50 hours. (iii) the cost of energy consumed at Rs 4.20 per Kw.h. (3)

c) (i) How do you tune your radio set to a particular station? Name the phenomenon involved. (ii) Why is loud sound heard at resonance? (4)
