Model Question Paper 2

Nature of the Physical World and Measurement 2

11th Standard

Physics

Reg.No. : | | | | | | |

Answer all the Questions

Time : 00:50:00 Hrs

Total Marks : 40

Part A

5 x 1 = 5

1) Which of the following are equivalent?

(a) 6400 km and 6.4×10^8 cm (b) 2×10^4 cm and $2 \times 10^6 mm$ (c) 800 m and 80x10^{2}m (d) $100 \mu m$ and 1mm

2) Red light has a wavelength of 7000 $\mathring{A}$. In mm it is _____.

(a) $0.7 \mu m$ (b) $7 \mu m$ (c) $70 \mu m$ (d) $0.07 \mu m$

3) A speck of dust weight 1.6x10^{-10} kg. How many such particles would weigh 1.6 kg?

(a) 10^{-10} (b) 10^{10} (c) 10 (d) 10^{-1}

4) The force acting on a particle is found to be proportional to velocity. The constant of proportionality is measured in terms of _____.

(a) kg s^{-1} (b) kg s (c) kg m s^{-1} (d) kg m s^{-2}

5) The number of significant digits in 0.0006032 is _____.

(a) 8 (b) 7 (c) 4 (d) 2

Part B

5 x 2 = 10

6) Name four units to measure extremely small distances.

7) What are random errors? how can we minimize these errors?

8) Show that has $\frac{1}{2} gt^2$ the same dimensions of distance.

9) What are the limitations of dimensional analysis?

10) Give the SI standard for (i) length, ii) mass and iii) time.

Part C

5 x 3 = 15

11) Find the value of π^2 correct to significant, if $\pi = 3.14$

12) 5.74 g of a substance occupies a volume of 1.2 cm^3 . Calculate its density applying the principle of significant figure.

13) The length, breadth and thickness of a rectangular plate are 4.234 m, 1.005 m and 2.01 cm respectively. Find the total area and volume of the plate to correct significant figure.

14) The length of a rod is measured as 25.0 cm using a scale having an accuracy of 0.1 cm. Determine the percentage error in length.

15) The force F acting on a body moving in a circular path depends on mass m of the body, velocity v and radius r of the circular path. Obtain an expression for the force by dimensional analysis (Take the value if k=1).

Part D

2 x 5 = 10

16) If the intensity is increased by a factor 60, by how many decibels the sound level is increased?

17) Two sound waves, originating from the same source, travel along different paths in air and then meet at a point. If the source vibrates at a frequency of 1.0 kHz and one path is 83 cm longer than the other, what will be the nature of interference? The speed of sound in air is 332 m s^{-1}.

Given data.

Frequency of the source (n) =1.0 kHz

Path difference between two interfering beams (x) = 83 cm=83x10^{-2} m

Speed of sound in air =332 ms^{-1} .

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