Note:-
1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Section A

Q.1 Select and Write the correct answer. (4)

1. Dimensions of Planck's constant equal to that of

    A) energy   B) momentum

    C) angular momentum   D) power

2. The unit of permitivity of free space is

    A) $C^2N^{-1}m^{-2}$ B) $CN^{-2}m{-}2$

    C) Nm^2C^{-2} D) $CN^{-1}m^{-1}$

3. The number of significant figures in 0.0900 is

    A) 1   B) 2

    C) 3   D) 4

4. The least count of a screw gauge having pitch of 0.5 mm having 100 divisions of a circular scale is

    A) 0.005 mm   B) 0.05 mm

    C) 0.5 mm   D) 0.0005 mm

Q.2 Answer the following. (3)

1. Define : Astronomical unit.

2. Find the order of magnitude of following quantities :

    (a) density of liquid = 1.68804780 g/cm^3
    (b) height of building = 2042 m

3. Define : Parsec.

Section B
Attempt any Four

Q.3   What is the need for measurement of a physical quantity? **(2)**

Q.4   State the factors affecting certainty in observations. **(2)**

Q.5   What are derived quantities? **(2)**

Q.6   Star A is farther than star B. Which star will have a large parallax angle? **(2)**

Q.7   When planet Jupiter is at a distance of 824.7 million kilometers from the Earth, its angular **(2)** diameter is measured to be 35.72^{o} of arc. Calculate the diameter of Jupiter.

Q.8   Write down the number of significant figures in the following : **(2)**
0.003 m^2, 0.1250 gm cm^{-2}, 6.4×10^6m, 1.6×10^{-19} C, 9.1×10^{-31} kg.

Section C
Attempt any Two

Q.9 Explain Error in sum and difference of two quantities. **(3)**

Q.10 Explain method to measure mass. **(3)**

Q.11 Using dimensions show that 1 Joule = 10^7 erg **(3)**

Section D
Attempt any One

Q.12 Explain methods to minimise the error. **(4)**

The distance travelled by an object in time (100 ± 1)s is (5.2 ± 0.1)m. What is the speed and its error?

Q.13 Write the conventions for the use of SI units. **(4)**