

Board – ICSE

Class – 9<sup>th</sup>

Topic – Measurement and Experimentation

1. In an experiment, for calculating acceleration due to gravity 'g', the length is measured correct to 0.1 cm and time correct to 0.5 s. A student expresses the answer as  $981.437 \text{ cm s}^{-2}$ . What should be the correct value?
2. State the formula for calculating observed length in the following cases:
  - i. Number of vernier scale divisions coinciding with main scale and the number of divisions of main scale on the left hand side of zero of vernier are known.
  - ii. The reading of main scale and the number of vernier scale divisions coinciding with main scale are known.
3. Draw a graph between two quantities A and B, if
  - (i)  $A \propto B$
  - (ii)  $A \propto B^2$
  - (iii)  $A \propto 1/B$
4. State four characteristics of a standard unit.
5. The circular scale of a screw gauge has 50 divisions. Its spindle moves by 2 mm on sleeve scale, when given four complete revolutions. Calculate (i) pitch (ii) least count.
6. In an experiment, time can be calculated correct to one second and length correct to one millimetre. Which amongst the following speed is correct and why?
  - (i)  $2.957 \text{ ms}^{-1}$
  - (ii)  $2.95 \text{ ms}^{-1}$
  - (iii)  $2.9 \text{ ms}^{-1}$
7. (a) Define simple pendulum.  
(b) State two factors which determine the time period of a pendulum.  
(c) Write an expression for the time period of a pendulum, stating clearly the meaning of symbols used.
8. (a) Define time.  
(b) State or define the following terms:
  - a. Solar day
  - b. Mean solar day
  - c. An hour
  - d. Minute
  - e. Second
  - f. Year.

9. The result of an experiment is 2731000 kg. Express the answer in the order of magnitude, if accuracy of experiment is
- (a) 1 in 10
  - (b) 1 in 100
  - (c) 1 in 1000
10. Draw a graph between 'l' and 'T', and l and T<sup>2</sup> for a simple pendulum. What do you deduce from the graph?
11. (a) What do you understand by the term zero error?
- (b) When does a vernier callipers have
    - (i) positive zero error
    - (ii) negative zero error
  - (c) State the correction if
    - (i) positive error is 7 div.
    - (ii) negative error is 7 div. Least count is 0.01 cm.
12. What is the approximate diameter of the orbit of the Earth around the sun.
- (i) in AU
  - (ii) in SI unit?