No. of Printed Pages : 3

MET–001

CERTIFICATE IN CONDITION MONITORING (CCOMO)

Term-End Examination

December, 2023

MET-001 : METROLOGY, INSTRUMENTATION AND TRIBOLOGY

Time : 3 Hours *Maximum Marks : 70*

Note : (*i*) *Attempt any* ***seven*** *questions.*

(*ii*) *All questions carry equal marks.*

1. (a) How do you classify fits ? 5

   (b) Distinguish between "Controllable Errors" and "Random Errors". 5

2. Define any *five* of the following : 5×2=10

   (i) Primary standards

   (ii) Secondary standards

   (iii) Metrology

   (iv) Snap gauge

   (v) Candela

3. (a) List the various steps to care for and handle measuring instruments. 5

   (b) Explain with a neat sketch the working of an optical comparator. 5

4. (a) Draw a neat sketch of a Vernier depth gauge and explain its construction and working. 5

   (b) State the 'principle' on which micrometers are designed. 5

5. Discuss the unilateral and bilateral systems of writing tolerances with suitable examples and explain which system is preferred in interchangeable manufacturing and why ? 10

6. Discuss, in detail the 'Interferometer'. What are their advantages over optical flats ? 10

7. (a) What is a clinometer ? Explain with a neat sketch and state its purpose also. 5

   (b) Describe the construction and working principle of an autocollimator. 5

8. Following observations were recorded for the deflection of a spring under a given load which was removed after each observation. Deflection (mm) 0.541, 0.532, 0.548, 0.55, 0.538. Find arithmetic mean, average deviation, standard deviation and geometric mean. 10

9. (a) What is projector ? What are the various applications of the projector ? 5

   (b) State the importance of limits and fits in large-scale production. 5

10. Discuss in detail the following properties of a lubricant : 4×2.5=10

   (a) Viscosity

   (b) Volatility

   (c) Chemical properties

   (d) Oiliness