DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2024

MATERIAL SCIENCE AND METROLOGY

[Maximum Marks : 75]   [Time : 3 hours]

PART–A

I.   Answer **all** the following questions in one word or sentence. Each question carries 1 mark.

(9x1=9 marks)

		Module Outcome	Cognitive level
1	What is Space lattice?	M1.01	U
2	Describe hardness.	M2.01	U
3	What is the principle behind Liquid penetrant testing?	M2.02	U
4	What is aided and unaided visual inspection?	M2.02	U
5	Explain creep failure.	M2.01	U
6	Give another name of ductile fracture.	M2.01	U
7	Describe direct method of measurement.	M3.01	U
8	Name any two methods of angular measurement.	M4.04	U
9	What is surface roughness?	M4.02	U

PART B

II.   Answer **any Eight** questions from the following. Each question carries 3 marks.

(8x3=24 marks)

		Module Outcome	Cognitive level
1	Explain HCP structure with figure.	M1.01	U
2	Give the composition of Pig Iron and how is it produced.	M2.05	U
3	Explain Ductile fracture.	M2.01	U
4	Draw the graph describing Tensile test on ductile material.	M2.02	U
5	Give the equation for Vickers Hardness number and explain the terms involved.	M2.02	U
6	Briefly explain Liquid penetrant testing.	M2.02	U
7	Name the stages involved in a measurement system.	M3.02	U
8	Describe Spring balance.	M3.04	U
9	Describe the classification of auto collimator.	M4.04	U
10	Sketch and mark the parts of Clinometer.	M4.04	U

PART C

Answer **all** questions from the following. Each question carries 7 marks.

(6x7=42marks)

		Module Outcome	Cognitive level
III	Give the composition of Stainless steel. Also mention its properties and applications.	M1.03	U
	OR		
IV	What are Isomorphous, Eutectic and Eutectoid systems? Give examples.	M1.04	U
V	Draw the Iron Carbon diagram.	M1.02	U
	OR		
VI	Briefly describe BCC, FCC and SC lattices.	M1.01	U
VII	How Pulse-Echo system works? Give a neat sketch.	M2.02	U
	OR		
VIII	Explain Case hardening.	M2.04	U
IX	Describe the terms: (a) hysteresis (b) Calibration (c) Threshold (d) Range.	M2.01	U
	OR		
X	Explain process involved in a measurement.	M3.02	U
XI	Describe classification of errors in measurement.	M3.02	U
	OR		
XII	Explain mechanical strain gauge.	M3.04	U
XIII	Demonstrate the working of Vernier depth gauge with help of a diagram.	M4.04	U
	OR		
XIV	What is Mechanical Optical comparator? Explain.	M4.01	U

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