

Material Science and Metrology

Time: 3 hours

Maximum marks: 75

PART – AI. Answer **ALL** the following questions in one word or sentence.**(9 x 1= 9 marks)**

		Module outcome	Cognitive Outcome
1	Define space lattice.	M1.01	R
2	Melting point of pure Fe is..... ⁰ C	M1.02	R
3	Define Phase	M1.02	R
4	Machine used for Tensile testing is	M2.02	R
5	Define span of a measuring instrument	M3.03	U
6is the ability of the measuring instrument to get the same value in repeated measurements under different conditions	M3.03	R
7	Name a mechanical Comparator	M4.01	R
8	Vernier depth gauge is used for measuring.....	M4.01	U
9	Clinometer is used for measuring.....	M4.04	U

PART –BII. Answer any **EIGHT** questions from the following.**(8 x 3= 24 marks)**

		Module outcome	Cognitive Outcome
1	Explain the purpose of alloying in steels	M1.04	U
2	Give the applications of wrought Iron	M1.03	U
3	Briefly explain the classification of Cast Iron	M1.03	U
4	Name different failure mechanisms in engineering materials	M2.01	R
5	Explain Annealing	M2.03	U
6	Explain the significance of measurement	M3.01	U
7	Define Sensitivity and repeatability.	M3.02	R
8	Explain calibration in measurement.	M3.01	U
9	Write a note on random errors in measurement	M3.01	U
10	Explain the importance of force measurement	M3.04	U

PART – C

III. Answer *ALL* questions from the following.

(6 x 7 = 42 marks)

		Module outcome	Cognitive Outcome
1	With the help of a neat sketch explain FCC and BCC crystal structure	M1.01	U
OR			
2	Draw and briefly explain iron carbon equilibrium diagram	M1.02	U
3	Explain the procedure for performing the Brinell hardness test	M2.02	U
OR			
4	Explain magnetic particle inspection test	M2.02	U
5	Explain the case hardening processes, nitriding and cyaniding	M2.01	U
OR			
6	Sketch and explain Austempering	M2.04	U
7	Explain primary and secondary standards of measurement	M3.02	U
OR			
8	Write short note on systematic and random errors in measurement.	M3.03	U
9	Write a note on the classification of comparators and their characteristics.	M4.01	R
OR			
10	Explain the principle of working of an auto collimator.	M4.03	U
11	Describe angle measurement using angle gauges.	M4.04	U
OR			
12	Explain the importance of machine tool testing and List the various tests conducted.	M4.05	U
