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MANGALORE INSTITUTE OF TECHNOLOGY & ENGINEERING

(A Unit of Rajalaxmi Education Trust®, Mangalore)

Autonomous Institute affiliated to VTU, Belagavi, Approved by AICTE, New Delhi

Accredited by NAAC with A+ Grade & ISO 9001:2015 Certified Institution

Model Question Paper

First / Second Semester B.E Degree Examination

Industrial Systems and Manufacturing Technology

Time: 3 Hours (180 Minutes)

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M: Marks, L: RBT (Revised Bloom's Taxonomy) level, C: Course outcomes.

Module -1			M	L	C
Q1	a.	Explain the characteristics of a manufacturing system.	04	L2	CO1
	b.	Differentiate between mass and batch manufacturing.	06	L2	CO1
	c.	Describe the responsibilities of the engineering, production, and purchasing functions in a manufacturing organization.	10	L2	CO1
OR					
Q2	a.	Draw and label the input–output model of a manufacturing system.	04	L2	CO1
	b.	With a neat sketch, explain the manufacturing organizational structure.	06	L2	CO1
	c.	Compare process layout and product layout in terms of flexibility, production rate and the impact of a machine breakdown.	10	L2	CO1
Module- 2					
Q3	a.	Give a brief classification of the manufacturing process.	05	L2	CO2
	b.	Explain with a neat sketch the process of the plain turning operation on a lathe.	05	L2	CO2
	c.	Explain the taper turning operation by swiveling the compound rest on a lathe with a neat sketch.	10	L2	CO2
OR					
Q4	a.	Explain the process of countersink operation on a drilling machine.	05	L2	CO2
	b.	Explain with a neat sketch the reaming operation on a drilling machine.	05	L2	CO2
	c.	Explain with a neat sketch the process of the plain/slab milling operation.	10	L2	CO2
Module – 3					
Q5	a.	Explain the CNC system and its components with a neat sketch.	10	L2	CO2
	b.	Write a complete CNC part program to perform a step-turning operation on a cylindrical workpiece of diameter 40 mm and length 150 mm, shown in the figure below, using appropriate G and M codes.	10	L3	CO3

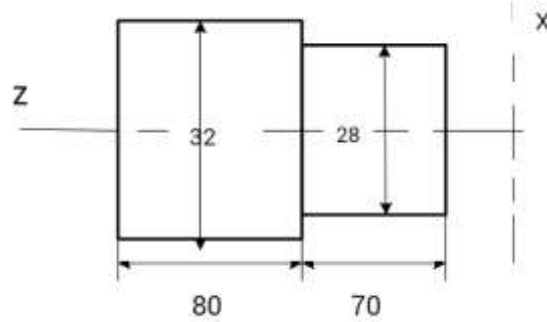


Fig. 5b.

OR

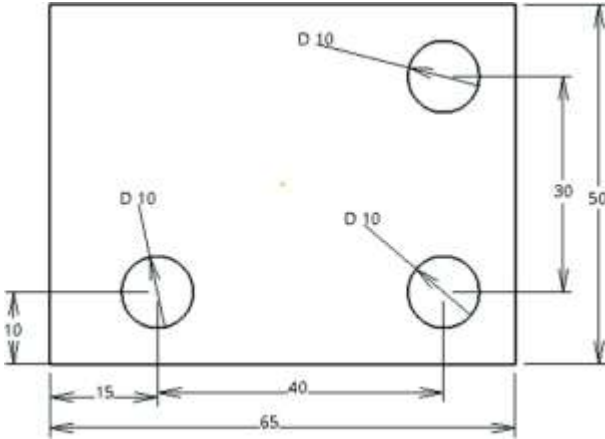
Q6	a.	Explain the construction and working of a Vertical Machining Center with a sketch.	10	L2	CO2
	b.	Develop a CNC part program for drilling three holes of diameter 10 mm at specified coordinate intervals on a 20 mm thick MS plate shown in the figure below. 	10	L3	CO3

Fig. 6b.

Module – 4

Q7	a.	Explain the construction of Fused Deposition Modelling (FDM) with a neat labelled diagram and describe its working principle.	10	L2	CO2
	b.	List the advantages and limitations of AM technology.	10	L2	CO2

OR

Q8	a.	Describe the standard workflow and the various materials used in Additive Manufacturing.	10	L2	CO2
	b.	Explain the construction and working of Selective Laser Sintering with a neat sketch.	10	L2	CO2

Module – 5

Q9	a.	Explain the robotic systems/robot anatomy with a neat labelled sketch.	10	L2	CO2
	b.	Explain the types of joints used in robots with a sketch.	10	L2	CO2

OR

Q10	a.	Explain cartesian co-ordinate robot configuration with a labelled diagram.	10	L2	CO2
	b.	Describe the applications of a robotic system in assembly operations.	10	L2	CO2
