	Sanjay Ghodawat University, Kolhapur Established as State Private University under Govt. of Maharashtra. Act No XL, 2017	
FY M Tech	**School of Technology | Department of Mechanical Engineering**	
MDM 504	**Flexible Manufacturing Systems (FMS)**	**Sem-II**
23/5/2018	**Examination: ESE, Max Marks: 100, Time 3 Hrs.**	

Instructions:
10:30 AM TO 1:30 PM
1) All Questions are compulsory.
2) Draw neat figures wherever necessary.
3) Simple graph papers can be used if necessary.

Q.1			Marks	CO
	a)	Define FMS. What are the capabilities a manufacturing system must possess To be flexible? Discuss the tests of flexibility. OR Explain the automated work-part flow in FMS with the help of a flow chart.	9	
	b)	Discuss the concept of Flexible Manufacturing Cell with the help of a block diagram and its basic functions.	9	
Q.2		Answer any two.		
	a)	What is group technology? Explain the concept of part family.Explain the concept of composite part.	8	
	b)	Explain the Design Principles & Guidelines in DFMA.	8	CO
	c)	What is concurrent engineering approach?	8	CO
Q.3		Answer any two.		
	a)	Explain the data structures with suitable applications in manufacturing.	8	CO
	b)	Explain dynamic scheduling in FMS. Write its functions.	8	CO
	c)	What are Deadlocks in FMS? State the conditions for occurrence of a deadlock. Explain forms of deadlock handling.	8	CO
Q4		Answer any two.		
	a)	Explain the structure of distributed tool database in FMS with the help of a neat diagram.	8	
	b)	Explain flexible fixturing methodologies. Explain programmable servo clamps and phase change fixtures.	8	

	c)	Explain the concept of modular fixturing. Discuss its categories with examples.	8	
Q5		Answer any two.		
	a)	What are the Flexibilities in Material Handling in FMS? Discuss.	8	
	b)	Explain with neat sketches, robot centered FM cell layouts. OR b) Discuss components and functions of an automated storage and retrieval system	8	
	c)	Discuss the types of AGV control methods – Wire guides, Optical/Chemical/Magnetic Guide-paths, Free Ranging AGVs	8	
Q6		Answer any two.		
	a)	Discuss the need and techniques of FMS simulations. State the input data required for simulating FMS.	8	
	b)	What is the rationale behind Reconfigurable Manufacturing Systems (RMS)? What characteristics the RMS must possess?	8	
	c)	Discuss the methodology of designing a reconfigurable machine tool. Illustrate with simple sketches the change in machine configuration.	8	

*****