Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019

Course Code: ME474

Course Name: Micro and Nano Manufacturing

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks. Marks

1	a)	With neat sketches explain about space micro propulsion system.	(6)
	b)	Explain about the advantages and applications of MEMS	(4)
2	a)	With neat sketches explain about the structure and properties of carbon nano tubes	(7)
	b)	Write down the applications of nano biosensors	(3)
3		With neat sketches explain nano plastic forming process in detail	(10)
4	a)	With neat sketches explain about micro drilling process	(7)
	b)	List down the applications of micro milling process	(3)

PART B

Answer any three full questions, each carries 10 marks.

5	a)	With neat sketches explain the working principle of abrasive jet micro machining	(6)
	b)	Explain the advantages, disadvantages and applications of micro EBM process	(4)
6	a)	With neat sketches explain the working principle of focused ion beam machining process	(7)
	b)	List few applications of Micro ECM process	(3)
7	a)	Explain the role of carbonil iron particles in MR finishing process	(5)
	b)	Explain the influence of process parameters in MR jet finishing process	(5)
8	a)	With neat sketches explain the working principle of chemical mechanical polishing.	(7)
	b)	List few applications of CMP process.	(3)

PART C

Answer any four full questions, each carries 10 marks.

9	a)	With neat sketches explain soft lithography process.	(6)
	b)	Write short notes about the mechanical and physical properties of carbon nano tubes.	(4)

10	a)	With a neat sketch explain the working of a field effect transistor.	(6)
	b)	Write short notes about micro fabrication.	(4)
11	a)	Discuss the working of carbon nanotube transistors.	(6)
	b)	List any four applications of manipulation techniques.	(4)
12		With neat sketches differentiate between scanning probe microscopy and scanning tunnelling microscopy.	(10)
13	a)	With neat sketches explain laser micro welding process.	(5)
	b)	Write the advantages, disadvantages and applications of electron beam micro welding.	(5)
14	a)	Differentiate between constant height method and constant current method used in scanning tunnelling microscopy.	(6)
	b)	Discuss about on-machine metrology.	(4)

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