Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FOURTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019

Course Code: ME220
Course Name: MANUFACTURING TECHNOLOGY (IE, ME, MA)

Max. Marks: 100 Duration: 3 Hours

PART A
Answer any three questions. Each question carries 10 marks.

1	a)	Why casting is preferred over other methods of manufacturing? Discuss	3
	b)	With the help of neat sketches, explain any two types of commonly used patterns	4
	c)	Distinguish between liquid shrinkage and solid shrinkage as related to casting. How they are taken care of in designing sand casting	3
2	a)	Describe the complete step by step procedure of investment casting.	4
	b)	Explain any one type of centrifugal casting process with a neat sketch	4
	c)	Name any eight common defects encountered in casting process	2
3	a)	Sketch and explain Cluster and Planetary rolling mill arrangements used in rolling processes	6
	b)	Why is the surface finish of a rolled product better in cold rolling than in hot rolling?	2
	c)	A 400 mm thick slab is to be cold rolled. The roll diameter is 800 mm and the co-efficient of friction is 0.08. Determine the maximum possible draft	2
4	a)	With the help of a neat sketch, explain the distribution of roll pressure along the contact length in flat rolling.	4
	b)	Is rolling process useful for making seamless thick-walled tubes? Explain with proper sketches.	4
	c)	How can you reduce the 'roll force' in a rolling process?	2

PART B
Answer any three questions. Each question carries 10 marks

5	a)	What do you understand by the term 'flash' in a forging? Explain with the help of a sketch	3
	b)	With a neat diagram explain the process of direct extrusion.	4
	c)	Explain with a neat sketch 'wire drawing' process	3
6	a)	Make neat sketches and explain coining and heading	4
	b)	With the help of a schematic illustration, explain impact-extrusion process. What is the function of a stripper plate in impact extrusion?	4

	c)	Explain the difference between open and closed die forging techniques.	2
7	a)	Explain the aspect 'Degree of freedom of movement of a free body' with special reference to location of workpieces	3
	b)	What is the principle of 'Six-point location'? Explain with suitable sketches	7
8	a)	Select a locating system to best locate the part shown in *Figure A.*	3

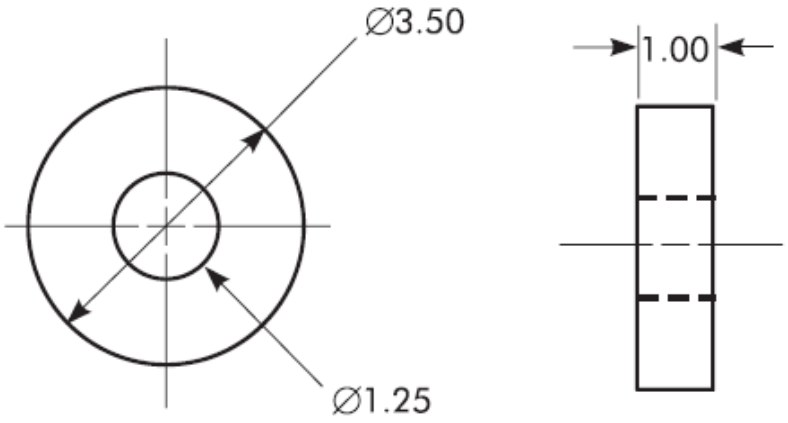

Figure A.

	b)	What do you understand by foolproofing? Explain with an example	3
	c)	What are the different types of strap clamp? Give sketches	4

PART C

Answer any four questions. Each question carries 10 marks.

9	a)	Describe with neat sketch the deep-drawing process. What defects can occur in an improperly deep drawn product?	5
	b)	Discuss with neat sketch the working of metal spinning process	5
10	a)	Why is it necessary to provide clearance between the punch and die in a shearing operation? Give reasons	2
	b)	Write a note on ''bending'' of sheet metal. What is spring back and how is its effect eliminated?	5
	c)	Bring out the differences between punching and blanking.	3
11	a)	What is the Guerin process? How does the Guerin process reduce the cost of tooling in a drawing operation?	3
	b)	Define heat affected zone? What is its importance in producing a crack free weld?	3
	c)	What are the factors that affect weldability	4
12	a)	Sketch the three types of gas welding flames and give differences between them.	3
	b)	With a neat sketch explain the construction and working of Carbon Arc Welding	4

	c)	Explain the term ‘flux’ or ‘soldering fluid’. Enumerate the fluxes commonly used in soldering process.	3
13	a)	What is the difference between a consumable electrode and nonconsumable electrode? For which processes does a filler metal have to be added by a separate mechanism?	3
	b)	Explain the working of Resistance Spot Welding. State their advantages and limitations	7
14	a)	Explain operation, equipment and applications of ultrasonic welding.	6
	b)	Explain construction and working principle of submerged arc welding	4