Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: ME303

Course Name: MACHINE TOOLS AND DIGITAL MANUFACTURING

Max. Marks: 100 Duration: 3 Hours

PART A

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

1	a)	Draw the tool-chip interface of a metal cutting process and explain the regions of heat generation.	(5)
	b)	Compare orthogonal cutting & oblique cutting.	(5)
2	a)	Describe different types of tool wear.	(3)
	b)	During an orthogonal cutting of steel, the following data were obtained. Chip thickness = 0.35mm, width of cut = 3mm, feed = 0.25 mm/rev, tangential cutting force = 1100N, feed thrust force =325N, cutting speed = 2m/s, α = +10°. Calculate the Shear force & Kinetic coefficient of friction.	(7)
3	a)	Why Cast Iron is preferred for Lathe bed.	(4)
	b)	With a neat diagram explain how a lathe is specified.	(6)
4	a)	Differentiate between Counter boring & Counter sinking with help of neat diagrams.	(5)
	b)	With a neat diagram explain different parts of a radial drilling machine.	(5)

PART B

Answer any three full questions, each carries 10marks.

5	a)	List the advantages of V–guide ways provided on the planing machine bed.	(4)
	b)	Compare planning & shaping machines.	(6)
6	a)	Calculate the cutting speed if the shaper has stroke length of 240 mm, number of double strokes per minute 40 and ratio of return to cutting time 2:3.	(5)
	b)	Explain various operations performed on slotting machines.	(5)
7	a)	Discuss the advantages & disadvantages of Up milling & Down milling with the help of diagrams.	(7)
	b)	List any three milling attachments used.	(3)
8	a)	With a neat sketch explain the principal parts of a milling machine.	(5)
	b)	Illustrate the milling cutter nomenclature with a neat diagram.	(5)

PART C

Answer any four full questions, each carries 10marks.

9	a)	Explain the working of a swiss type automatic lathe.	(5)
	b)	With help of neat diagram differentiate between internal grinding and planetary internal grinding.	(5)
10	a)	Compare Glazing & Loading of grinding wheels.	(4)
	b)	Explain the importance of super finishing operations & comment on the surface roughness achievable by various super finishing operations	(6)
11	a)	Explain honing process by citing an application.	(5)
	b)	Explain with neat sketch a plain cylindrical grinding process.	(5)
12	a)	'With rapid developments in the field of information Technology, DM is gaining momentum'. Discuss.	(7)
	b)	How concepts like JIT, TQM, FMS etc., can be related to DM.	(3)
13	a)	Differentiate between traditional manufacturing (mass production) & Digital manufacturing.	(4)
	b)	Explain the operation reference mode of DM with the help of a flow diagram.	(6)
14	a)	List the benefits of DM system.	(6)
	b)	Explain IDEF modelling method	(4)

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