Total No. of Questions – [04] Total No. of Printed Pages 2

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T. Y. B. TECH. (MECHANICAL) (SEMESTER - I)

COURSE NAME: Manufacturing Technology

COURSE CODE: MEUA31174

(PATTERN 2017)

Time: [**1 Hour**] [Max. Marks: **30**]

(*) Instructions to candidates:

1) **Answer Q.1 OR Q.2 and Q.3 OR Q.4.**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data wherever required**

Q. 1. a) Calculate the mean shear plane temperature rising during orthogonal machining with zero rake angle. 6 Marks

Given: V=2 m/sec,
t_1= 0.25 mm,
μ=0.5,
ρ=7200kg/m^3,
K=43.6 w/m^2-°C,
C=502J/Kg-°C. Work Material (MS) shear stress=400x10^6 N/m^2
Used the Lee and shaffer shear angle relationship

b) Estimate the machining time to drill four 8 mm dia holes and one 40 mm diameter central hole in the flange. 20 mm dia hole is drilled first and then enlarged to 40 mm f hole. 6 Marks

Take cutting speed 10 m/min,

Drill	Feed (mm/rev)	Thickness (mm)
8 mm	0.1	10
20 mm	0.2	30
40 mm	0.4	30

c) A 20 × 5 cm CI surface is to be faced on a milling machine with a cutter having a diameter of 10 cm & having 16 tooth for the cutting speed and feed are 50 m/min & 5 cm/min respectively, determine the milling time, rpm, and feed/tooth 4 Marks

OR

Q. 2. a) Find the time required on a shaper to machine a plate 600 mm × 1,200 mm, if the cutting speed is 15 m/min. The ratio of return stroke time to cutting time is 2:3. 6 Marks

The clearance at each end is 25 mm along the length and 15 mm on width. Two cuts are required, one roughing cut with cross feed of 2 mm per stroke and one finishing cut with feed of 1 mm per stroke.

	b)	In a turning operation, it was observed that the tool life was 150min.when the cutting speed was 20m/min. As the speed was increased to 25m/min the tool life dropped to 25.2 minutes. If the time required to change the tool was 2 minutes, the cost of regrinding the tool was ten times the cost of turning per minute. Calculate a. the most economical cutting speed b. tool life for maximum production	6 Marks
	c)	Difference between up milling and down milling with neat sketch	4 Marks
Q. 3.	a)	Write Short notes on Truing & Dressing of grinding wheel	6 Marks
	b)	Explain the Burnishing process with neat sketch	4 Marks
	c)	Explain the meaning of grinding wheel signature : *26-C-60-M-7-V-28*	4 Marks
		OR	
Q. 4	a)	Explain construction and working of centreless grinding with neat sketch	6 Marks
	b)	Explain the meaning of grinding wheel signature : *W-A-40-J-6-V-17*	4 Marks
	c)	Comparison between Lapping & Honing	4 Marks