Sub Code: RME505

Paper Id: 140510 Roll No: | | | | | | | | | | | | | |

B.TECH.
(SEM V) THEORY EXAMINATION 2019-20
MANUFACTURING SCIENCE &TECHNOLOGY-II

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

(a)	Write down the function of cutting fluid.
(b)	Differentiate between CNC and DNC.
(c)	Distinguish between up milling and down milling
(d)	Differentiate between surface grinding and cylindrical grinding.
(e)	Write down the objectives of un-conventional machining process.
(f)	Define special purpose machines with suitable example
(g)	What do you mean by abrasive flow machining?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

(a)	A M. S. bar of 100mm is being turned with a tool having ASA tool significant as : 6^0-10^0-5^0-7^0-10^0-30^0-0.5mm. Determine the various components of the machining force and the power consumption. Take depth of cut 2.5 mm, feed = 0.125 mm/ rev, turning speed of job = 300 rev/ min, coefficient of friction at the total work interface = 0.6. ultimate shear stress of the work material = 400Mpa
(b)	Explain different indexing method. indexing 141 divisions using compound indexing.
(c)	Discuss the threat cutting mechanism by taking an example and show all the calculation for the same
(d)	Explain the mechanics of material removal in Electro-Chemical Machining (ECM) process with neat sketch. Also explain advantages, disadvantages and applications of it
(e)	Explain the different wear mechanism of grinding wheel.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Explain the factors which influence the tool life of a cutting tool. In a normal turning operation the tool life varies with cutting speed as shown in following table Cutting speed, V, m/min: 2.5, 3.54 Tool life, T, min: 110, 37 Estimate the tool life for this operation at a speed of 2.3 m/min.
(b)	Draw the merchant force diagram and write down the relation among cutting force, thrust force, shear force, friction force and normal force.

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4. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Explain the principle and construction of capastan laith with neat sketch.
(b)	Calculate the time required for drilling a 20 mm diameter hole in 15 mm thick MS plate. a feed rate of 0.15 mm/ rev and a lip angle of 118^0 for the twist drill may be assumed, cutting speed for MS is taken as 25m/min.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a)	A 100 mm diameter cutter having 8 teeth cuts steel at 30 m/min.the depth of cut is taken as 4 mm and table feed rate 150 mm/min. find the length of chip in up and down milling operations.
(b)	Explain the working of planner machine tool with help of neat sketch. Also explain drive mechanism used in planner machine tool.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Using a horizontal axis surface grinder, a flat surface of C65 steel of size 100* 250 mm is to be ground. The grinding wheel used is 250 mm in diameter with a thickness of 20 mm. calculate the grinding time required. Assume a table speed of 10m/min and a wheel speed of 20 m/sec.
(b)	Discuss any to gear manufacturing method with neat sketch

7. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Explain the Laser beam machining with help of neat sketch. Also write down their applications and advantages.
(b)	Explain the working principle of abrasive jet machining process. Also explain the different process parameter which influence the material removal rate and surface finish.