

INSTITUTE OF ENGINEERING
AND TECHNOLOGY

JK Lakshmipat University Jaipur

INSTITUTE OF ENGINEERING AND TECHNOLOGY

B. Tech. in Mechanical Engineering.

3rd Year (6th Semester)

Term-III Examination, May, 2019

Course No. : ME607
 Course Title : Production Technology - II
 Nature of Exam : Closed book
 Weightage : 30%
 Max Marks : 30
 Duration : 180 Minutes
 Date of Exam : 04-05-2019

No. of Pages =	01
No. of Questions =	05

Session: 02:00 PM – 05:00 PM

Note:

1. Please read through and follow all the instructions given on the cover page of the answer book.
2. Draw neat diagrams using pencil (if required).
3. Electronic gadgets including cell phones (other than calculator) not allowed during the examination.
4. All questions are compulsory.

- Q1. In order to manufacture a screw, a bar was turned on a lathe machine. Orthogonal turning was performed on SS304 steel. During turning operation following data were obtained: chip feed force= 240 kgf, cutting force = 350 kgf, rake angle of tool= 15 degree, chip thickness ratio = 0.36. Calculate, (i) shear angle, (ii) shear force, (iii) normal force, (iv) co-efficient of friction at the chip tool interface, (v) friction angle. [Marks: 6] LO:01, LO:02
- Q2. A cold rolled steel cup with an inside radius of 30 mm and a thickness 3 mm is to be drawn from a blank of radius 40 mm. The yield stress in shear is 220 N/mm² and the allowable stress in tension is 600 N/mm². Determine the, (i) drawing force taking $\mu=0.12$ and $\beta=0.056$ and (ii) minimum possible radius of the cup which can be drawn from the given blank without causing a fracture. [Marks: 6] LO:05
- Q3. A strip with cross section 150 mm * 4.5 mm is being rolled with 20 % reduction area using 450 mm diameter rolls. Find, (i) the angle subtended by the deformation zone at the roll center, (ii) the final strip thickness, and (iii) the location of neutral plane. Take co-efficient of friction as 0.12. [Marks: 6] LO:05
- Q4. Threading on bolt is performed using thread rolling operations. The thread length was prepared using lathe machine tool. Further using grinding operations pitch circle diameter was obtained using the grinding operation. With neat diagram explain a suitable grinding operation that can be used. Also explain how honing and lapping are different from grinding operation. [Marks: 6] LO:04
- Q5. In order to manufacture a gear, the module of gear is very important parameter using which a spur gear. For a blank diameter of 42mm, find the indexing to cut 9 surfaces on the blank. Also, write the classification of milling machine. [Marks: 6] LO:03