Total No. of Questions : 4]

SEAT No. :

PE6

[Total No. of Pages : 2

[6579]-306

T.E. (Mechanical/Automobile Engineering) (Insem)

MACHINING SCIENCE AND TECHNOLOGY

(2019 Pattern) (Semester - I) (302045-B) (Elective-I)

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

Instructions to the candidates:

1) ***Solve Q.1 or Q.2 and Q.3 or Q.4.***
2) ***Neat labeled diagrams must be drawn wherver necessary.***
3) ***Assume suitable data, notations if necessary.***
4) ***Figures to right indicate full marks.***
5) ***Use of non-programmable electronic calculator is allowed.***

Q1) a) Enumerate the factors on which the tool wear and tool life depend. **[5]**

b) Compare between Continuous chip and discontinuous chip with four difference points. **[4]**

c) Following observations are noted in orthogonal cutting operation set up: **[6]**

i) Rake angle = 12°,

ii) Cutting speed 80 m/min,

iii) Chip thickness after metal cut = 0.80 mm,

iv) Uncut chip thickness = 0.40 mm,

v) Cutting force = 3000 N,

vi) Thrust force = 1000 N.

Calculate:

1) Frictional force acting on chip
2) Coefficient of friction at tool chip interface
3) Shear angle
4) Shear Force along shear plane.
5) Force normal to shear plane.
6) Cutting power.

OR

P.T.O.

Q2) a) Draw a neat sketch of "Chip Breaker" and Justify why it is needed? **[5]**

b) Compare between orthogonal and oblique cutting. (Minimum Four Points) **[4]**

c) Using Taylor's equation and using n = 0.5, C = 40, calculate the percentage increase in tool life when cutting speed V is reduced by 50% **[6]**

Q3) a) Illustrate with neat sketch any one method of the thread rolling process for manufacturing of threads. Why rolled threaded parts are stronger than machined threads? **[6]**

b) What is gear hobbing ? Explain with neat sketch gear hobbing process **[5]**

c) Explain with neat diagram any one method Multi Rib Thread grinding for precision thread manufacturing **[4]**

OR

Q4) a) Describe with neat sketch thread milling process. **[6]**

b) Illustrate with neat sketch gear shaping process. **[5]**

c) What is gear inspection? Explain the role of gear inspection in gear manufacturing process. **[4]**