

Total No. of Questions : 4]

SEAT No. :

**P9001**

[Total No. of Pages : 1

**Oct-22/TE/Insem-506**

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

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

- Q1)** a) Explain single point cutting tool Geometry with figure. [5]  
b) Explain the relation between shear velocity, cutting velocity and chip flow velocity. [4]  
c) A 300 mm diameter bar is turned at 50 rev/min. with depth of cut 2 mm and feed of 0.3 mm/rev. Calculate power consumption, specific cutting energy and energy consumed with cutting force 1800 N and Feed force 500 N. The total metal removed during the turning operation is  $2.5 \times 10^3 \text{ mm}^3$ . [6]

OR

- Q2)** a) Draw Merchant circle and write the equation of frictional forces and shear forces in terms of cutting force and thrust forces using merchant circle. [6]  
b) Write the difference between orthogonal and oblique cutting. [5]  
c) A tool life of 60 minute is obtained at a speed of 25 m/min. and 6 minute at 50 m/min. Calculate following: [4]  
i) Tool life equation  
ii) Cutting speed for 5 min. life

- Q3)** a) Explain thread rolling with neat sketch. [6]  
b) Explain thread milling with neat sketch. [5]  
c) Give the advantages and limitations of casting for the manufacture of gears. [4]

OR

- Q4)** a) Explain with neat sketch the Gear Hobbing. [6]  
b) What are the advantages of producing thread by grinding? [5]  
c) Write a short note on Gear Inspection. [4]

