

Roll No.

Total No. of Questions : 08]

[Total No. of Pages : 02

M.Tech.

METAL CUTTING

SUBJECT CODE : PE - 502

Paper ID : [E0442]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 100

Instruction to Candidates:

- 1) Attempt any **Five** questions.
- 2) All questions carry equal marks.

- Q1)** (a) Discuss the effect of different factors on forces in orthogonal cutting.
- (b) Explain the two main requirements i.e. Sensitivity and Rigidity in case of dynamometer design.
- Q2)** (a) Discuss in detail the different types of tool failures.
- (b) Explain the effect of metallurgy on machinability of a material.
- Q3)** (a) What are the different wear measurement techniques? Discuss in detail.
- (b) Explain the mechanism of grinding process: Why do we require the testing of grinding wheel?
- Q4)** Write short notes on:
- (a) Economics of machining.
 - (b) Mathematical modeling for wear.
 - (c) Grinding wheel wear.
 - (d) Mechanism of honing.

- Q5)** (a) Explain the effect of cutting variables on chip reduction coefficients.
- (b) What is the effect of wear land on force system in case of oblique cutting?
- Q6)** (a) Explain the mechanism of chip formation in case of orthogonal cutting.
- (b) Draw and explain the Merchant's force diagram for orthogonal cutting.
- Q7)** (a) Explain any two methods that can be used for heat and temperature determination during metal cutting.
- (b) What are the effects of different factors on the cutting temperature in turning?
- Q8)** (a) Explain the different materials, along with their properties, that can be used for making the tools.
- (b) Explain the effect of helix angle on force system in milling.

