

Registration No :

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Total Number of Pages : 02

B.Tech
PME5I101

5th Semester Regular / Back Examination 2018-19

MACHINING SCIENCE & TECHNOLOGY

BRANCH : MECH

Time : 3 Hours

Max Marks : 100

Q.CODE : E503

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Short Answer Type Questions (Answer All-10) (2 x 10)

- What is the use of chip breaker?
- Write the factors affecting tool life during machining?
- Explain the limitations of ceramic tools.
- What is the difference between a 'face plate' and 'drive plate'?
- Calculate the set over required to machine a taper of 60mm/m on the workpiece 400 mm long.
- What is the difference between shaper and planer?
- Explain the term 'machinability'.
- Define grinding ratio?
- What is meant by 'grades' and 'structures' of grinding wheel?
- What type of work is most suitable for LBM?

Part- II

Q2 Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- Sketch a single point cutting tool under ORS system. Define various tool angles and discuss their importance.
- Write a short note on cutting fluids.
- Write any five factors that are associated with BUE.
- Describe the method of operation of the swiss type automatic lathe with applications and tools used. What is its specialty?
- What is hydraulic shaper? what are its advantages over mechanical shaper?
- A rod 150 mm long and having diameter 15 mm is reduced to 14 mm diameter in one pass of turning. Find the material removal rate and machining time when spindle speed is 400 rpm and feed 200 mm/min.
- Discuss the working principle of Lathe tool dynamometer with sketch.
- Calculate the time to shape a plate 500X900 mm size when the cutting speed is 10 m/min and return to cutting time ratio is 1:4. Take feed as 3 mm and clearance at each end 70 mm.
- Differentiate between up milling and down milling. Which one is most commonly used method and why?
- What are the advantage and disadvantages of centerless grinding?
- What are the functions of Electrolyte in ECM?
- What are the different types of transducers used in USM? Write their function.

Part-III

Long Answer Type Questions (Answer Any Two out of Four)

Q3 What are the situations where diamonds are used as cutting tools? **(16)**
Following data is recorded relating to orthogonal cutting:

Feed force=850 N; cutting force=1600 N',
chip thickness ratio=0.26; tool rake angle=10°
calculate

- a) compression and shear force and
- b) coefficient of friction between chip and tool face

Q4 What are the different types of indexing method? Describe the differential indexing method with example. **(16)**

Q5 Explain the principles of EDM. Describe the different parts of EDM with neat sketch. **(16)**

Q6 Derive the expression for optimum cutting speed for minimum cost of production and maximum production rate. **(16)**