Printed Pages: 3 | 1000 | MME-158

(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID : 240158   Roll No. *uptuonline.com*

M. TECH.

(SEM.I) THEORY EXAMINATION, 2015-16

MACHINING SCIENCE

[Time:3 hours]   [Total Marks:100]

1. Attempt **any two** parts of the following: (10×2=20)

    (a) What are the various types of Chips? What is Chip Thickness Ratio? Derive the expression

    $\tan \phi = r \cos \alpha /(1 - r \sin \alpha)$.

    (b) What do you mean by Mechanics of metal cutting? Also write the difference between Orthogonal and Oblique cutting.

    (c) What do mean by Machinability? What are the factors which affect machinability?

2. Attempt **any two** parts of the following: (10×2=20)

    (a) Draw the tool geometry of single point cutting tool. And show the different angles.

    (b) If the Taylors Tool Life exponent n =0.5 and constant C = 400, what will be the percent increase in tool life when cutting speed is reduced to half?

    (c) Why we use cutting fluids? Discuss some of the cutting fluids used during machining.

3. Attempt **any two** parts of the following: (10×2=20)

    (a) What do you mean by super finishing operations? Also discuss difference between Honing and Lapping.

    (b) What is the function of electrolyte ECM? Also write the working of ECM. Enlist the application of ECM.

    (c) Explain the principle of USM. What is the difference between USM and EDM?

4. Attempt **any two** parts of the following: (10×2=20)

    (a) Write down problems associated with machining of plastics. Also write the name of tools which are used for plastic cutting. *uptuonline.com*

    (b) Why unconventional welding is preferred over conventional welding for different properties of material.

    (c) What do you mean by economics of metal cutting- single and multi pass machining operations?

5. Write short notes on any FOUR: (5×4=20)

   (a) Chip control methods

   (b) Thermodynamics of chip formation

   (c) WJM

   (d) Tool life

   (e) Wheel wear

   (f) Multipoint cutting tool

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