Printed Pages : 4 | 680 | EME-503

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

Paper ID : 140523 | Roll No. | | | | | | | | | |

B.Tech.

(SEM. V) THEORY EXAM. 2015-16

MANUFACTURING SCIENCE - II

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

Section - A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (2x10=20)

   (a) Define non-conventional machining process and how it is differ from conventional machining processes?

   (b) Explain tool signature with the help of an example.

   (c) Write down the characteristics of cutting tool materials.

   (d) What is meant by keyhole welding?

   (e) What is an abrasive? What are its types & characteristics?

   (f) Differentiate between Capstan and Turret lathe.

   (g) Explain the mechanics of material removal in USM process.wear.

   (h) Explain the parameters that influence tool wear.

   (i) What is meant by soldering? How does it differ from brazing?

   (j) Discuss the various types of chips produced in metal cutting.

Section - B

Note : Attempt **any five** questions from this section. (10x5=50)

2. Explain three different ways in which the wear of grinding wheel takes place. What can be done to prevent them?

3. Enumerate the various types of defects in welding? Also specify the reasons and remedial measures for each.

4. Derive the expression for the determination of shear angle in an orthogonal metal cutting operation with assumptions.

5. Define milling? What are the various work holding devices used in milling? Explain their relative applications and disadvantages.

6. What are the cutting fluids? Discuss some of the cutting fluids used during machining and their method of application.

7. Explain the working principle of dividing head in milling machine. Draw schematic sketch of horizontal milling machine.

8. Draw the neat sketch of single point cutting tool & explain its elements.

9. Discuss the various methods used for expressing the surface roughness.

Section - C

Note : Attempt **any two** questions from this section. (15x2=30)

10. Explain the constant current and constant voltage characteristics of welding process. What are the advantages and limitations of each? What are the different types of power sources used in arc welding.

11. Write brief notes on all of the following :

    (i) Diffusion Process

    (ii) Cladding

    (iii) Explosive Welding

12. A cylindrical bar is to be turned. The maximum allowable feed is 0.2 mm/revolution and at this feed rate Taylor's tool life equation for a tool-work combination is found to be $vT^{0.25}=75$, where 'v' is the cutting speed in m/min and T is the corresponding tool life in minutes. The labour cost and overheads is Rs. 0.15 per minute and the total cost involved in each regrinding of the tool is Rs. 2.50. On the average, it takes about 2 min to change the tool. Estimate the cutting speed that will lead to the minimum cost. Also find out the optimum cutting speed for maximum production rate for the job.

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