Printed Pages: 4 | 699 | NME-503

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

Paper ID : 140503 | Roll No. | | | | | | | | | |

B. Tech.

(SEM. V) THEORY EXAMINATION, 2015-16

MANUFACTURING SCIENCE & TECHNOLOGY-II

[Time:3 hours] **[Maximum Marks:100]**

SECTION-A

Note : All questions are ***compulsory***

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

   (a) Describe the cutting tool temperature.

   (b) Discuss the conditions due to which discontinuous chips produced in metal cutting.

   (c) What are the carbide cutting tool materials and its applications ?

   (d) What is an abrasive ? What are its types and characteristics ?

   (e) Write short note on hybrid machining processes.

(f) Bring out the differences between orthogonal and oblique cutting.

(g) Differentiate between normal, oxidizing and carburizing flames.

(h) Explain the mechanics of material removal in ECM process.

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

(j) Why Schaeffler diagram is used ?

SECTION-B

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

2. What are the cutting fluids ? Discuss various properties of cutting fluids used during machining.

3. What are the main differences between a shaper and planer ? Discuss the different drive mechanisms used in shaper with the help of suitable diagram.

4. Explain three different ways in which the wear of grinding wheel takes place. What can be done to prevent them? Differentiate Dressing and Truing.

5. What are various types of arc welding power sources ? Give the advantages and limitations of each.

6. Explain with neat sketches-Resistance welding & submerged arc welding.

7. How are grinding wheels specified ? Clearly differentiate between grade and structure of a grinding wheel ?

8. Define flaw, roughness and waviness to characterize surfaces. Show surface profile for a rough, lapped and finished object.

9. What is the purpose of reaming? Explain the process of Honing Lapping Claddig.

SECTION-C

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

10. Discuss the various criteria used for optimizing the cutting conditions. A cylindrical bar is to be turned. The maximum allowable feed is 0.2mm/revolution and at this feed rate Taylor's tool life equation for a tool work combination is found to be $VT^{0.25} = 55$. The labor cost involved in each regrinding if the tool is Rs 7.0. On the average, it takes about 3 minutes to change the tool. Find the cutting speed that will lead to maximum production rate. Drive the formula used.

11. How are non-conventional machining processes different from conventional machining processes ? Write brief notes on all of the following :

(i) Abrasive jet machining (AJM)

(ii) Advantages of EBM over USM

(iii) Plasma arc welding

12. Draw Merchant's force circle diagram and develop expression for power required in metal cutting and derive Merchant's shear angle relationship.

—x—