

Printed Pages: 02

Subject Code: NME-503

Paper Id:

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B. TECH

(SEMV) THEORY EXAMINATION 2018-19

MANUFACTURING SCIENCE AND TECHNOLOGY - II

Time: 3 Hours

Total Marks: 100

Note: Attempt all Sections. If require any missing data; then choose suitably.

Section-A

1. Attempt all Questions in brief

2×10=20

- a. Define lapping.
- b. Name the two systems of designating the cutting tool.
- c. What do you understand by continuous chip with BUE
- d. Mention the applications of Friction Welding.
- e. What do you understand by boring, reaming and broaching?
- f. Bring out the differences between orthogonal and oblique cutting.
- g. What do you understand by HAZ in welding?
- h. What is the main point of difference between dressing and truing?
- i. Discuss the conditions due to which discontinuous chips produced in metal cutting.
- j. Mention four important factors that influence the selection of grinding wheel.

Section-B

2. Attempt any three of the following:

10×3=30

- a. Explain "Merchant force circle" along with assumptions.
- b. Explain grinding wheel specification. What is meant by grit, grade and structure of grinding wheel? Explain.
- c. Sketch and explain the working of shaper machine.
- d. Explain the mechanics of material removal in ECM process.
- e. Write a brief notes on:
 - i. Water Jet Machining
 - ii. Ultrasonic Welding

Section-C

3. Attempt any one of the following:

10×1=10

- a. Discuss the various types of chips produced during metal machining with neat sketch.
- b. In an orthogonal cutting test with a tool of rake angle 10° , the following observations were made:
Chip thickness ration = 0.3
Horizontal component of the cutting force = 1290N
Vertical component of the cutting force = 1650N

From Merchant's theory, calculate the various components of the cutting forces and the coefficient of friction at the chip tool interface.

- 4. Attempt any one of the following: 10×1=10**
- a. Mention the specifications of lathe with a neat sketch. Also give the classification of lathe machines.
 - b. Write the difference between turret lathe and capstan lathe. What are the uses of (i) Lead Screw (ii) feed rod (iii) Tail stock (iv) Half nut (v) Compound Slide in lathe machine.
- 5. Attempt any one of the following: 10×1=10**
- a. Explain three different ways in which the wear of grinding wheel takes place. What can be done to prevent them?
 - b. Define flaw, roughness and waviness to characterize surfaces. Show surface profile for a rough, lapped and finished object.
- 6. Attempt any one of the following: 10×1=10**
- a. What are various types of arc welding power sources? Give the advantages and limitations of each.
 - b. Explain the principle & working of Atomic-hydrogen welding process? What is resistance welding write its advantages, limitation and applications.
- 7. Attempt any one of the following: 10×1=10**
- a. How are non-conventional machining processes different from conventional machining processes? Write a brief notes on the following:
 - i. Material removal mechanism of Abrasive jet machining
 - ii. Advantages of EDM over USM
 - b. Classify the non-conventional machining processes. Explain the mechanics of metal removal process in Electrical discharge machining process. Also enlist its advantages and disadvantages.