

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

PAPER ID :

Roll No.

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B.TECH.

**Theory Examination (Semester-IV) 2015-16
MANUFACTURING TECHNOLOGY**

Time : 3 Hours

Max. Marks : 100

Note: (i) All symbols have usual meaning. (ii) Assume any relevant data, if missing.

SECTION A

Q (1) Attempt all parts. Write answer of each part in short. (2×10=20)

- What do you know about 3-2-1 Principle?
- How Manufacturing processes are classified?
- What are the common materials used for pattern making?
- What is the main function of Core in castings ?
- What do you understand by "machinability" ?
- Define Chip thickness ratio.
- What materials are used as Abrasive for Grinding wheels?
- What is the function of abrasive slurry in USM ?
- What is the function of dielectric fluid in E.D.M process ?
- What do you understand by Straight Polarity?

SECTION B

Q (2) Attempt any five questions from this section. (10×5=50)

- Explain Die and Punch assembly with the help of neat sketch.
- What do you understand by the Term gating system? Draw neat sketches of different gates in castings
- Draw a sketch of single point cutting Tool & Describe all angles.
- Explain orthogonal cutting and oblique cutting with its neat sketches and compare.
- Draw a neat sketch of twist drill with its nomenclature and explain various terminologies of twist drill.
- Compare TIG and MIG Welding processes.
- Differentiate Shaper, planer and Slotter with reference to relative tool and work motion. Explain various operations performed on them.
- Explain the working principle of Ultrasonic welding. Give its advantages, disadvantages and applications.

SECTION C

Attempt any two questions from this section. (15×2=30)

Q (3) Attempt the following

- Explain the following casting defects, their causes and remedies:
(i) Blow holes (ii) Scab (iii) Pin holes. (iv) Mis run
- In the casting of steel under certain mold conditions, the mold constant in Chvorinov's Rule is known to be 4.0 min/cm² based on previous experience. The casting is a flat plate whose length = 30 cm, width = 10 cm, and thickness = 20 mm. Determine how long it will take for the casting to solidify.

Q (4) Attempt the following

- Explain different types of chips produced in Metal Cutting.
- An orthogonal cutting operation is performed using a rake angle of 15° chip thickness before the cut = 0.012 in and width of cut = 0.100 in. The chip thickness ratio is measured after the cut to be 0.55. Determine (i) the chip thickness after the cut, (ii) shear angle, (iii) friction angle, (iv) coefficient of friction, and (v) shear strain.

Q (5) Write a note on the following:

- Explosive Welding
- Cutting Tool Materials
- Dressing and Truing in Grinding