

[03 - 2213]

II/IV B.E. DEGREE EXAMINATION.

Second Semester

Mechanical Engineering

MANUFACTURING TECHNOLOGY - II

(Common with Dual Degree Programme in
Mechanical Engineering)

(Effective from the Admitted Batch of 2006-2007)

Time : Three hours

Maximum : 70 marks

Question No. 1 is compulsory.

Answer any FOUR questions from the remaining.

All questions carry equal marks.

Answer to question 1 must be at one place.

Assume suitable data wherever necessary.

(7 × 2 = 14)

1. (a) What are the methods of indexing?
- (b) Enumerate the methods of taper turning in lathe.
- (c) State the applications of honing and lapping finishing methods.

6. (a) Discuss the various types of broaches. (7)
- (b) Calculate the time taken for one complete cut on a work piece of 500 mm long and 50 mm diameter. The cutting speed is 30 m/min and the feed rate is 0.5 mm/rev. (7)
7. (a) Write short notes on expanding hand reamers and adjustable machine reamers. (7)
- (b) Explain Abrasive Jet Machining (AJM) with suitable diagram. (7)
8. (a) What are the various advantages of using ECM? (7)
- (b) Explain the working principle of ECG process with a neat sketch. (7)

- (d) What are the four important characteristics of materials used for cutting tools?
- (e) Why is it essential that the cutting point of the tool should be level with the spindle centre while machining taper on a work-piece?
- (f) What is the difference between a ram-type turret lathe and saddle type turret lathe?
- (g) Under what conditions planning operation would be preferred over other machining processes like milling, broaching, shaping, etc?

2. (a) Explain the different types of chip formation and their effects on machining. (7)

(b) Explain why cutting fluids are not advisable in a machining operation. What are the new techniques employed in metal cutting operation to limit the use of cutting fluids? (7)

3. (a) List the various types of drills used on drilling machine. Sketch any two of them. (7)

(b) Draw the neat sketch of single point cutting tool and show the different parts and angles on it. (7)

4. (a) Explain the indexing mechanism with a neat diagram. (7)
- (b) A steel tube 40 mm outside diameter is turned on a lathe. The following data was obtained
- | | | |
|--------------------------------------------|---|------------------|
| Rake angle | = | 22° |
| Cutting speed | = | 18m/min |
| Feed | = | 0.2 mm/rev |
| Cutting force | = | 180 kgf × 9.81 N |
| Feed force | = | 60 kg f × 9.81 N |
| Length of continuous chip in one direction | = | 50mm |
- Determine:
- Chip thickness ratio
 - Chip thickness
 - Shear plane angle
 - Velocity of chip along tool face
 - Coefficient of friction. (7)
5. (a) Explain milling dynamometers and lathe tool dynamometers. (7)
- (b) Explain briefly the temperature distribution in the primary and secondary deformation zone. (7)