

Roll No.

24169

B. Tech. 4th Sem. (Mechanical Engg.)

Examination – May, 2011

MANUFACTURING TECHNOLOGY-I

Paper : ME-202-F

Time : Three hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination

Note : Attempt *five* questions in all, selecting at least *one* question from each Section. *Q. No. 1 is compulsory.* Each question carries equal marks.

1. (i) What are the basic items required for cutting any material ?
- (ii) Describe the basic elements of machining.
- (iii) Draw a neat sketch of a single point cutting tool indicating complete geometry on it.
- (iv) What are "Crater wear and tool wear" ?
- (v) Differentiate between a Jig and a Fixture.

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- (vi) What do you mean by locating and clamping devices ?
- (vii) Is lathe a G.P. or S.P. machine tool ? What are that operations that can be performed on it ?
- (viii) Differentiate between cold and hot working.
- (ix) What do you mean by High pressure and low pressure Gas welding ?
- (x) Differentiate between brazing and soldering.

SECTION - A

2. (a) What do you understand by "Machine ability" ? By which parameters it is generally influenced ?

- (b) A M.S. bar of 50 mm dia. was orthogonally machined on a lathe. The following data were obtained :

Feed rate = 0.5 mm/rev.

Chip thickness = 1.2 mm.

Rotational speed of work = 100 r.p.m.

Calculate chip thickness ratio, chip reduction ratio and length of chip removed/minute.

3. (a) What three-effects are produced by the application of cutting fluid at the interface of work and cutting tool ? What are the functions, the cutting fluid performs ?

- (b) Name the cutting tool materials and what is the function of alloying elements such as Carbon, chromium and Tungsten ?

SECTION – B

4. Write notes on the following :

- (a) Drilling Jigs,
- (b) Milling Fixtures,
- (c) Lathe fixtures,
- (d) Jig Bushes.

5. (a) What do you mean by metrology ? Name the linear measuring instruments and angular measuring instruments used in industries and workshops. What is auto-collimator ? Explain comparator and its types.

(b) What do you mean by surface finish ? Name the surface finishing processes. How surface finish is evaluated ? What are the units of surface roughness ?

SECTION – C

6. What is the difference between a machine and a machine tool ? Give examples of each. Explain about constructional features, specialization, operations and devices of the following machine tools :

- (i) Lathe,
- (ii) Shaper,
- (iii) Milling machine,
- (iv) Principles of Capstan and Turret lathes

7. Write short notes on the following :

- (i) Pattern allowances,
- (ii) Core making,
- (iii) Gating system,
- (iv) Cupola furnace,
- (v) Casting defects and remedies.

SECTION – D

8. (a) How do you classify welding processes ?

(b) Write short notes on the following :

- (i) Blanking,
- (ii) Forming,
- (iii) Extrusion,
- (iv) Forging,
- (v) Spinning.

9. Explain the following welding processes :

- (i) TIG welding,
- (ii) MIG welding,
- (iii) Laser beam welding,
- (iv) Electro slag welding,
- (v) Welding defects and remedies