

**MANUFACTURING TECHNOLOGY**

*Time: Three Hours*

*Maximum Marks: 100*

*Answer five questions, taking ANY TWO from Group A, any two from Group B and all from Group C.*

*All parts of a question (a, b, etc. ) should be answered at one place.*

*Answer should be brief and to-the-point and be supplemented with neat sketches.*

*Unnecessary long answer may result in loss of marks.*

*Any missing or wrong data may be assumed suitably giving proper justification.*

*Figures on the right-hand side margin indicate full marks.*

**Group A**

1. (a) Distinguish between hardness and hardenability. Explain a method of measuring the hardenability of steel. 6
- (b) Distinguish between a steel and a cast iron. Broadly classify steels and indicate their most common applications. 8
- (c) How is annealing different from normalising ? 6
  
2. (a) Give the classification of manufacturing processes. Name the commonly used casting processes. With the help of a figure explain investment casting. 8
- (b) Discuss the differences between pressurized and unpressurized gating systems and justify their applications. 6
- (c) Draw a complete process of shell moulding. Write advantages and limitations of this process. 6
  
3. (a) Why should we do hot working of metals? Enumerate the advantages and disadvantages of hot working. 6
- (b) What are the different methods of extrusion? Describe the hot extrusion process with suitable sketch. 8
- (c) Describe “punching” and “blanking” operations with the help of figures. 6

4. (a) Give the names of different types of plastics normally used commercially. Discuss the various applications of each type. Describe the process of blow molding of plastic. 6
- (b) Describe blow moulding and compression moulding processes and give their applications. 8
- (c) Briefly explain the compaction and sintering processes. Write their advantages and limitations. 6

**Group B**

5. (a) How are screw threads manufactured by machining processes ? Explain the salient features of those processes. Also mention merits and demerits. 8
- (b) How are the grinding wheels specified ? 6
- (c) Differentiate between honing and buffing. 6
6. (a) What are the main features of NC, CNC and DNC machine tools used for machining? 8
- (b) Define guideway and slideway. Enlist the main requirements to be fulfilled in the design of slideway bearings. 6
- (c) What are open loop and close loop controls in NC machines? 6
7. (a) What are the basic reasons for developing non traditional machining processes? 6
- (b) Name various new machining methods. Explain process capabilities and limitations of AJM, EDM, EBM and LBM. 8
- (c) Draw a schematic set up of ECM unit with label, and explain the material removal process by ECM. 6
8. (a) Differentiate between welding, brazing and soldering. 6
- (b) Explain TIG and MIG system of arc welding. Write their applications and limitations. 8
- (c) Name destructive and non-destructive testing methods of welded joints and explain one destructive and one non-destructive testing method. 6

*Group C*

9. Answer the following in brief: 20
- (i) What is meant by manufacturing cycle?
  - (ii) Why is tempering heat treatment done after quenching heat treatment?
  - (iii) What are different types of stainless steels?
  - (iv) Differentiate between a mould and a die.
  - (v) What is plastic deformation and its importance?
  - (vi) What is sintering process?
  - (vii) Differentiate between neutral flame and carburising flame.
  - (viii) Name six cutting tool materials.
  - (ix) Name six single and multipoint cutting operations.
  - (x) Explain specification of a grinding wheel.

*(Refer our course material for answers)*

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