

**II B. Tech II Semester Regular Examinations April/May – 2013**  
**PRODUCTION TECHNOLOGY**  
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 75

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Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) What are the different types of patterns used in foundries? Sketch any two types and give their applications.  
b) Compare the bottom gate with the top gate vis-à-vis its merits and demerits.
2. a) What is the difference between the solidification of pure metals and metal alloys? Explain with suitable examples.  
b) What are the different processes for Steel making? Describe any one of them with a neat sketch.
3. a) Can dissimilar metals be welded by resistance welding? If so, give the necessary precautions required.  
b) Describe, with a neat sketch, the process of Thermit welding. Give its applications.
4. a) Write a note on the destructive methods of testing the welded joints.  
b) Describe the types of fluxes used in soldering and write their applications.
5. a) Briefly explain the meaning of draught and elongation as related to hot rolling.  
b) Explain the meaning of the following terms: Strain hardening; Recovery; recrystallization.
6. a) Distinguish between hot spinning and cold spinning with respect to the process, relative merits, and applications.  
b) What is Tube drawing? Explain the process with a neat sketch.
7. a) How do you provide shear angle in the case of punching and blanking operations? Explain with proper sketches.  
b) Explain the influence of the following parameters on the component produced:  
i) Drawing speed      ii) Draw die radius
8. Explain the various methods (only the principle) available for blow moulding of thermoplastics giving their relative applications.



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1. a) List and explain the various pattern allowances.  
b) What are the major limitations of the sand-casting process and how are they overcome? Explain.
2. a) What is crucible melting? Explain. Mention its applications.  
b) State and explain the differences between centrifuging and true centrifugal casting.
3. a) Explain the characteristics of arc-welding machines, viz. constant current and constant voltage. Mention the applications of each of them.  
b) What do you understand by the term *kerf* in gas cutting? Explain its relevance.
4. a) Distinguish between brazing and soldering from the point of view of the filler metals used, applications and the strength of the joint obtained.  
b) Explain the process of friction welding, giving its applications.
5. a) Briefly explain the theory of rolling. What is the significance of roll diameter with reference to the roll-separating force in rolling?  
b) What is strain hardening? Does it occur in hot working or cold working or both? Give proper reasons for your answer.
6. a) Explain what happens when the clearance between the punch and the draw die, in the case of a deep-drawing operation, is equal to the thickness of the blank.  
b) Discuss the different types of press tools giving their applications.
7. a) Explain, with neat sketches, how tubes are produced by i) Extrusion and ii) Drawing.  
b) Distinguish between Roll forging and Rotary forging.
8. Describe, with a neat sketch the equipment and for injection moulding. Also give its applications



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1. a) Give a brief write-up on the following casting terms with suitable sketches: Sprue, Gate, Runner, and Riser  
b) Define Gating Ratio. Discuss the disadvantages of the unpressurized gating system.
2. a) Compare the Modulus method with Caine's method for fixing the Riser dimensions.  
b) Is it possible to obtain a sound casting of a solid bar by centrifugal casting? Give reasons in support of your answer.
3. a) What are the parameters that decide the drag in oxy-fuel gas cutting? Explain how a good cut is achieved.  
b) How is polarity defined in the case of a DC welding source? How is it advantageously used?
4. a) Distinguish between the destructive and non-destructive testing of welds. Mention their applications.  
b) Describe, with a neat sketch, the Explosion welding process.
5. a) Explain the theory of rolling, with a neat sketch.  
b) Give the broad classification of the Roll Pass Sequence. How do you design the roll pass schedule?
6. a) A  $60^{\circ}$  bend is required on a sheet metal component. Should the die angle be equal to, more, or less than  $60^{\circ}$ ? Support your answer with proper reasons.  
b) What is the difference in the set-up used drawing and blanking operations? Explain. What is Shallow Drawing?
7. a) Distinguish between Impact extrusion and Cold extrusion forging.  
b) What are the different types of Forging methods? Explain the Machine Forging operation.
8. a) What is Thermoforming? Explain the Vacuum Thermoforming process with a sketch.  
b) What are the common additives used in plastics? Discuss how they improve the properties of plastics.



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1. a) Describe the following types of patterns, with suitable sketches, giving their applications:  
i) Follow Board pattern;                      ii) Loose Piece Pattern.  
b) Discuss the normal characteristics desired of a Core in a sand casting.
2. a) Describe the operation of Crucible melting, with a sketch. What are its disadvantages as compared to Cupola melting.  
b) Discuss the applications of the Parting Gate and Step Gate.
3. a) Explain how the Heat Input affects the Welding Design.  
b) Describe, with a neat sketch, the Submerged Arc welding process. Give its applications.
4. a) For welding heavy rail sections, thermit welding is often used. Explain how the heat necessary for the joining process is obtained.  
b) What is the effect of restraining a joint? Explain how it could be advantageously utilized in minimizing the distortions.
5. a) What are the types of possible sequences for finishing passes for rolling round sections? Explain with suitable sketches.  
b) Give any three examples of rolling stand arrangements, with sketches.
6. a) What is Stamping, and what are its applications? Is it a cold working process or hot working process? Give reasons for your answer.  
b) What is redrawing? When is this process used? Describe with a suitable sketch of the set-up.
7. a) Explain the principle of Extrusion. Describe the flow of metal in the extrusion process with a relevant sketch.  
b) What is counter-locking of forging dies? Write the cause and effect of the same.
8. a) Give the classification of the different polymeric materials by means of a flow chart.  
b) Distinguish between Compression Moulding and Transfer Moulding with regard to the process and applications.

