Code No: RR310301 **Set No. 1**

III B.Tech I Semester Regular Examinations, November 2006
PRODUCTION TECHNOLOGY
(Mechanical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain using a simple sketch the layout of a typical foundry.
   (b) What are the factors that affect the permeability? Explain
   (c) Why is it best to use green sand in making a core, if mold permits?[10+3+3]
2. (a) State the differences between true-centrifugal casting, semi-centrifugal casting, centrifuging. Which method is used for cast iron pipe production.
   (b) Discuss the various elements that comprise the gating system. [8+8]
3. (a) Explain the effect of "thermal conductivity" and "thermal expansion" on welding process.
   (b) Discuss the types of welding joints with their standard symbols. [6+10]
4. (a) What is forge welding and what are the different types of forge welding? Explain any two types.
   (b) How does spot welding differ from roll spot welding and projection welding? [10+6]
5. (a) Explain the term Brazing and different methods used in Brazing.
   (b) Explain the following terms used in computation of weld costs
      i. Operator factor
      ii. Overhead costs
      iii. Equipment costs. [10+6]
6. (a) What are the parameters controlling the explosive forming? Discuss them.
   (b) Explain the disposition of clearance in size of punch and die for blanking and piercing. [10+6]
7. (a) What are the various equipment used in extrusion of metals? Briefly descries them.
   (b) What are the various methods of making seamless pipes? Discuss any two methods in brief. [6+10]
8. (a) Discuss the advantages and limitations of forging process.
   (b) Define the following forging defects and explain the remedies.
      i. Cracks
      ii. Pitting

iii. Shift
iv. Folds. [8+8]

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Code No: RR310301 **Set No. 2**

III B.Tech I Semester Regular Examinations, November 2006
PRODUCTION TECHNOLOGY
(Mechanical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the following pattern allowances :
   i. Distortion.
   ii. Mould - wall movement.
   (b) What are the reasons for reconditioning of used sand ? [8+8]
2. (a) Explain the applications of shell moulding process.
   (b) Describe the types of risers and their uses with suitable sketches. [6+10]
3. List out any 5 types of fusion welding processes and compare them with the source of heat energy, applications and advantages. [16]
4. (a) Explain the process of Thermit welding? State and explain clearly the controlling parameters that influence the Thermit welding.
   (b) What class of welding process is known as resistance welding? Give some of the advantages of these processes over other processes. [8+8]
5. (a) Explain the term HAZ in welding and its role in the success of a weldment.
   (b) How is Brazing different from Welding and soldering? [10+6]
6. (a) Discuss ring rolling operation in detail.
   (b) Write a note on thread rolling process. [8+8]
7. (a) What is hot extrusion? In how many ways it can be performed?
   (b) Explain the role of container and die in the analysis of extrusion. [8+8]
8. (a) Differentiate between press forging and machine forging.
   (b) By inspecting some forged products, such as a pipe wrench, one can see that the lettering on them is raised rather than sunk. Explain why they are made that way. [8+8]

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Code No: RR310301 **Set No. 3**

III B.Tech I Semester Regular Examinations, November 2006
PRODUCTION TECHNOLOGY
(Mechanical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain using simple sketches the following pattern types :
   i. Pattern with loose pieces.
   ii. Follow board pattern.
   (b) How is the layout of pattern made? Explain the procedure for pattern construction. [10+6]

2. (a) What are the common forms in which the die casting dies are designed? Describe.
   (b) Compare precision investment casting and shell moulding from the standpoint of process, product and applications. [10+6]

3. (a) Explain the effect of "thermal conductivity" and "thermal expansion" on welding process.
   (b) Discuss the types of welding joints with their standard symbols. [6+10]

4. (a) What is the source of welding heat in Thermit welding? What are the applications of Thermit welding?
   (b) What does a Thermit mixture consist of and what reactions take place in Thermit welding? [8+8]

5. (a) Explain the following metal joining techniques.
   i. Dip soldering
   ii. Wave soldering
   iii. torch brazing
   iv. Dip brazing.
   (b) How is Brazing different from Welding? And what are the materials used in Brazing. [12+4]

6. (a) What is tube spinning? Explain the process of making hollow shaft with steps.
   (b) Give the examples for the applications of super plastic forming. [10+6]

7. (a) Discuss the basic characteristics of extrusion process.
   (b) Discuss the following with the help of neat sketches
   i. Hydrostatic Extrusion
   ii. Impact Extrusion [6+10]

8. (a) Describe with the help of neat sketch the working of a spring hammer.
   (b) What are the advantages and limitations of hot forging? [8+8]

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Code No: RR310301 **Set No. 4**

III B.Tech I Semester Regular Examinations, November 2006
PRODUCTION TECHNOLOGY
(Mechanical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the different types of patterns commonly used with neat sketches
   (b) What are expendable patterns and why they are used? [12+4]
2. (a) Discuss the shell molding process with the help of neat sketch.
   (b) Give the relevance of the following with reference to a casting
      i. Sprue
      ii. Runner
      iii. Ingate [10+6]
3. Differentiate between Arc and Gas welding with respect to the principle, operation application and limitations? [16]
4. Describe the following types of welding techniques:
   (a) TIG welding
   (b) Explosive welding
   (c) Laser Beam welding. [5+5+6]
5. (a) Describe the following metal joining techniques
      i. Furnace brazing
      ii. Dip brazing
   (b) Explain the following tests conducted on welds
      i. Dye penetrant test
      ii. Magnetic particle test [8+8]
6. (a) Explain briefly the various defects in rolled products.
   (b) Explain the functions of working rolls and supporting rolls. [10+6]
7. (a) Explain the extrusion process and discuss the various controlling parameters.
   (b) Describe the process of making seamless tubes by extrusion process [8+8]
8. (a) Explain the process and applications of the following forging operations.
      i. Upsetting
      ii. Bending
   (b) What are common materials used for forging? Give their forging temperatures and applications. [8+8]

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