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**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**B.E. (Mech. Engg.) III Year I-Semester Main & Backlog Examinations, December-2017**  
**Manufacturing Processes**

Time: 3 hours

Max. Marks: 70

*Note: Answer ALL questions in Part-A and any FIVE questions from Part-B*

**Part-A (10 × 2 = 20 Marks)**

1. Explain the purpose of chaplets and chills.
2. Why is the sand used for moulding?
3. List the inspection methods to find out fine surface and sub-surface defects.
4. Discuss the merits and demerits of hot chamber die casting process over cold chamber die casting process.
5. Explain why the carburizing flame is the longest flame?
6. Outline the function of flux in forge welding process.
7. Define weldability. List the parameters that influence weldability of a material.
8. "Spots cannot be made closer than 16 times the thickness of the sheets in spot welding. But in case of projection welding closer spots are possible" Justify the statement.
9. Compare piercing and blanking processes.
10. What are the merits of nonconventional forming processes over conventional forming processes?

**Part-B (5 × 10=50 Marks)**  
*(All bits carry equal marks)*

11. a) State the types of gates and explain about their relative merits and demerits along with the applications
- b) Design the riser for the casting section of 25 cm X 15cm X 5 cm using NRL method. Use following table

Shape factor	2	4	6	8	10	12	14	16
Riser volume/casting volume	0.8	0.7	0.55	0.5	0.46	0.43	0.41	0.4

12. a) Explain the investment casting process along with merits and demerits.
- b) Recommend the suitable casting processes for the following components with suitable justification (i) large cast iron pipes (ii) gas turbine blades of aero engines (iii) Carburetor (iii) cylinder head for 4 wheeler.
13. a) What are the merits and demerits of friction welding process? Explain the process in detail.
- b) Discuss the procedure of soldering. Classify the soldering operations explain about them in brief.
14. a) Recommend the process and procedure used for welding of rails.
- b) Explain the principal of resistance welding? Explain the seam welding process with a neat sketch.
15. a) Discuss hot working and cold working processes? Write their relative merits and demerits.
- b) Explain the electromagnetic forming with a neat sketch.
16. a) What are various pattern allowances? Explain about them in brief.
- b) Explain about hot chamber die casting process with a neat sketch.
17. Answer any *two* of the following:
  - a) Explain about plasma arc welding with a neat sketch.
  - b) Explain about electro slag welding process with a neat sketch
  - c) State and explain about various types of forging processes.