



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Third Semester, B.E. - Mechanical Engineering

Semester End Examination; Dec - 2019

Manufacturing Process - I

Time: 3 hrs

Max. Marks: 100

Note: i) **PART - A** is compulsory. **Two** marks for each question.

ii) **PART - B:** Answer any **Two** sub questions (from a, b, c) for Maximum of **18 marks** from each unit.

| Q. No. | Questions | Marks |
|----------------------|---|-----------|
| I : PART - A | | 10 |
| I a. | List the organic group of binders used in moulding sand. | 2 |
| b. | Write the steps involved in Slush Casting. | 2 |
| c. | List the Causes of porosity kind of welding defects. | 2 |
| d. | Write any two factors to be considered when selecting a cutting fluid. | 2 |
| e. | List the advantages and limitations of lapping. | 2 |
| II : PART - B | | 90 |
| UNIT - I | | 18 |
| 1 a. | List the major components produced by casting. Also discuss the advantages and limitations of casting process. | 9 |
| b. | What is riser? Discuss any four types of patterns with a sketch. | 9 |
| c. | Explain the functions of different types of additives. | 9 |
| UNIT - II | | 18 |
| 2 a. | Explain the different types of sand moulds, also list their advantages and disadvantages. | 9 |
| b. | With a neat sketch, explain the procedure involved in making shell mould. | 9 |
| c. | With the help of sketch, describe the steps involved in core making. | 9 |
| UNIT - III | | 18 |
| 3 a. | Explain spot welding process with a neat diagram. | 9 |
| b. | Explain the different methods of brazing based on the mode of application of heat. | 9 |
| c. | Explain the effects and control of residual stresses in welding. | 9 |
| UNIT - IV | | 18 |
| 4 a. | Draw the shear angle relationship and derive the equation $\tan \phi = \frac{r \cos \alpha}{1 - r \sin \alpha}$ | 9 |
| b. | Write a note on; i) HSS ii) Cemented carbides iii) Ceramics | 9 |
| c. | Explain three different type of chip formation. | 9 |
| UNIT - V | | 18 |
| 5 a. | A lathe turning at a particular speed is cutting a mild steel work piece with HSS tool. The speed-life relationship for the tool is given by $VT^{0.4} = 400$. Determine the percentage increase in the tool life, if the cutting speed is reduced by 20%. | 9 |
| b. | With a neat sketch, explain the Hydraulic driving mechanism of shaper. | 9 |
| c. | Explain the factors to be considered before selecting a grinding wheel. | 9 |