



**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
<b>I : PART - A</b>		<b>10</b>
I a.	List out the different types of patterns.	2
b.	List the functions of risers.	2
c.	Define weldability of metals.	2
d.	Differentiate between orthogonal cutting and oblique cutting.	2
e.	Define tool life.	2
<b>II : PART - B</b>		<b>90</b>
<b>UNIT - I</b>		<b>18</b>
1 a.	List and explain different steps involved in casting process.	9
b.	Sketch and explain sweep pattern and match plate pattern.	9
c.	List the pattern allowances and explain in detail “draft allowances” in patterns.	9
<b>UNIT - II</b>		<b>18</b>
2 a.	With a neat sketch, explain types of risers.	9
b.	With a neat sketch, explain Investment casting.	9
c.	Explain briefly “CO <sub>2</sub> ” Moulding process.	9
<b>UNIT - III</b>		<b>18</b>
3 a.	With a neat sketch, explain Explosive welding.	9
b.	What is meant by HAZ? Explain the various parameters affecting HAZ.	9
c.	Write a note on shrinkage and residual stresses in welds.	9
<b>UNIT - IV</b>		<b>18</b>
4 a.	With a neat sketch discuss about single point cutting tool nomenclature.	9
b.	Explain with a neat sketch the types of chips produced in Machining operations.	9
c.	Explain the following tool materials:	9
	i) Carbides    ii) Ceramics    iii) HSS	9
<b>UNIT - V</b>		<b>18</b>
5 a.	A lathe running at a speed of 30 m/min cuts a mild steel rod of 160 mm diameter with a HSS tool. The tool life under this condition was observed to be 2.1 hours. When the cutting speed was reduced to 25 m/min, the tool life was observed to be 5.2 hours. Calculate the value of the constant “C” and the exponent “n” in the tool life equation.	9
b.	With a neat sketch, explain the turret lathe mechanism.	9
c.	Explain the different factors to be considered in the selection of a grinding wheel.	9