

Reg. No.

--	--	--	--	--	--	--	--	--	--

**B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019**

Third Semester

**AE18305 – PRODUCTION PROCESSES***(Automobile Engineering)***(Regulation 2018)****Time: Three Hours****Maximum : 100 Marks**Answer **ALL** questions**PART A - (10 X 2 = 20 Marks)**

	<b>CO</b>	<b>RBT</b>
1. Why metals and alloys are suitable for foundry patterns?	<b>1</b>	<b>U</b>
2. What do you mean by fettling in a casting process?	<b>1</b>	<b>U</b>
3. Give the applications of resistance welding.	<b>2</b>	<b>U</b>
4. Name the different types of welded joints.	<b>2</b>	<b>R</b>
5. Define impact extrusion.	<b>3</b>	<b>R</b>
6. Show the arrangement of a Cluster rolling mill.	<b>3</b>	<b>R</b>
7. State the need for high energy rate forming of metals.	<b>4</b>	<b>U</b>
8. What do you understand by the term springback in a forming process?	<b>4</b>	<b>U</b>
9. Give two examples of thermoplastics and thermosetting plastics. State their uses.	<b>5</b>	<b>R</b>
10. Enumerate the important properties of plastics which have made them suitable for large number of engineering uses.	<b>5</b>	<b>U</b>

**PART B - (5 X16 = 80 Marks)**

- |  |             |          |          |
|--|-------------|----------|----------|
| 11. (a) (i) Sketch and explain the construction of a Cupola furnace.   | <b>(8)</b>  | <b>1</b> | <b>U</b> |
| (ii) Explain the various properties required in a moulding sand.   | <b>(8)</b>  | <b>1</b> | <b>U</b> |
| <b>(OR)</b>  |             |          |          |
| (b) Sketch and explain with neat sketches the steps involved in investment (precision) casting process with a suitable application. Mention its advantages and limitations of the process. | <b>(16)</b> | <b>1</b> | <b>U</b> |
| 12. (a) (i) Describe the three types of flames in oxy-acetylene welding.   | <b>(8)</b>  | <b>2</b> | <b>U</b> |

- (ii) Explain the Gas metal arc welding (MIG) process with a neat sketch and state its application. **(8)**    **2**    **U**
- (OR)**
- (b) (i) Briefly explain with a schematic sketch the working principle of the laser beam welding process. **(10)**    **2**    **U**
- (ii) Differentiate between soldering and brazing. **(6)**    **2**    **U**
13. (a) (i) Describe in detail the various steps involved in a drop forging process. **(8)**    **3**    **U**
- (ii) Describe the wire drawing process with a neat sketch. **(8)**    **3**    **U**
- (OR)**
- (b) Write the step by step procedure of producing powder metallurgy components. Give a brief account on the advantages, limitations and applications of powder metallurgy process. **(16)**    **3**    **U**
14. (a) (i) Explain the bending operation with its nomenclature. **(8)**    **4**    **U**
- (ii) Explain with a neat sketch, the stretch forming process in detail. **(8)**    **4**    **U**
- (OR)**
- (b) (i) With the aid of a sketch, explain the electro-magnetic forming process in detail. **(10)**    **4**    **U**
- (ii) Compare electro-hydraulic forming and explosive forming. **(6)**    **4**    **U**
15. (a) (i) Explain the working principle of injection moulding process of thermoplastics with a suitable application. **(10)**    **5**    **U**
- (ii) Discuss any one type of compression moulding of plastics with a neat sketch. **(6)**    **5**    **U**
- (OR)**
- (b) (i) Describe the working principle of thermoforming processes with neat sketches. **(8)**    **5**    **U**
- (ii) Explain in detail with neat sketches any two methods of bonding of thermoplastics. **(8)**    **5**    **U**