

Total No. of Questions : 8]

SEAT No. :

**P3985**

**[5462]-714**

[Total No. of Pages : 2

**M.E. Production (Manufacturing & Automation)**  
**ADVANCED MANUFACTURING PROCESSES**  
**(2017Course) (Semester - I) (511103)**

*Time : 3 Hours]*

*[Max. Marks :50*

*Instructions to the candidates:*

- 1) Attempt any five questions.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*
- 4) Assume Suitable data if necessary.*
- 5) Use of electronic pocket calculator and logarithmic tables is allowed.*

- Q1)** a) How melting and solidification take place during sand casting. [4]  
b) How blow molding differs than conventional molding process. [4]  
c) How non-conventional machining processes better than that of conventional machining processes. [2]
- Q2)** a) How Laser Beam Machining (LBM) works? [4]  
b) Which are most common welding defects? [4]  
c) Which are the most common blow molding defects? [2]
- Q3)** a) How Electro Chemical Machining (ECM) differs from chemical Machining (CM)? [4]  
b) What are the features of Non-destructive testing of castings ? [4]  
c) Which non-destructive tests are used for weld joints? [2]
- Q4)** a) Describe mechanism of material removal of EDM process. [5]  
b) Suggest causes and remedies for the most common arc welding defects. [5]

**P.T.O.**

- Q5)** a) A wire of 12 mm diameter is to be reduced to 6 mm diameter. The die angle is  $15^\circ$  and the coefficient of friction at die and wire interface is 0.5. The flow stress of wire material is  $340 \text{ N/mm}^2$ . Determine drawing stress and drawing load if the drawing speed is 0.7 m/s. [4]
- b) Explain with neat sketch important steps in hydro-forming of sheet metal. [4]
- c) Name any four non-conventional forming processes. [2]
- Q6)** a) What do you mean by electromagnetic forming? [4]
- b) How hot forming differs from cold forming? [4]
- c) What do you know about high energy rate forming? [2]
- Q7)** a) Explain important process parameters of electro-hydraulic forming. [4]
- b) A tube of 20 mm external diameter and 1.5 mm thickness is to be reduced to 15 mm external diameter and 0.5 mm thickness. The die angle is  $24^\circ$  and plug angle is  $16^\circ$ . The coefficients of friction at die and tube interface and tube and plug (mandrel) interface is 0.5. The flow stress of tube material is  $340 \text{ N/mm}^2$ . The tube drawing is carried at a speed of 0.4 m/s. Calculate the fixed plug. [4]
- c) What is high speed blanking? [2]
- Q8)** a) Explain forming limit diagram. [5]
- b) Which are the various strategies adopted in industry to reduce roll force? [5]

