Hall Ticket No | | | | | | | | | | | Question Paper Code: AME006

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech IV Semester End Examinations (Regular / Supplementary) - May 2019

Regulation: IARE – R16

PRODUCTION TECHNOLOGY

Time: 3 Hours **(ME)** **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT – I

1. (a) Identify the materials that are generally used for making patterns? Explain the reasons for their choice. **[7M]**
   (b) Recall what is a master pattern? How does their size differ from other patterns? Explain. **[7M]**
2. (a) What are the types of casting defects and discuss about their defects in casting processes with a neat sketch. **[7M]**
   (b) State about shell moulding and discuss about procedure with neat sketches. **[7M]**

UNIT – II

3. (a) Describe the principle of Oxy-Acetylene welding process with neat sketches. **[7M]**
   (b) Calculate the melting efficiency in the case of arc welding of steel with a potential of 20V and current of 200A. The travel speed is 5mm/s and the cross sectional area of the joint is $20mm^2$. Heat required to melt steel may be taken as $10J/mm^3$ and the heat transfer efficiency as 0.85. **[7M]**
4. (a) Describe the principles of resistance spot, seam and projection welding. **[7M]**
   (b) In a given arc welding operation, the power source is at 20V and current is at 300A. If the electrode travel speed is 6mm/s, calculate the cross sectional area of the joint. The heat transfer efficiency is 0.8 and melting efficiency is 0.30. Heat required to melt the steel is $10J/mm^2$. **[7M]**

UNIT – III

5. (a) Discuss in detail about Tungsten Inert Gas(TIG) welding with neat sketch. **[7M]**
   (b) The voltage length characteristic of a DC arc is given by V=20+30l, where 'V' is the arc voltage and 'l' is the length of arc in cm. Determine the open circuit voltage and short circuit current for arc lengths ranging from 3 to 5mm and current ranging from 200 to 400Amp during welding operation. **[7M]**
6. (a) Explain in detail at least one non-destructive testing method used in welding process. **[7M]**
   (b) What are the types of welding defects and discuss about welding defects with neat sketches. **[7M]**

UNIT – IV

7. (a) Define re-crystallization and explain its impact on hot working process. **[7M]**
   (b) Categorize various types of roll mills and discuss at least one type of roll mill. **[7M]**

8. (a) Briefly explain various methods available for breakdown passes in rolling. Explain their applications. **[7M]**
   (b) Distinguish between spinning and bending operations with neat sketches. **[7M]**

UNIT – V

9. (a) Define hot extrusion? Demonstrate the complete hot extrusion process with a neat sketch? **[7M]**
   (b) Discuss the main characteristics and principle of forging processes? **[7M]**

10. (a) Write a short notes on forging defects, cold forging and forging hammers. **[7M]**
    (b) Write in detail about **[7M]**
    i.Impact extrusion
    ii.Tube extrusion
    iii.Pipe extrusion