

**BACHELOR OF TECHNOLOGY IN
MECHANICAL ENGINEERING
(COMPUTER INTEGRATED
MANUFACTURING)
BTCLEVI/BTMEVI/BTELVI/BTCSVI/BTECVI**

Term-End Examination

June, 2013

BME-003 : MANUFACTURING TECHNOLOGY

Time : 3 Hours

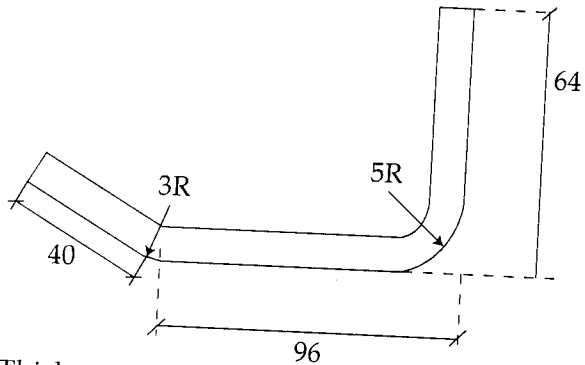
Maximum Marks : 70

Note : Answer any five questions only. Use of calculator is allowed. Assume suitable data if any missing.

1. (a) What necessary precautions are required in operating the cupola ? 3
- (b) How does the grain size and shape of the moulding sand affect its properties ? 4
- (c) Describe the construction, working and uses of core less type Induction furnace. 7

2. (a) What are the essential differences between die casting and permanent model casting ? 3
- (b) How will you test the moisture content and clay content in moulding sand ? 4
- (c) Describe the complete step by step procedure of Investment - casting with neat sketches. 7

3. (a) Describe the difference between elastic and plastic behaviour. 7
- (b) Describe press forging. How does it differ from drop forging.
- (c) Calculate the developed length of part shown in figure.



Thickness of sheet = 2mm

4. (a) Name any six types of drilling operations. 3
- (b) Explain the difference between up milling and down milling. 4
- (c) In orthogonal cutting of a mild steel tube of 150 mm diameter and 2mm thick the cutting force was observed to be 130 kg and feed force 35 kgs and the chip thickness 0.3 mm. The orthogonal cut was taken at 60 mpm with a feed of 0.15 mm/rev. If the back rake angle of the cutting tool was -8° , calculate the following : 7
- (i) Shear strain
- (ii) Strain energy per unit volume

5. (a) What do you understand by the term Hi-efficiency range in machining ? 3
- (b) Explain the most effective ways of applying cutting fluids with figure. 4
- (c) Explain with the help of sketches the different systems of specifying tool geometry. 7
6. (a) What are the similarities and differences between consumable and non-consumable electrodes ? 3
- (b) Explain how cutting takes place when an oxyfuel gas torch is used. How is under water cutting done ? 4
- (c) Explain different types of defects caused during welding with the help of sketches. 7
7. (a) What is the difference between GMAW and GTAW process ? 3
- (b) Why is the deposition rate very high in submerged arc welding ? Name different types of fluxes used in submerged arc welding. 4
- (c) Explain the different techniques to eliminate the Residual stresses in welding with figure. 7

8. Write short notes on *any four* :

$3\frac{1}{2} \times 4 = 14$

- (a) Innoculation
 - (b) Plastic deformation methods
 - (c) Milling cutters
 - (d) Upset forging
 - (e) Safety practices in welding
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