



Manufacturing Engineering - I
(123105 / 213105)

P. Pages : 3

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any two** sub questions from each unit.
5. Black figures to the right indicate full marks.
6. Draw neat sketches wherever necessary.

UNIT – I

- | | | |
|-------|---|---|
| 1. a) | What types of allowances are generally incorporated into a pattern? Explain all in brief. | 8 |
| b) i) | Explain the functions of riser in casting process ? Based on Chvorinov's rules, what would be an ideal shape for a casting riser ? What would be a desirable shape from practical perspective ? | 4 |
| ii) | Why is it important to design the geometry of the gating system to control the rate of metal flow from the pouring ladle into the mould cavity ? | 4 |
| c) i) | What is permeability and why is it important in moulding sand ? | 4 |
| ii) | Write short notes on Induction furnace. | 4 |

UNIT – II

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|-------|--|---|
| 2. a) | Explain various types of rolling stand arrangement with neat sketch. | 8 |
|-------|--|---|

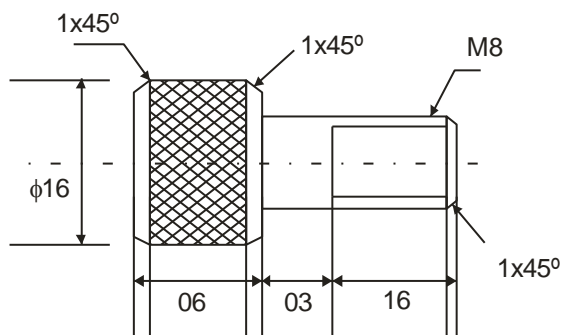
- b) Explain in brief following drop forging operations with neat sketch. 8
- i) Fullering ii) Edging
iii) Blocking iv) Trimming
- c) i) Explain with sketches the difference between direct extrusion and indirect extrusion. 4
- ii) Distinguish between wire drawing and tube drawing with sketches. 4

UNIT – III

3. a) What is an arc blow ? Explain the causes of the arc blow and methods of reducing the arc blow problem. 8
- b) i) Distinguish between arc and gas welding processes from the point of view of heat concentration, temperature, ease of operation and running cost. 4
- ii) Differentiate between brazing and soldering. 4
- c) Explain principle of resistance welding. List its types, advantages, limitations and applications. 8

UNIT – IV

4. a) List various types of milling cutter and explain any two with neat sketch. 8
- b) List the sequence of operations and draw the tool layout for manufacturing following component on Capstan Lathe. 8



Raw Material ϕ 16 M.S. bar (sketch is not as per scale)

- c) i) Explain counter boring and counter sinking operation performed on drilling machine with neat sketch. 4

- ii) Explain Honning operation with neat sketch. 4

UNIT – V

5. a) Define following terms : 8
- i) Green density
 - ii) Apparent density
 - iii) Compressibility
 - iv) Flow rate
- b) Describe the various methods used for manufacturing metal powder in brief. 8
- c) i) Why is it necessary to control atmosphere during sintering. 4
- ii) List the advantages of powder metallurgy. 4
