MANUFACTURING TECHNOLOGY (SEMESTER - 4)

CS/B.Tech (ME)/SEM-4/ME-406/09

1. ....
Signature of Invigilator

2. .... ***Reg. No.*** | | | | | | | | | | | | | | | |
Signature of the Officer-in-Charge

Roll No. of the Candidate | | | | | | | | | | | | | | | |

CS/B.Tech (ME)/SEM-4/ME-406/09

ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009

MANUFACTURING TECHNOLOGY (SEMESTER - 4)

Time : 3 Hours] [Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No 3.
2. a) In **Group – A**, Questions are of Mul ple Choice type. You have to write the correct choice in the box provided **against each question**.
   b) For **Groups – B** & **C** you ha e to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to w ite the corresponding question numbers while answering.
6. Do not write your nam or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

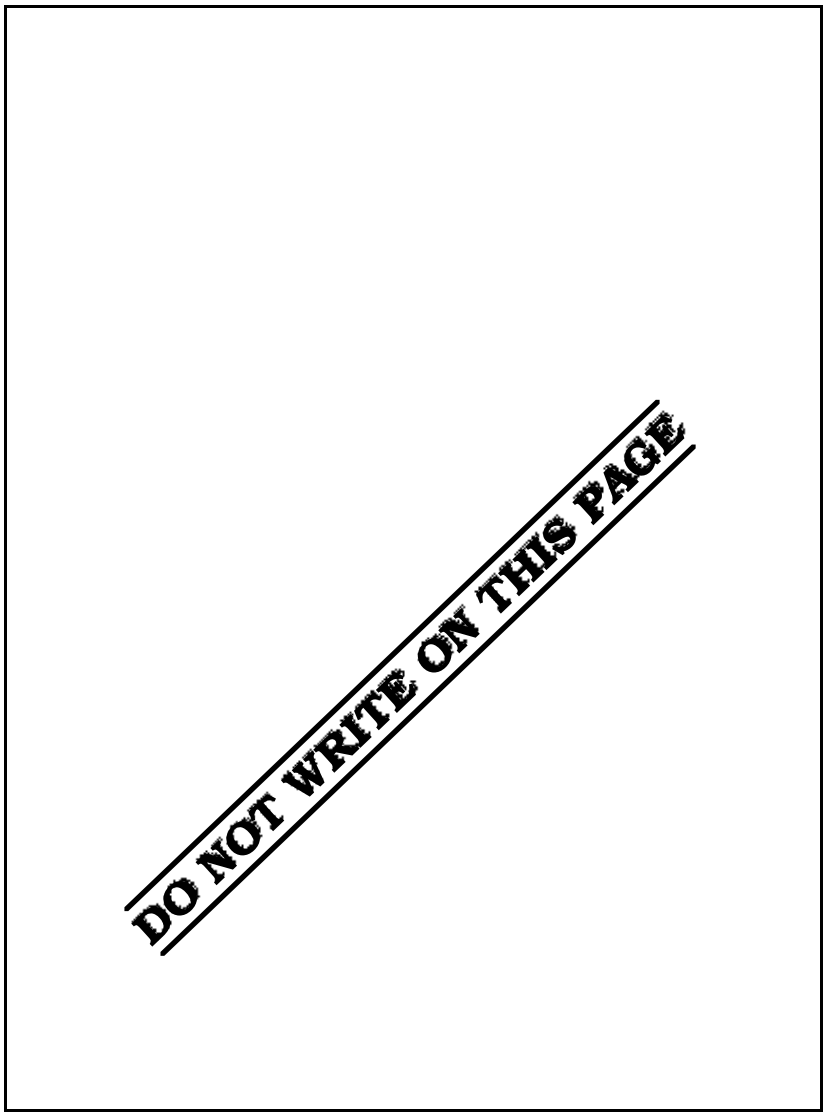
FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

	Group – A								Group – B			Group – C				
Question Number															***Total Marks***	***Examiner's Signature***
Marks Obtained																

....
Head-Examiner/Co-Ordinator/Scrutineer

4655 (16/06)



ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009

MANUFACTURING TECHNOLOGY

SEMESTER - 4

Time : 3 Hours] [Full Marks : 70

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

i) Investment casting uses pattern made of

a) Wax b) Clay

c) Metal d) W od. ☐

ii) Cast iron and steel pipes are produced by

a) die casting b) slush casting

c) investment casting d) true centrifugal casting. ☐

iii) Surface finish of casting depends upon

a) mould dressing b) pattern finish

c) fineness of sand d) all of these. ☐

iv) In four high rolling mill the bigger rollers are called

a) guide rolls b) back up rolls

c) main rolls d) support rolls. ☐

v) In drawing operation the metal flows due to

a) ductility b) work hardening

c) plasticity d) shearing. ☐

vi) Riser is generally located

a) near the deepest section of the mould

b) near the parting line

c) on the upper most section of the casting

d) opposite to the pouring end. ☐

vii) Which of the following pattern can be used for symmetrical jobs only ?

a) Gated patter b) Sweep pattern

c) Split pattern d) Cope & drag pattern. ☐

viii) Which of the following s not a part of gating system ?

a) Pouring basin b) Sprue

c) Vents d) Riser. ☐

ix) Extrusion of metal is known as

a) material forming process

b) material improvement process

c) material fabrication process

d) material removal process. ☐

x) Soft soldering is a

a) Copper based alloy

b) Sn-Pb alloy

c) Aluminium based alloy

d) None of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following $3 \times 5 = 15$

2. a) Explain where skeleton and sweep pa erns are used.

b) What is the function of core and core prints ? 3 + 2

3. a) Briefly explain the applica ion of Chills and Chaplets used in sand castings.

b) What is directional solidification ? 4 + 1

4. a) Why the Sprue is made taper ?

b) What is flash and how it can be removed in case of forging ? 2 + 3

5. a) What is the significance of recrystallisation temperature in metal working ?

b) What is the difference between Drop forging and Press forging ? 1 + 4

6. Explain any five types of common casting defects in sand casting components. 5

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Explain the cupola furnace. 5

b) Explain centrifugal casting. 5

c) The casting shown in the figure is to be made in plain carbon steel using a wooden pattern. Assuming machining allowance and draft allowance what will be the pattern dimensions if all the surfaces of the casting need to be machined.

Given : Machining allowance for bore = 3 mm

Machining allowance for all surfaces ; upto 150 mm = 3·0 mm

(151 – 500) mm = 5·5 mm Machining a lowance for cope side = 6 mm

Draft angles for external details – 0·75° and for internal details 1·0°. 5

Dia.

8. a) Calculate the size of a cylindrical Riser using Cains method (height and diameter is equal) to be used for feeding the material for making the slab casting of 30 ∞ 30 ∞ 6 cm. With a side riser, casting poured horizontally into the mould.

b) Explain with sketches the process for making tooth paste tube on mass scale production basis.

c) What do mean by Extrusion ratio ? 7 + 7 + 1

9. a) Define the following terms :

   i) Roll Gap

   ii) Roll pass

   iii) Casting yield

   iv) Void in casting

   v) GFN

   b) Explain the product line sequences for manufacturing connecting rod of aluminium alloy by drop forging on mass production. 10 + 5

10. a) Give comparison between forward extrusion and backward extrusion process. 5

    b) Explain how forgings are cleaned and finished. 5

    c) Discuss briefly the mechanism of rolling. 5

11. a) What is the difference between *AC* and *DC* arc welding ? 5

    b) Explain the different welding positions 5

    c) Explain laser beam welding. 5

12. a) Explain the va ious methods employed to inspect the casting. 5

    b) Explain the gating system. 5

    c) What is the function of flux used in Submerged arc welding process ? 1

    d) Can dissimilar metals be welded by an welding process ? If so, explain the process very briefly. 4

END