Total No. of Questions—**12**] [Total No. of Printed Pages—**4+1**

[3762]-25

S.E. (Mechanical) (I Sem.) EXAMINATION, 2010

MANUFACTURING PROCESSES—I

(2003 COURSE)

Time : Three Hours **Maximum Marks : 100**

N.B. :— (*i*) Answer *three* questions from Section I and *three* questions from Section II.

(*ii*) Answers to the two Sections should be written in separate answer-books.

(*iii*) Neat diagrams must be drawn wherever necessary.

(*iv*) Figures to the right indicate full marks.

(*v*) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

(*vi*) Assume suitable data, if necessary.

SECTION I

1. (*a*) What are the different pattern allowances ? Discuss the functions of each. [4]

(*b*) Describe shell moulding. What are its advantages ? [4]

(*c*) For what purpose is the cupola furnace used ? Describe briefly the operation. [4]

(*d*) Sketch and explain "Blow moulding" process for plastics. [4]

P.T.O.

Or

2. (*a*) Discuss the various properties of moulding sand. [4]

(*b*) Write a note on "Sand Slinger". [4]

(*c*) What is meant by gating system ? What functions does it serve ? [4]

(*d*) Sketch and explain "Calendering process" for plastics. [4]

3. (*a*) What is the difference between a bloom and a billet ? Sketch and explain *three* high rolling mill. [4]

(*b*) Compare direct and indirect extrusion. [4]

(*c*) Compare open and closed die forging with sketch. [4]

(*d*) Sketch any *four* mechanisms used on presses. [4]

Or

4. (*a*) Enumerate the advantages of mechanical working of metals over other manufacturing processes. [4]

(*b*) Define "Forgeability". On what factors does it depend ? [4]

(*c*) Describe the continuous method of making seamless tubing. [4]

(*d*) Briefly describe with sketch the following press operations : [4]

(*i*) Lancing

(*ii*) Ironing.

5. (*a*) Sketch and write on the various edge preparations used for welded joints. [6]

(*b*) With the help of neat sketches explain the following welding methods : [6]

(*i*) Submerged arc welding

(*ii*) Thermit welding.

(*c*) Distinguish between Brazing and Braze welding related to : [6]

(*i*) Fluxes

(*ii*) Filler materials

(*iii*) Methods.

Or

6. (*a*) What is meant by straight polarity ? Compare AC and DC arc welding machines, giving the advantages of each. What is arc blow ? [6]

(*b*) Compare the following joining processes with respect to principle, temperature, flux application and techniques : [6]

(*i*) Soldering

(*ii*) Brazing.

(*c*) List the adhesive materials. State the applications. [6]

SECTION II

7. (*a*) Taper turning by set-over by tailstock is equal to entire length of the work multiply conicity divided by two, with usual notations, derive the relation. [4]

(*b*) What is multistart thread ? What are the advantages of a multistart thread over a single start thread ? [4]

(*c*) Attempt any *two* : [8]

(*i*) Neat sketch of "Back gear drive".

(*ii*) Types of mandrels

(*iii*) Function of "Face plate" and "Follower rest".

Or

8. (*a*) What are the considerations affecting the selection of speed of work on a Lathe ? [4]

(*b*) Sketch single point cutting tool. Give importance of negative rake angle. [4]

(*c*) List out various taper turning methods. Explain taper turning attachment briefly. [8]

9. (*a*) Give list of drilling machine operations. What is spot facing operation ? [4]

(*b*) Draw a neat sketch of a Twist drill (3 views). [4]

(*c*) Classify milling machines. Draw neat sketch and label different parts of "Universal Milling Machine". [8]

[3

Or

10. (*a*) How do you specify milling machine ? [4]

(*b*) Write a short note on "Quick Change Chuck" used on drilling machine. [4]

(*c*) State various methods of indexing on milling machine. Calculate compound indexing for 87 divisions. Use plate No. 2 with hole circles : [8]

21, 23, 27, 29, 31 and 33.

11. (*a*) "Hard grinding wheel is used for grinding soft materials." Comment on it. [4]

(*b*) Classify the grinding machines. Draw sketch of tool and cutter grinder. [4]

(*c*) Compare honing, lapping and superfinishing operations with neat sketches. [10]

Or

12. (*a*) Describe the various types of surface grinders with simple sketches. [4]

(*b*) List the bonding materials used in manufacturing of grinding wheels. Explain vitrified bonding process. [4]

(*c*) Write short notes on (any *two*) : [10]

(*i*) Finishing of round hole by "Hones"

(*ii*) Centreless Grinding Operations

(*iii*) Balancing of Grinding Wheels.