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

[4062]-115

S.E. (Mechanical) (I Sem.) EXAMINATION, 2011

MANUFACTURING PROCESSES

(2008 PATTERN)

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

N.B. **:—** (*i*) Attempt *one* question from each Unit of Section I and Section II.

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

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

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

(*v*) Use of non-programmable electronic pocket calculator is allowed.

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

SECTION I

UNIT I

1. (*a*) State the principles of centrifugal casting and state its types, advantages and limitations. [8]

(*b*) Write down the procedure for the following sand tests : [8]

(*i*) Moisture content test

(*ii*) Permeability test

(*iii*) Clay content test

(*iv*) Compression strength test

Or

2. (*a*) Explain in brief various allowances provided on pattern. Also draw neat sketches of segmental pattern and lagged-up pattern. [8]

(*b*) Explain the construction and working of hot chamber die casting process. State the advantages and limitations of the process. [8]

UNIT II

3. (*a*) Explain the different types of forging defects with reference to causes and remedies. [8]

(*b*) Sketch and explain the working of "Universal rolling mill" and "Planetary rolling mill". [8]

Or

4. (*a*) Describe with neat sketches the operation of wire drawing and tube drawing. [8]

(*b*) Define extrusion process. Compare direct extrusion and indirect extrusion. [8]

UNIT III

5. (*a*) Compare with neat sketches leftward and rightward welding techniques. Specify the merits and limitations of both the techniques. [10]

(*b*) What is the purpose of coating on an arc welding electrode ? [8]

Or

6. (*a*) Distinguish between brazing, soldering and braze welding processes. [10]

(*b*) Describe various types of adhesives and their applications. [8]

SECTION II

UNIT IV

7. (*a*) Define taper. How is the amount of taper expressed ? Describe set over method of taper turning on a lathe. [8]

(*b*) What is multi-start thread ? Explain with schematic diagram the principle of thread cutting on a lathe. [10]

Or

8. (*a*) Why are chucks used ? List various types of chucks used in lathes. Describe any *one* in brief. [8]

(*b*) Calculate the machining time required to reduce 60 mm diameter Shaft to 50 mm diameter for a length of 1500 mm with depth of cut of 2 mm for rough cut and 1 mm for finish cut. Given : [10]

(*i*) Cutting speed = 30 m/min

(*ii*) Feed = 0.5 mm/rev

(*iii*) Approach length = 5 mm

(*iv*) Overrun length = 5 mm

(*v*) Number of Passes = 3 (2 rough cut + 1 finish cut).

UNIT V

9. (*a*) Differentiate between : [8]

(*i*) Gang milling and Straddle milling

(*ii*) Up milling and Down milling.

(*b*) Explain working principle of Universal dividing head. [8]

Or

10. (*a*) Draw a neat labelled sketch of Sensitive Drilling Machine. Explain its construction and working. [8]

(*b*) Calculate the machining time required for producing 20 holes on an M.S. plate of 40 mm thickness with the following data : [8]

(*i*) Drill diameter = 30 mm

(*ii*) Cutting speed = 25 m/min

(*iii*) Feed = 0.1 mm/rev.

(*iv*) Overrun = 0.5 × Drill diameter (mm).

UNIT VI

11. (*a*) Explain dressing, truing and balancing of grinding wheel. [8]

(*b*) Outline various factors that influence the selection of grinding wheel. Explain the meaning of any *four* letters mentioned in the specification printed on a grinding wheel. [8]

Or

12. (*a*) Briefly explain the process of burnishing. [8]

(*b*) Distinguish between honing and lapping process. [8]