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

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S.E. (Production) (Second Semester) EXAMINATION, 2010

WELDING AND FOUNDRY

(2008 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 books.

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

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

(*v*) Assume suitable data if necessary.

SECTION I

Unit I

1. (*a*) Explain GTAW process considering the points :

(*i*) Working principle

(*ii*) Process parameters

(*iii*) Advantages

(*iv*) Disadvantages

(*v*) Applications. [10]

(*b*) Explain with neat sketch an arc blow in the welding. Also explain causes, effects and remedies of arc blow. [8]

P.T.O.

Or

2. (*a*) Describe with neat sketch SAW process and its applications. [10]

(*b*) Explain Voltage-Current and Voltage-Arc length characteristics in welding. [8]

Unit II

3. (*a*) Compare spot welding and projection welding processes with neat sketch. [8]

(*b*) Distinguish with suitable sketches different types of Oxy-Acetylene gas flames stating how they are obtained and their applications. [8]

Or

4. (*a*) Discuss the different variables in resistance welding process. How are dissimilar metals welded by resistance welding ? [8]

(*b*) Sketch various types of flames used in the welding of Mild Steel, Alloy Steel, Aluminum and High Carbon Steel. [8]

Unit III

5. (*a*) Explain Laser beam welding process with neat sketch and state its advantages and limitations over electron beam welding process. [8]

(*b*) Write a short note on friction welding. [8]

Or

6. (*a*) Explain with neat sketch electron beam welding process and effect of vacuum on the penetration. [8]

(*b*) Write a short note on explosive welding. [8]

SECTION II

Unit IV

7. (*a*) Explain in detail various allowances given to the patterns. [8]

(*b*) With neat sketch explain construction and operation of a Cupola. [8]

Or

8. (*a*) Which are the different ingredients of moulding sand ? State their importance during mould making. [8]

(*b*) Explain with neat sketch construction of an electric furnaces. [8]

Unit V

9. (*a*) Explain with neat sketch pressure die-casting process. List out merits, demerits and applications of it. [8]

(*b*) Explain with neat sketch investment casting process. [8]

Or

10. (*a*) Explain with neat sketch centrifugal casting process. [8]

(*b*) Explain various casting defects with their causes and remedies. [8]

Unit VI

11. (*a*) What is meant by pressurized and un-pressurized gating system ? State the standard gating ratios used for Aluminium, Steel and Brass. [8]

(*b*) Compare directional and progressive solidification of casting. [6]

(*c*) Explain Chvorinov's rule. [4]

Or

12. (*a*) Using Caine's method calculate the size of cylindrical riser (Height = Diameter) necessary to feed steel slab casting 30 × 30 × 5 cm with side riser, casting is poured horizontally into the mould.

Data for Steel Casting $a = 0.1$, $b = 0.03$ and $c = 1.0$ [8]

(*b*) Explain the following : [10]

(*i*) Criteria used for designing of pouring basin

(*ii*) Casting yield and methods to increase it.