Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5152]-117

S.E. (Mechanical/Automobile) EXAMINATION, 2017

ENGINEERING METALLURGY

(2012 PATTERN)

Time : Two Hours **Maximum Marks : 50**

***N.B.* :—** (*i*) Solve Q. No. **1** *or* Q. No. **2,** Q. No. **3** *or* Q. No. **4**, Q. No. **5** *or* Q. No. **6**, Q. No. **7** *or* Q. No. **8**.

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

(*iii*) Draw neat, well labelled sketch wherever if necessary.

1. (*a*) Draw a neat, well labelled schematic TTT curve for medium carbon steel. [4]

(*b*) What is meant by alloy steel ? State different types of stainless steel, and give composition of 304SS. [4]

(*c*) Explain different steel specifications, with suitable example. [5]

Or

2. (*a*) Differentiate between Microscopic and Macroscopic examination. [4]

(*b*) Define etching, and state etching reagents for ferrous and non-ferrous metals. [4]

(*c*) Draw iron-iron carbide equilibrium diagram, showing all details. [5]

P.T.O.

3. (*a*) Draw a schematic diagram showing all details of Metallurgical microscope. [4]

(*b*) State the importance of hardenability of steel, it depends on which factors ? [4]

(*c*) Explain mechanism of corrosion with suitable figure. [4]

Or

4. (*a*) Classify surface hardening treatments, and explain induction hardening. [4]

(*b*) Explain crevice corrosion method. How can it be prevented ? [4]

(*c*) What is inter-granular corrosion ? Explain with figure. [4]

5. (*a*) What is 'malleabilising' heat treatment ? To which type of cast iron is it given ? [4]

(*b*) Differentiate between White cast iron and Nodular cast iron. [4]

(*c*) Explain how modification in design will improve corrosion resistance ? [5]

Or

6. (*a*) Draw the microstructure of Nodular cast iron and state two applications of it. [4]

(*b*) Why is Grey cast iron found commonly in columns but not in structural beams ? [4]

(*c*) What is meant by 'inoculation' in context of cast irons ? Why is it done ? [5]

7. (*a*) Write a short note on bearing materials. State any *two* materials. [4]

(*b*) Draw a necessary phase diagram for brass, showing all phases. [4]

(*c*) Why is aluminium called as corrosion resistance metal ? [4]

Or

8. (*a*) Differentiate between brass and bronze. [4]

(*b*) Explain the heat treatment given in case of aluminium alloys. [4]

(*c*) Write a short note on double tempering. Where is it needed ? [4]