B.TECH. SEM -V PRODUCTION 2014 COURSE (CBCS) :
SUMMER - 2018
SUBJECT : ENGINEERING METALLURGY

Day : **Thursday** **S-2018-2373** Time : **10.00 AM TO 01.00 PM**
Date : **24/05/2018** Max. Marks : **60**

N. B. :

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Use of non-programmable calculator is **ALLOWED**.
4) Assume suitable data, if necessary.

Q. 1 **a)** Define and explain the ferrite, perlite, Austenite ,Cementite and Ledeburite phases in steels. **(05)**

b) Write the classifications of steels on the basis of 'C' content and deoxidation methods. **(05)**

OR

a) By using lever rule find the amount of phases in AISI 1030 steels. Explain the cooling of it form high temperature to low temperature. Draw the microstructure of this steel. **(05)**

b) Describe in details specimen preparation for metallography. **(05)**

Q. 2 **a)** Write the chemical composition of white C I. How it is manufacture where it is used. Draw its microstructures. **(05)**

b) Explain in details effect of C, Si ,S ,P and Mn on microstructure of C. I. **(05)**

OR

a) Explain the effects of cooling rate on microstructure of Cast Iron. **(05)**

b) Write a short note on Alloy Cast Iron. **(05)**

Q. 3 **a)** Give the classification of tool steels with some examples. **(05)**

b) Write the chemical composition of following stainless steels and give few applications: **(05)**

i) AISI 310 **ii)** AISI 402

OR

a) What do you know about H.S.S.? How it is heat treated? **(05)**

b) Compare between the following: **(05)**

i) Martensitic stainless steel v/s Ferritic Stainless steel

ii) O H N S v/s H C H C

P. T. O.

Q. 4 **a)** Draw the T.T.T. diagram of AISI 1080 steels and show following cooling curves on it. **(05)**

- **i)** Austempering
- **ii)** Annealing
- **iii)** Normalizing
- **iv)** Water Quenching
- **v)** Martempering

b) What do you know about tempering heat treatment? Give its purpose and types. **(05)**

OR

a) Write the characteristics of : **(05)**

- **i)** Martensite transformation
- **ii)** Pearlitic transformations

b) Explain the heat treatment in detail for obtaining full banitic matrix. **(05)**

Q. 5 **a)** Describe in detail Induction Hardening process. **(05)**

b) Draw the self explainatory diagrams for salt bath heat treatment furnace. **(05)**

OR

a) What is liquid Nitriding? How it is different than liquid carbonizing? **(05)**

b) What is need of controlled atmosphere in heat treatment? List out those for different treatments. **(05)**

Q. 6 **a)** Give the chemical composition and typical application of the following: **(05)**

- **i)** Monel
- **ii)** Beryllium Bronze
- **iii)** Duralumin
- **iv)** Lead brass

b) Explain the age Hardening process with suitable non-ferrous alloy. **(05)**

OR

a) Draw the Cu-Zn equilibrium diagrams. Give the different types of brasses and its applications. **(05)**

b) Write short note on LM series. **(05)**

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