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Total Number of Pages : 01

B.Tech.  
PEMT5407

8<sup>th</sup> Semester Regular / Back Examination 2017-18  
FERROALLOYS TECHNOLOGY

BRANCH : METTA, MME

Time : 3 Hours

Max Marks : 70

Q.CODE : C396

Answer Question No.1 which is compulsory and any five from the rest.  
The figures in the right hand margin indicate marks.

**Q1 Answer the following questions : (2 x 10)**

- a) Define ferroalloy & state the classification of Ferro alloys.
- b) Distinguish between Ferro-chrome and charge chrome.
- c) Distinguish between carbothermic reduction and metallothermic reduction.
- d) What is decarbonisation of solid ferro-chrome?
- e) Deoxidisers are used in the form of ferro-alloys, -Justify.
- f) What is secondary voltage in Ferro alloy furnace?
- g) Mention two uses of Ferro manganese.
- h) State one problem faced and its remedies in Indian ferroalloy industry.
- i) Mention the off-gas dedusting techniques adopted in Ferro alloy plants.
- j) Name four Ferro alloy producing companies in India.

**Q2**

- a) Distinguish between agglomeration of chromites and iron ore agglomeration? (5)
- b) Draw Fe-Cr equilibrium diagram and discuss its region of interest for Fe-Cr production. (5)

**Q3**

- a) Discuss about the Fe-Mn solution behaviour with the help of equilibrium diagram. (5)
- b) How will you control 'P' level during Fe-Mn smelting? (5)

**Q4**

- a) What do you mean by transformer power? How is it calculated? (5)
- b) Discuss the different characteristics of carbothermic & silicothermic reduction processes to produce Ferro alloys. (5)

**Q5**

- a) Discuss the physico-chemical conditions for production of ferro-silicon. (5)
- b) Discuss various operational irregularities and their remedies during FeSi melting. (5)

**Q6**

- a) What is prebaked electrode? Describe its preparation and uses. (5)
- b) Explain how electrode consumption in a ferro alloy f/c depends upon tap to tap time. (5)

**Q7** Describe the influence of slag composition, thermal effect & powder particle size in aluminothermic reduction to produce ferro alloys. (10)

**Q8 Write short answer on any TWO : (5 x 2)**

- a) Soderberg electrode
- b) Submerged EAF
- c) Ferro vanadium
- d) High carbon Ferrochrome