

Total Pages—4

(Set-V₁)

B. Tech - 8th(M & M)
Ferro Alloys Technology

Full Marks : 70

Time : 3 hours

Answer six questions including Q. No: 1
which is compulsory

The figures in the right-hand margin indicate marks

Symbols carry usual meaning

1. Answer all questions :

2 × 10

(a) Justify the requirement of ferroalloy production.

(b) What is Andrae's formula ?

(c) How much heat will heat generate (Q), if furnace current is 1 amps for time T secs in arc furnace.

(d) What is fabric filter ? Why it is used ?

(Turn Over)

(2)

(e) What are the parameters affecting the production of high carbon ferromanganese in closed submerged arc furnace ?

(f) Where are the applications of FeB ?

(g) What is Soderberg paste ?

(h) In SRC process, is it possible to reduce the specific power consumption up to 50% of the normal ? How ?

(i) Which ferroalloys are produced in FACOR ?

(j) Boudouard Reaction observed in which type of ferroalloy production ?

2. (a) What are the present status and future outlook of Indian ferroalloy industry ? 5

(b) Classify ferroalloy. What are demand drivers of ferroalloy production ? 5

3. (a) Describe different Physiochemical principles associated with ferroalloy making. 5

(3)

(b) Draw schematic diagram of submerged arc furnace for ferrochrome production and write the material balance. 5

4. (a) Make a flow chart and discuss about the production of both ferrosilicon with silico-calcium. 5

(b) Discuss about the design, working parameters of electric reduction furnaces for ferroalloy production ? 5

5. (a) Write about different types of electrode, their properties and applications, which are used in ferroalloy furnace. 5

(b) Write down different reaction involved with ferromanganese production and ferrochrome production. 5

6. (a) Describe different dust collection systems and their working principles. 5

(b) Discuss about the presence of different

(4)

impurity and their effects, during ferro-manganese, ferrosilicon and ferrochromium production. 5

7. (a) What are the trends in plasma processing technique for production of ferroalloy? 5

(b) Suppose you are planning for one ton ferrotitanium production in an induction melting furnace. Make a charge calculation in a tabular form, before commencing the furnace. 5

8. Write short notes on any two: 5 × 2

(i) Nobel Ferroalloy

(ii) Electrostatic precipitators and their type

(iii) Metallothermic reduction

(iv) Ferro vanadium : production, properties and application.

