Subject : Steel Technology

Examination : M-Met-Engg, Industrial Metallurgy, 2nd Semester, 2018

Metallurgical & Material Engineering Department

Ref No. : EX/PG/Met IM/T/127A/2018

		Answer to the following questions.	Marks
1		Diffentiate between the followings (any five)	5 X 4
	a)	- Coke & Coal	
	b)	- Acid Pellet & Fluxed Pellet	
	c)	- Isothermal Test & Non-isothermal Test of Reducibility	
	d)	- Coarse Cleaning & Semi-fine Cleaning of Blast Furnace Gas	
	e)	- Acid Bessemer Process & Basic Bessemer Process	
	f)	- AC Electric Arc Furnace & DC Electric Arc Furnace	
	g)	- Diffusion Deoxidation & Precipitation Deoxidation	
2		Write short notes on the followings (any five)	5 X 5
	a)	- Hot Blast Stove	
	b)	- Degree of Metallization of Sponge Iron	
	c)	- Desulphurisation in Blast Furnace	
	d)	- Uses of Ferro Alloys	
	e)	- Finex Process	
	f)	- Salient Features of Stainless Steel Production	
3		Answer the followings (any five)	5 X 5
	a)	Explain the role of emulsion phase in LD steelmaking.	
	b)	Define Blast Furnace Productivity. Explain how it is linked with size of the burden materials.	
	c)	State about different types of raw materials used for steelmaking	
	d)	State the effect of DRI morphology on reactivity.	
	e)	State the present problems & their remedies in Indian ferroalloy industry.	
	f)	State the salient features of Aluminothermic reduction to produce ferro alloys	
4		A mini steel plant comprises of two no. of equisized Blast Furnace (BF'ce), one Pig Casting Machine, downstream steelmaking with Electric Arc Furnace & casting facilities. The production of billet is 3,000,000 tpy. In EAF the charge mix is 60% purchased Steel Scrap and 40% of hot metal.	5+5
		Calculate : Size of each Blast Furnace Total cost of purchased Steel Scrap	
		Given : Operating days per year of BF'ce is 350 and that of steelmaking unit is 320 Productivity of BF'ce is 2 ton/cum/day Price of Steel Scrap is Rs. 30,000/ton Yield of Caster & Ladle Furnace is 97% and 99.5% respectively Metallic Yield of Electric Arc Furnace is 90%	
5		Briefly describe the different Blast Furnace irregularities stating their occurances , causes and possible remedies.	20
		-or-	
		What is Killed steel? Briefly describe the solidification mechanism of Killed steel ingot. Draw a neat diagram and discuss about V-type continuous casting machine stating importance of each part.	2+5+3+10