C. U. SHAH UNIVERSITY Winter Examination-2019

Subject Name: Power Plant Engineering Subject Code: 4TE05PPE1 Semester : 5 Date : 21/11/2019

Branch: B.Tech (Mechanical) Time : 10:30 To 01:30 Marks : 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

Q-1		Attempt the following questions:	(14)
	a)	How much percentage of electricity is generated by coal in India?	01
	b)	Write the purposes of steam condenser.	01
	c)	What is the function of economizer?	01
	d)	What is the purpose of air intake system in a diesel engine power plant?	01
	e)	What are the methods used for handling of coal?	01
	f)	What is the function of cooling tower?	01
	g)	What is the mechanism of pulverized fuel firing system?	01
	h)	Explain the function of moderator?	01
	i)	What are the components of pressurized water reactor nuclear power plant?	01
	j)	Write the function of draft tube in turbine outlet?	01
	k)	What are the methods used for starting a diesel engine?	01
	l)	What is the use of load curves in power plants?	01
	m)	List the impurities of feed water.	01
	n)	What is the temperature of steam in Lamont boiler?	01

Attempt any four questions from Q-2 to Q-8

Q-2		Attempt all questions	(14)
	a)	List out the factors with which the unit size of the power plant is being decided.	07
	b)	Draw the general layout of thermal power plant and explain the working of different circuits.	07
Q-3		Attempt all questions	(14)
	a)	List out the major advantages of high-pressure boiler in modern thermal power plants.	07
	b)	Draw a neat line diagram of Benson boiler and discuss its relative merits and	07



Q-4		Attempt all questions	(14)
	a)	Differentiate between forced draught and induced draught system in cooling tower.	06
	b)	Draw a line diagram of fluidized bed combustion system where steam turbine is used as a prime mover and explain its working.	08
Q-5		Attempt all questions	(14)
	a)	A central power station has annual factors as follows. Load factor = 60% , capacity factor = 40% and use factor = 45% . power station has a maximum demand of 15000 KW. Determine the annual energy production, reserve capacity over and above peak load hours per year not in service.	06
	b)	Explain the various draught systems with a neat sketch.	08
Q-6		Attempt all questions	(14)
-	a)	Describes the boiling water reactor with the help of neat sketch and explain its chief characteristics.	07
	b)	Write the short note on: Ash handling system.	07
Q-7		Attempt all questions	(14)
	a)	What are the desirable properties of a good moderator?	04
	b)	Draw a schematic diagram of a hydro plant.	04
	c)	What are the advantages and disadvantages of diesel power plants?	06
Q-8		Attempt all questions	(14)
	a)	Write the short note on: CANADA Deuterium- Uranium reactor (CANDU).	07
	b)	Point out the Cogeneration systems.	04
	c)	Explain the fixed costs and operating costs of a power station.	03

