Enrollment No:	Exam Seat No:
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C. U. SHAH UNIVERSITY

Summer Examination-2020

Subject Name: Power Plant Engineering

Subject Code: 4TE05PPE1 Branch: B.Tech (Mechanical)

Semester: 5 Date: 02/03/2020 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)
e –		01
_	A. Exhaust gas	
	B. Heaters	
	C. Draining steam from the turbine	
	D. All of the above	
ŀ	The efficiency of chimney is approximately	01
	A. 20%	
	B. 90%	
	C. 10%	
	D. 65%	
C	Surge tank is for the protection of	01
	A. Dam	
	B. Spillways	
	C. Penstock	
	D. Headworks	
Ċ	Economiser is used to heat	01
	A. Feed heater	
	B. Air	
	C. Flue gases	
	D. All of the above	
e) Space required of a steam power station	01
	A. More than diesel power station	
	B. Equal to diesel power station	
	C. Less than diesel power station	
	D. None of the above	
f	Reflectors of a nuclear reactors are made of	01
	A. Boron	
	B. Cast iron	



	C. Beryllium	
	D. Steel	
g)	is the most commonly used moderator	01
	A. Graphite	
	B. Sodium	
	C. Deuterium	
	D. Heavy water	
h)	In a pressurised water reactor (PWR)	01
	A. The coolant water is pressurised to work as moderator	
	B. The coolant water boils in the core of the reactor	
	C. The coolant water is pressurised to prevent boiling of water in the core	
	D. None of the above	
i)	The cost of fuel transportation is minimum	01
	A. Thermal power plant	
	B. Hydro-electric power plant	
	C. Nuclear power plant	
	D. None of the above	
j)	Francis, Kaplan and Propeller turbines fall under the category of	01
	A. Impulse turbine	
	B. Reaction turbine	
	C. Impulse reaction combined	
- 、	D. Axial flow	0.4
k)	Size of boiler tubes is specified by	01
	A. Mean diameter and thickness	
	B. Inside diameter and thickness	
	C. Outside diameter and thickness	
1)	D. Outside diameter and inside diameter	Λ1
l)	India's first nuclear power plant was installed at	01
	A. Tarapore B. Kota	
	C. Kalpakkam	
	D. none of the above	
m)	The draught which a chimney produces is called	01
,	A. Induced draught	02
	B. Natural draught	
	C. Forced draught	
	D. Balanced draught	
n)	In India largest thermal power station is located at	01
,	A. Kota	
	B. Sarni	
	C. Chandrapur	
	D. Neyveli	



Attempt any four questions from Q-2 to Q-8 $\,$

Q-2		Attempt all questions	(14)
	a)	Explain the various draught systems with a neat sketch.	07
	b)	Explain with neat sketch construction and working of Lamont Boiler.	07
Q-3		Attempt all questions	(14)
	a)	With usual notations derive an expression of estimation of height of chimney and condition of maximum discharge.	07
	b)	Discuss different troubles caused by the impurities in water.	07
Q-4		Attempt all questions	(14)
	a)	What are the desirable properties of a good moderator?	06
	b)	Draw neat sketches of following: i. Gas cooled reactor ii. CANDU reactor	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 18000 KW. Determine the annual energy production, reserve capacity over and above peak load hours per year not in service.	06
	b)	What are the different methods of cooling diesel engine? Compare different methods.	08
Q-6		Attempt all questions	(14)
	a)	A 100 MW power station delivers 100 MW for 2 hours, 50 MW for 6 hours and is shut down for the rest of each day. It is also shut down for maintenance for 45 days each year. Calculate its annual load factor	07
	b)	Write the shorts notes on: Coal handling system.	07
Q-7		Attempt all questions	(14)
	a)	What are the advantages and disadvantages of diesel power plants?	07
	b)	Draw and explain schematic diagram of a thermal power plant.	07
Q-8		Attempt all questions	(14)
	a)	What do you understand by nuclear fission? Give the functions and materials used for following components of nuclear reactor: Moderator, reflector, control rod, coolant, thermal shield.	07
	b)	Explain the Cogeneration systems.	07

