Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Winter Examination-2015

Subject Name: Electrical Power System
Subject Code: 4TE05EPS1 **Branch: B.Tech (Electrical)**

Semester: 5 Date: 07/12/2015 Time: 2:30 To 5:30 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) What is the function of induced draft fan?
b) Define :Diversity factor
c) Moderator consists of _____ rods which enclosed the fuel rods.
d) KVAR=_____ tan φ
e) Fuel cell, the _____energy is converted into electrical energy.
(1)Mechanical (2)Chemical (3)Heat(4)Sound
f) Economiser is used to heat
(1)Air (2) Feed water (3)Flue gases (4)All above
g) An over excited synchronous motor on no load is known as_____
h) Define: Plant capacity factor
i) Define: Skin effect
j) Which of the following are the constants of the transmission lines?
(1)Resistance (2) Inductance (3) Capacitance (4) All Above
k) Overhead lines generally use (1) copper conductors (2)All Aluminum conductors (3)A.C.S.R. conductors (4)None of the Above
l) Which of the following protects a cable against mechanical injury?
(1) Bedding (2) Sheath (3) Armoring (4) None of the above
m) Capacitance grading of cable implies
(1) Use of dielectrics of different permeability (2) Grading according to capacitance of cables per Km length (3) Cables using single dielectric in different concentrations (4)capacitance required to be introduced at different lengths to counter the effect of inductance (5) none of the above
n) Define :Load duration curve

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

Q-2 **Attempt all questions** **(14)**

A Draw schematic arrangement of thermal power plant. Also state function of each block. **07**

B Draw and explain the schematic arrangement of nuclear power plant. **07**

Q-3		**Attempt all questions**	**(14)**
	A	Define short, medium, and long transmission line on the basis of length and Voltage. Also explain the nominal π method with respect to medium transmission line.	**07**
	B	Define sag of over head transmission line and derive the equation of sag for equivalent line supports.	**07**
Q-4		**Attempt all questions**	**(14)**
	A	Derive the equation of inductance for single phase double line circuit.	**07**
	B	Explain briefly different types of insulator used in power system.	**07**
Q-5		**Attempt all questions**	**(14)**
	A	Classify the underground cables. Also describe the general construction of an underground cable with neat sketch.	**07**
	B	What do you mean by corona? What are the various factors which affect the corona? How the corona effect can be minimized?	**07**
Q-6		**Attempt all questions**	**(14)**
	A	A 3-phase, 50-hz overhead transmission line 100 km long has the following constants: Resistance/km/phase = 0.1ohm Inductive reactance/km/phase =0.2ohm Capacitive susceptance/km/phase =0.04 x e-4 siemen Determine (i) the sending end current (ii) sending end voltage (iii) sending end power factor and (iv) transmission efficiency when supplying a balance load of 10,000 kW at 66 kV, *p.f.* 0.8 lagging. Use nominal T method.	**07**
	B	Explain different types of power factor improvement methods.	**07**
Q-7		**Attempt all questions**	**(14)**
	A	What is neutral grounding? State different method of neutral grounding. Explain any one of them.	**07**
	B	A transmission line has a span of 150m between level supports. The conductor has cross-section area of $2cm^2$. The tension is the conductor is 2000 kg. If specific gravity of conductor material is 9.98m /cm^3 and wind pressure is 1.5 kg/m. Calculate sag and vertical sag.	**07**
Q-8		**Attempt all questions**	**(14)**
	A	A power station has following daily load cycle: Time(hrs) 0-6 6-10 10-12 12-16 16-20 20-24 Load(MW) 20 25 30 25 35 20 Draw load curve .Also calculate: (i) Average load (ii) Load factor	**05**
	B	Discuss the causes and consequences of low power factor.	**05**
	C	Define: (1) Three part tariff (2) Power factor tariff	**04**