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[5+5]

+ × +	No: 114AD ::::: WAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDI B.Tech II Year II Semester Examinations, May - 2016 POWER SYSTEMS-I	R13 ERABAD					
Time:	(Electrical and Electronics Engineering) 3 Hours  Max	. Marks: 75					
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Note:	This question paper contains two parts A and B.	1 'x xx'					
Part A is compulsory which carries 25 marks. Answer all questions in Part Part B consists of 5 Units. Answer any one full question from each Each question carries 10 marks and may have a, b, c as sub questions.							
X X X X X X X X X X X X X X X X X X X	PART- A	(25 Marks)					
1.a)	Write a short note on super heater.	[2]					
b)	What are the main parts of Nuclear reactor and their functions?	[3]					
c) d.).	What are the advantages of Ring Main Distribution systems? Compare DC distribution with AC distribution system.	[2]					
e):	What are the advantages of Outdoor substation over indoor substation	? [3]					
f)	What are the types of Bus Bar arrangements and explain single bus b	-					
a)	What are the effects of low power factor?	[3] [2]					
g) h)	Explain how power factor can improve by using Synchronous conden						
: .·i)··	Define Load curve and load duration curve.	[2]					
: x,j)x*	What is meant by Two Part Tariff?	[3]					
	PART-B (5	60 Marks)					
2 .a)	Explain the operation of Thermal Power Station with a neat line diagra	ım.					
;;; b);	Explain the procedure of nuclear waste disposal mechanism in a nuplant.	iclear power [5+5]					
2 )	OR						
3.a) b)	Explain the principle of operation of nuclear reactor with neat diagram. What are the types of steam turbines and explain with neat diagram?	n. [5+5]					
U)	what are the types of steam turbines and explain with heat diagram:						
4.a)	Explain the design features of A.C distributed systems.	* * * * * * * * * * * * * * * * * * *					
* 'b')	The load on a DC three wire system employing a rotator balanced so between outers consists of lightening loads of 210. A on the position						
	between outers consists of lightening loads of 210 A on the posit 337 A on the negative side. Power loads taking 400 A connecte						
	outers. Calculate the loading KV on the main generators and on	each of the					
* * * * * *	balancer machines. Assume a loss of 1.5 KW in each balancer machin	ne. [5+5]					
5.a)	What are the advantages of Doubly Fed distributor over Singly Fed D	istributor?					
b)	A two wire distributors are fed at $F_1$ and $F_2$ at 230 V and 220 V						

Loads of 150 A and 100 A are taken at points P and Q. Resistance of both the conductors between  $F_1$  P is 0.03  $\Omega$ , between PQ is 0.05  $\Omega$  and between QF<sub>2</sub> is 0.02  $\Omega$ . Determine the current in each section of the distributor and voltage at

each load point.

Describe the Doubly Explain GIS with a si	ngle line diagra	m. * ** · · · * ·	m	[5+5]	+ x + x x x x x x x x x x x x x x x x x			
Draw the symbols for			ght)in substation	and explain				
briefly.								
Derive the expression for most economical power factor.  What are the methods of voltage control and explain shunt capacitor briefly?[5+5]  OR								
Explain the method of power factor improvement using phase advancer and discuss the advantages and disadvantages of this method.  A fluorescent lamp takes a current of 0.75 A when connected across a 240 V, 50 Hz A.C supply. The power consumed by the lamp is 80W. Calculate the value of the capacitance to be connected in parallel with the lamp to improve the power factor to a) unity b) 0.95 lagging.  [5+5]								
Discuss the objectives and requirements of tariff methods.  A factory has a maximum load of 240 kW at 0.8 p.f. lagging with an annual consumption of 50,000 units. The tariff is Rs. 50 per KVA of maximum demand plus 10 paisa per unit. Calculate the flat rate of energy consumption. What will be annual saving of p.f. is raised to unity?  [5+5]								
Define the following with respect to the economic aspects power generation:  i) Connected load  ii) Plant capacity factor.								
the following data. Plant capacity 500 MW; annual load factor 45 %; capital cost Rs.1200×10 <sup>6</sup> ; annual cost of fuel etc Rs.160 × 10 <sup>6</sup> , interest 9.2 % per annum of initial value: [5+5]								
ooOoo								
	K9	K9	KO	K9	K.S			
K9	K9		K9	K9	k K			
	K9	KO	K.	K9				
	Draw the symbols for briefly.  Give the compression substation.  Derive the expression What are the methods  Explain the method discuss the advantage A fluorescent lamp to 50 Hz A.C supply. To fithe capacitance to factor to a) unity b) to Discuss the öbjective A factory has a may consumption of 50,00 plus 10 paisa per unit annual saving of p.f.  Define the following i) Connected load ii) Plant capacity fact Calculate the general the following data. P. Rs.1200×106; annual initial value.	Draw the symbols for important equibriefly.  Give the compression between A substation.  Derive the expression for most economy what are the methods of voltage comes and disadvant A fluorescent lamp takes a current 50 Hz A.C supply. The power consulong of the capacitance to be connected in factor to a) unity b) 0.95 lagging.  Discuss the öbjectives and requirement A factory has a maximum load of consumption of 50,000 units. The taplus 10 paisa per unit. Calculate the annual saving of p.f. is raised to unit in Define the following with respect to i) Connected load ii) Plant capacity factor.  Calculate the generating cost per ky the following data. Plant capacity 50 Rs.1200×106 annual cost of fuel et initial value:	Explain GIS with a single line diagram.  OR  Draw the symbols for important equipment(at least eighriefly.  Give the compression between Air insulated subsubstation.  Derive the expression for most economical power fact What are the methods of voltage control and explain so OR  Explain the method of power factor improvement discuss the advantages and disadvantages of this method. A fluorescent lamp takes a current of 0.75 A when 50 Hz A.C supply. The power consumed by the lamp of the capacitance to be connected in parallel with the factor to a) unity b) 0.95 lagging.  Discuss the öbjectives and requirements of tariff method factory has a maximum load of 240 kW at 0.8 consumption of 50,000 units. The tariff is Rs. 50 per plus 10 paisa per unit. Calculate the flat rate of energiannual saving of p.f. is raised to unity?  OR  Define the following with respect to the economic as i) Connected load ii) Plant capacity factor.  Calculate the generating cost per kWH, delivered from the following data. Plant capacity 500 MW; annual 1 Rs.1200k10 annual cost of fuel etc Rs.160 × 106, initial value: ooOoo	Draw the symbols for important equipment(at least eight) in substation briefly.  Give the compression between Air insulated substation and Gasubstation.  Derive the expression for most economical power factor.  What are the methods of voltage control and explain shunt capacitor book  OR  Explain the method of power factor improvement using phase and discuss the advantages and disadvantages of this method.  A fluorescent lamp takes a current of 0.75 A when connected across of Hz A.C supply. The power consumed by the lamp is 80W. Calcul of the capacitance to be connected in parallel with the lamp to improve factor to a) unity b) 0.95 lagging.  Discuss the objectives and requirements of tariff methods.  A factory has a maximum load of 240 kW at 0.8 p.f. lagging with consumption of 50,000 units. The tariff is Rs. 50 per KVA of maximplus 10 paisa per unit. Calculate the flat rate of energy consumption. annual saving of p.f. is raised to unity?  OR  Define the following with respect to the economic aspects power gene i) Connected load  ii) Plant capacity factor.  Calculate the generating cost per kWH, delivered from a generating the following data. Plant capacity 500 MW; annual load factor 45 % Rs.1200×10°; annual cost of fuel etc Rs. 160°× 10°, interest 9.2 % printial value. ooOoo	Explain GIS with a single line diagram.  OR  Draw the symbols for important equipment(at least eight)in substation and explain briefly.  Give the compression between Air insulated substation and Gas insulated substation.  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