Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Course: Demand Side Management (ELEG-417) **Semester: VII**
Programme: B.Tech EL & PSE **Time: 03 hrs.**
Max. Marks: 100

SECTION A

S. No.		Marks	CO
Q 1	Explain RTU and SCADA system of Power System Communication.	4	CO1
Q 2	Distinguish the paradigm shift in Electricity act 2003.	4	CO4
Q 3	Highlight the points that shows the impact of reduction in cross subsidy on industries, agriculture and domestic consumers.	4	CO5, CO2
Q 4	a) Define the term open access as per Electricity Act 2003. b) Categorize the open access On the basis of location of buying and selling entity.	2+2	CO5
Q 5	Explain in detail the TOD (Time of Day) method for reducing maximum demand on the system.	4	CO4
	SECTION B		
Q 6	Discuss the importance of proper load allocation in power plants. List down the information that must be available for optimum load allocation.	10	CO3,4
Q 7	A system consists of two plants connected by a transmission line. The load is at plant 2. The transmission line loss calculations reveal that a transfer of 100 MW from plant 1 to plant 2 means a loss of 15 MW. Find the required generation at each plant for lagrangian multiplier 60. Assume that the incremental costs of the two plants are given by: $dC_1/dP_1 = 0.2\ P_1 + 22$ Rs. /MWh $dC_2/dP_2 = 0.15\ P_2 + 30$ Rs. /MWh	10	CO3,4
Q 8	Discuss the power and functions of State Electricity Regulatory Commission and Central Electricity Regulatory Commission during 1997.	10	CO5, CO2
Q 9	Distinguish the term regulation and deregulation. Also, mention the requirements of deregulation in power industry. OR Elaborate the main issues involved in deregulation of power industry.	10	CO4
	SECTION-C		
Q 10	a) Differentiate the term Economic Scheduling and Unit Commitment. b) Derive and explain how the dynamic programming solve the problem of optimal unit commitment .	5+15	CO3,4

Q 11	a) Two units of a thermal station have each the following cost characteristics $C = 5000 + 450\ P + 0.5\ P^2$ Rs. /hr Due to an instrumentation error the cost characteristics of first unit is in error by +2% and that of the second unit by -2% at the time of scheduling. Find the extra operating cost due to erroneous scheduling. Total load is 200 MW. b) ”Wheeling is important to independent energy producers”. Give your suggestion.	**12+8**	**CO3,4**

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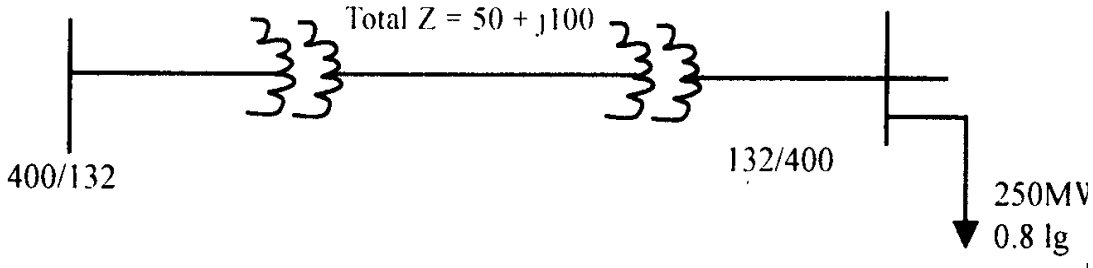
SECTION A

S. No.		Marks	CO
Q 1	Define the term "Ancillary Services" with example.	**4**	**CO5**
Q 2	Explain the voltage controlling method using shunt capacitor.	**4**	**CO2**
Q 3	Describe the term Captive power and captive power policy.	**4**	**CO4**
Q 4	A 230 kV line is fed through 66/230 kV transformer from a constant 66 kV supply. The impedance of the line and transformer at 230 kV is (15+j 40) ohms. Both the transformers are equipped with tap changing facilities which are so arranged that the product of the two off nominal settings is unity. If the load on the system is 150 MW at 0.9 p.f. Determine the settings of the tap changers required to maintain the voltage of the load bus bar at 66 kV.	**4**	**CO1**
Q 5	Brief the Role of BEE in power industry.	**4**	**CO3**
	SECTION B		
Q 6	Explain the role and responsibility of the following bodies for power dispatch (a) LDC's (b) NLDC (c) SLDC (d) RLDC	**10**	**CO3,4**
Q 7	Describe in brief the working of Cyclocontrol. Also, discuss the strategies used in Demand side management.	**5+5**	**CO2**
Q 8	The cost curve of two generating units can be approximated by second order polynomials as under: $C_1 = 0.08\ P_1^2 + 16\ P_1 + 400$ Rs./ hr $C_2 = 0.04\ P_2^2 + 20\ P_2 + 600$ Rs./ hr a) Find the economic generation of each generator for a total load of 150 MW. The minimum and maximum loads of the units are 20 and 100 MW. b) Find the cost per hr if the generators are operated as per above schedule.	**10**	**CO3,4**
Q 9	Describe the various utility driven measures to incentivize DSM. OR Draw the flow chart of "Hybrid business model" and explain each steps involved in model	**10**	**CO5**

SECTION-C			
Q 10	a) Explain the concept of Blackout and discuss the reasons of blackout that occurred in India in year 2001 by elaborating series of chain reaction occurred. b) A 400kV line is fed through a 132/400kV transformer from a constant 132kV supply. At the load end of the line another transformer of nominal ratio 400/132kV is used to reduce the voltage. The total impedance of the line and transformers at 400kV is (50+j100) ohm. Both, transformers are equipped with tap changing so arranged that the product of the off nominal setting is unity. If the load on the systems is 250MW at 0.8 p.f lagging. Calculate the settings of the tap changer required to maintain the voltage of the load bus at 132kV.  	**10+10**	**CO5**
Q 11	a) Describe the term Open Access of the Section 2(47) and Open Access Registry. b) Explain the steps involved in Energy Auction and competitive bidding.	**6+12**	**CO4,5**