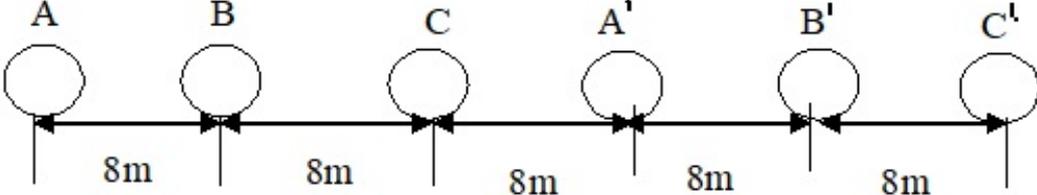




B.Tech - Odd Sem : End Semester Exam  
Academic Year:2020-2021

**19EE2102 - ELECTRICAL POWER ENGINEERING**

Set No: 2

Time:		Max.Marks: 100																	
S.NO	Answer All Questions	Choice	Options	Marks	CO														
1.	List the site selection factors for thermal power plant.	choice Q-2		10Marks	CO1														
2.	Describe the function of surge tank in hydro power plants and moderator in Nuclear power plants.			10Marks	CO1														
3.	Explain the following (i). Solar Insolation (ii). Photo Voltaic effect (iii). Surge tank (iv). Electrostatic precipitator	choice Q-4		15Marks	CO1														
4.	Define Connected load and load factor. A generating station has the following daily load cycle. Draw the Load curve, load duration curve and determine Maximum Demand, Average Load, Load Factor and No. of units generated. <table border="1" style="margin: 10px auto;"> <tr> <td>Time(hrs) :</td> <td>0-6</td> <td>6-10</td> <td>10-12</td> <td>12-16</td> <td>16-20</td> <td>20-24</td> </tr> <tr> <td>Load (MW) :</td> <td>40</td> <td>50</td> <td>60</td> <td>50</td> <td>70</td> <td>40</td> </tr> </table>	Time(hrs) :	0-6	6-10	10-12	12-16	16-20	20-24	Load (MW) :	40	50	60	50	70	40			15Marks	CO1
Time(hrs) :	0-6	6-10	10-12	12-16	16-20	20-24													
Load (MW) :	40	50	60	50	70	40													
5.	Derive the ABCD parameters for Nominal –pi represented medium transmission lines.	choice Q-6		10Marks	CO2														
6.	A DC ring main ABCDA is fed at point A from a 230 V supply and the loop resistances of various sections are: AB is 0.04 Ω; BC is 0.35 Ω; CD is 0.5 Ω and DA is 0.05 Ω. The main supplies 100 A at B, 150 A at C and 200 A at D. Determine the voltages at each load point. If the points A and C are interconnected through a link of 0.05 Ω, determine the voltages at the load points.			10Marks	CO2														
7.	Derive the expression for inductance of a three phase double circuit lines. Calculate the inductance per phase for a three phase double circuit line whose phase conductors have a radius of 5.3 cm with horizontal conductor arrangement as shown fig. 	choice Q-8		15Marks	CO2														
8.	Derive the expression for sending end voltage and currents for medium transmission lines (Use nominal T representation). An overhead 3-phase transmission line delivers 5000kW at 22kV at 0.8 pf lagging. The resistance and reactance of each conductor is 4 Ohms and 6 Ohms respectively. Determine sending end voltage and regulation.			15Marks	CO2														
9.	A three phase 220kV, 50Hz transmission line consists of 1.2cm radius conductor spaced 2 meters apart in equilateral triangular formation. Determine the disruptive critical voltage between the lines if the temperature is 20°C and atmospheric pressure is 72.2cm. Take $m_0=0.96$ . Dielectric strength of air=21.1kV (rms)/cm?	choice Q-10		10Marks	CO3														
10.	Explain different types of insulators used for overhead lines and their application.			10Marks	CO3														
11.	Draw 132kV/11kV and 33kV/415v substations layouts and explain the function of each component.	choice Q-12		15Marks	CO3														
12.	Define corona and list the factors affecting corona. A 132kV line with 1.956cm dia. conductors is built so that corona takes place if the line voltage exceeds 210kV (r.m.s.). If the value of potential gradient at which ionisation occurs can be taken as 30kV per cm, determine the spacing between the conductors.			15Marks	CO3														
13.	Explain the objectives and functions of Automatic Generation Control (AGC) in a power system?	choice Q-14		10Marks	CO4														
14.	Explain the necessity of keeping the frequency constant in a power system. Also describe how generation schedule will solve the problem of frequency variations.			10Marks	CO4														
15.	Define control area concept and Obtain the transfer function model and explain the ALFC of a single area of an isolated power system.	choice Q-16		15Marks	CO4														
16.	Explain the necessity of keeping the frequency constant in a power system. 100MW, 150MW and 280MW are the ratings of three units located in a thermal power station. Their respective incremental costs are given by the following equations: $dc_1/dp_1 = Rs (0.15p_1 + 12)$ $dc_2/dp_2 = Rs (0.05p_2 + 14)$ $dc_3/dp_3 = Rs (0.21p_3 + 13)$ Where $P_1, P_2$ and $P_3$ are the loads in MW. Determine the economical load allocation between the three units, when the total load on the station is 300MW.			15Marks	CO4														

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