B.E. Eighth Semester (Electrical Engineering (Electronics & Power)) (C.B.S.)

Elective - III : Electrical Distribution System

P. Pages : 2

NKT/KS/17/7578

Time : Three Hours

0533

Max. Marks : 80

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Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.

1. a) Define and explain the following terms. **6**
1) Maximum Demand   2) Demand Factor
3) Load Factor   4) Diversity Factor
5) Utilization Factor

b) What are the different categories of load? Explain. **7**

OR

2. a) An industry has connected load of 800 kw and operates of P.F. 0.98 (lag). The demand factor is 0.6. The monthly energy consumption is 115000 KWH. If the industry operates for 14 hours per day and 25 days per month. Calculate the load factor. **7**

b) What are the types of distribution system? Explain distribution system? **6**

3. a) Define and explain the terms : **6**
i) Feeder   ii) Distributor
iii) Service Mains

b) What are the different IDEAL types of loadings on a feeder? **7**

OR

4. a) What is the importance of % voltage drop (% VD) in feeder line? What are the factors that affect % VD. **6**

b) An 11 - KV 3- phase distribution line has 37 / 2.59 ACSR conductor with conductor spacing of 0.8 m in equilateral triangle form. The load supplied is of 0.85 P.F. lagging. Determine the constant K for % VD. **7**

5. a) What are the power losses in AC distribution? How is it estimated approximately? **7**

b) A distribution is supplied from 250 V DC and has loads as shown in fig. The resistance/ 100 m is $20 m\Omega$. What is the voltage at point P and voltage drop in each section? **7**

250V   30m   50km   70 km   P

60A   30A   110A
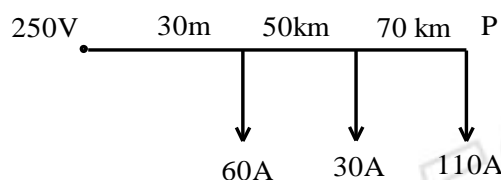
OR

6.	a)	What are the advantage for adopting 3 - phase 4 wire distribution for LT supplies and 3 - phase 3 wire for high voltage distribution.	7
	b)	Explain the advantages and difficulties with ring type feeders compared to (a) radial feeder and (b) feeder fed at both ends.	7
7.	a)	A 33 - KV feeder has $(0.1+J0.25)$ Ω impedance per phase per km and is supplying a load of 6 MVA over a distance of 80 km at 0.75 P.F. What will be the receiving end voltage and voltage drop of the line if compensated to 50% by series capacitance compensation? Find the receiving end voltage and improvement in voltage.	7
	b)	Write procedure for selection of best capacitor location and optimum capacitor size.	7

OR

8.	a)	Write short notes on :	7
		i) Power factor correction.	
		ii) Effect of AVB/AVR	
		iii) Line drop compensation.	
	b)	What are the different methods for voltage control? Briefly explain them.	7
9.	a)	Compare MCCB with fuse.	6
	b)	Draw a neat sketch showing pipe type earthing and explain.	7

OR

10.	a)	With the help of block diagram explain data acquisition system.	7
	b)	Write a short note on :	6
		i) Substation Automation.	
		ii) Feeder Automation	
		iii) Consumer Side Automation.	
11.	a)	Discuss the different ways of classifying the sub - station.	6
	b)	Draw the layout and schematic connection of a pole - mounted sub - station, and write it's components and equipments.	7
12.	a)	What are the different Bus Arrangement and Switching systems in substation.	6
	b)	Considering a typical example, describe the procedure for fault current calculations in a distribution system. mentioning the assumptions to be made for the analysis.	7

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