



COLLEGE OF ENGINEERING & TECHNOLOGY

Department : Electrical & Computer Control Engineering

Lecturer : Prof. Amany Hanafy

Course : Electrical Power

Course Code: EE 448

Date : 12 / 1 / 2016

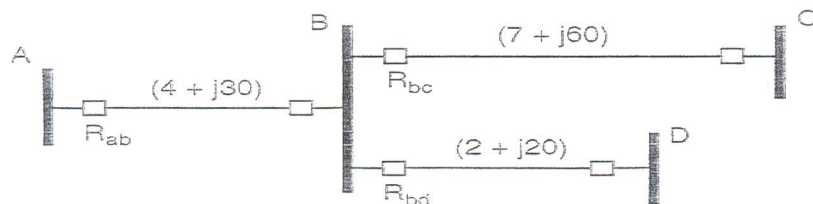
Marks: 40

Time : 2 hours

Final Exam

Answer the following questions:

- 1] What is the effect of using high voltage on the current carrying capacity of transmission conductors and what will be its advantages? (8 marks)
- 2] A 230kV, 60 Hz, three-phase overhead line has one 10 mm diameter conductor per phase. The three phases are arranged in flat horizontal form with 15m between adjacent conductors. Calculate:
 - i) inductance in H/m and reactance in Ω /m.
 - ii) shunt capacitance in F/m and admittance in S/m. (8 marks)
- 3] A single phase distributor 2km long has resistance and reactance (go & return) of 0.05Ω /km and 0.1Ω /km, respectively. The distributor supplies a load of 140 A at 0.8 p.f. leading at its far end and a load of 100 A at 0.9 p.f. lagging at its mid-point. Both power factors are referred to the voltage at the far end. If the voltage at the far end is maintained at 220 V, calculate the efficiency of the line. (8 marks)
- 4] A 120 km, 50 Hz, three-phase transmission line has a series impedance $Z=0.1+j0.5 \Omega$ /km, and a shunt admittance $Y=j4 \times 10^{-6}$ S/km. The line delivers 230MW at 220kV and 0.8 leading p.f. Using the nominal Π -circuit the line voltage regulation. (8 marks)
- 5] The relaying system in the transmission system shown in figure utilizes a CT with a turn's ratio of 500:5 and PT with a turn's ratio of 20kV:69.3V. Design the three zone setting of the impedance relay set in the beginning of line AB. (8 marks)



Members of course Examination Committee:	Signature:	Date:
Lecturer: Prof. Dr. Amany Hanafy		2 / 1 / 2016
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