
	<b>Mansoura University</b> <b>Faculty of Engineering</b> <b>BME Program</b>	
<b>Electrical Power</b>	<b>FCR 141</b>	<b>For level 100 BME Students</b>
<b>Date: 2/9/2019</b>	<b>Allowed Time : 120 min</b>	<b>Total Marks: 50 Mark</b>
<b>Summer semester 2018/2019</b>	<b>Final-Term Exam</b>	<b>2 pages</b>

### First Question (7 Marks)

A two-wire dc distributor AB, 1000 meters long is loaded as under:

<b>Distance from A in meter</b>	200	400	600	800
<b>Loads in Amp.</b>	100	250	250	300

The feeding point A is maintained at 440 V and that of B at 430 V. If each conductor has a resistance of 0.01 ohm/100 meters, calculate the following;

1. The current supplied from point A.
2. The current supplied from point B.
3. The point of minimum voltage and its value.
4. The efficiency of the distributor.

### Second Question (8 Marks)

A 500 m AB distributor has loads 100A, and 60A at distances 100m and 250m from point A and a uniformly distributed load of 1 A/m along a 200m from point B. The distributor is fed from both ends at 240V at A and 232V at B. Determine the point of minimum voltage. Assume that the loop resistance is 0.001  $\Omega$ /m.

### Third Question (5 Marks)

A single phase 50 Km transmission line has a total resistance of 20  $\Omega$  and a total inductive reactance of 50  $\Omega$ . If the line supplying 2000 KW 30 KV 0.8 Lagging pf load find.

1. Sending-end Voltage.
2. Sending-end pf.
3. Efficiency.
4. Voltage Regulation.
5. Power Loss

#### **Fourth Question (10 Marks)**

A 60 MW, 132 KV, 0.85 leading power factor load is connected at the receiving end of 100 Km, 50 Hz TL considering T-model with the following parameters per Km

$$r = 0.2 [\Omega] \quad L = 1.4 [mH] \quad C = 0.01 [\mu F]$$

1. Find the A, B, C, D parameters of the TL.
2. Calculate the sending end voltage, current, and power factor.
3. Determine the transmission efficiency.

#### **Fifth Question (10 Marks)**

A 6-pole DC machine has 500 conductors and each conductor is capable of carrying 80 A without excessive temperature rise. The flux per pole is 0.015 Wb and the machine is drive at 1600 rpm. Compute the total current, EMF, power developed in the armature and electromagnetic torque, if the armature conductors are wave connected.

#### **Sixth Question (10 Marks)**

1. Explain with drawing the construction of DC machine.
2. State the advantages and disadvantages of thermal power station.

*Good Luck*

*Dr. Islam Ismael*