Menoufia University		Postgraduate: Diploma
Faculty of Engineering		Subject: Electrical Networks
Shebin El-Kom		Date: 13/08/2020
Dept.: Electrical Eng.		Time Allowed: 3 hours
Semester : Second		Total Marks: 100

Answer all the following questions

Question (1) (20 Marks)

a) Explain the arcing ground phenomenon.
b) Derive the equation of earth resistance and explain how to measure earth resistance experimentally.
c) What are the main features of solidly grounded systems?
d) Explain the connection and operation of earthing transformers.
e) What is the present practice in neutral earthing?

Question (2) (20 Marks)

a) What are the main features of the Polyvinyl Chloride (PVC) as one of the cable insulation materials?
b) What are the main characteristics of the Cross Linked Polyethylene (XLPE) insulation material for cables?
c) Compare between the Paper and Mineral as two of the cable insulation materials.
d) What are the system operating problems with underground cables?

Question (3) (20 Marks)

a) What are the effects of reactive power flow in line-network?

b) What is the effect of reactive power flow on line voltage drop?
c) What is the effect of shunt and series compensations on the performance of transmission lines?
d) What are the system operating problems with series capacitors

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Question (4) (20 Marks)

a) What is the classification of load forecasting?
b) What are the important factors for forecasts?
c) Explain the medium- and long-term load forecasting methods.
d) What are the short-term load forecasting methods?

Question (5) (20 Marks)

a) Show that the 3 wire dc system is far superior to other systems.
b) A 3-phase 4-wire distributor supplies a balanced voltage of 400/230 V to a load consisting of 80 A at a power factor of 0.8 lagging, 70 A at a power factor of 0.9 lagging and 50 A at a unity power factor on phases R, Y, B respectively. Calculate the voltage at the supply end of phase R relative to the load voltage. The resistance of each core is 0.2 ohms.

This exam measures the following ILOS									
Question Number	Q1	Q2	Q4	Q2	Q3	Q5	Q2	Q3	Q4
Skills	A1	A2	A3	B3	B3	B2	C1	C1	C1
	Knowledge & Understanding			Intellectual Skills			Professional & Practical Skills		