

Menoufiya University  
 Faculty of Engineering  
 Shebin El-Kom  
 Postgraduate-PhD  
 Final Exam



Subject/code: High Voltage  
 Engineering/ELE702  
 Time Allowed: 3 hours  
 Year: 2017-2018  
 Date: 3-1-2018

Allowed Tables and Charts: (None), Total marks: 100

Answer ALL Questions:

**Question (1)**

(35 Marks)

- (1-a) What is polymer nanocomposite and give its constituents?
- (1-b) Describe the importance of nanocomposites for enhancement dielectric strength and tracking resistance in electrical insulator.
- (1-c) Discuss the effect of adding TiO<sub>2</sub> and ZnO nanoparticles on permittivity, tan delta, volume resistivity and dielectric strength of Epoxy.

**Question (2)**

(35 Marks)

- (2-a) Describe the effect of adding nano and micro alumina on erosion depth and breakdown strength of epoxy.
- (2-b) Discuss how the breakdown strength affected by adding ZnO to LDPE.
- (2-c) Explain the effect of adding clay-nanofillers on the breakdown strength, dielectric constant, tan delta and insulation resistance of high density polyethylene.

**Question (3)**

(30 Marks)

- (3-a) Discuss briefly the short-term and long term-breakdown in nano dielectrics.
- (3-b) Explain briefly the effect of the presence of water content in Glass-Mica-Epoxy Composite.

Good Luck ..... Prof. Mohamed A. Izzularab  
 Dr. Amr M. Abdelhady

This exam measures the following ILOs											
Skills	Knowledge & Understanding Skills				Intellectual Skills				Professional Skills		
	a1-1	a2-1	a4-1		b1-1	b9-1			c2-1	c3-1	
Question Number	Q1-a, b	Q1-c Q2-b	Q3-a,b		Q1-a,b	Q3-a			Q3-b	Q2-a,c	