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FACULTY OF ENGINEERING & TECHNOLOGY

S.E (EEP/EE) Year Examination - June – 2015

Electrical Engineering Materials

(Revised)

[Time: Three *Hours*] **[Max. Marks:80]**

"Please check whether you have got the right question paper."

i) Q. no1 and Q. no 6 are compulsory.

ii) Attempt any two questions from remaining in each section

SECTION-A

Q.1 Attempt any five from following 10

i) Define static field
ii) Define ionic polarization
iii) List out optical properties of materials used for power generation
iv) Define photo conductivity
v) Define dielectric breakdown strength
vi) Define magnetization.
vii) Define antiferro magnetism
viii) List out four magnetic recording materials.

Q.2 a) With neat sketches describe the materials used, construction equivalent circuit, working & application of photovoltaic cells. 10

b) Discuss the property differences, applications & nature of varnish and transformer oil. 05

Q.3 a) What are the criteria for selection of insulating materials used for cables? Explain with neat sketches 08

b) Elaborate the difference between break down volatge and break down strength of an insulating material. 07

Q.4 a) Describe the terms permeability & magnetic susceptibility. 08

b) Define ferromagnetism & ferri- magnetism explain the difference. 07

Q.5 a) Explain the criteria for selecting the magnetic materials for transformers & for rotating machines. 08

b) Write short notes on 07

i) Compact discs
ii) Magnetic recording materials from electrical engineering materials point of view.

SECTION-B

Q.6 Attempt any five from following. 10

a) Properties of electrial conducting materials. Enlist .
b) List out properties of thermal conducting materials.
c) Define energy bands.
d) List out any five material properties for transmission line conductor.
e) IS 6798 is used for what purpose?
f) Which IS is used for measurement of dielectric strength of insulating materials?
g) What is meant by 'Nano' in nano structures?
h) Write any four properties of 'Fuse' element material.

Q.7 a) Explain the limitations on aluminium conductor for its arrays of applications? Also give three examples. 08

b) What are the benefits of using aluminum conductor for certain areas of application? Give any two examples. 07

Q.8 a) Write minimum two applications of each of following. 08

i) Canthal
j) Brass
k) Ni-Chrome
l) Silver alloys

b) How will you measure di-electric strength of a liquid insulating material in yourlab? Write procedure. 07

Q.9	a)	Write short notes with sketches on following i) Carbon nano structures ii) Carbon nano tubes	07
	b)	Describe following in brief with neat sketches i) Single electron transister ii) Molecular machines	08
Q.10	a)	Explain with diagram total process of measurement of Flux density by Gaussmeter.	07
	b)	Explain with neat diagrams, the method of testing of high voltage bushings ,in details.	08