APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q. P. Code: 08EE7023(C)-II **(Pages: 2)** **Name .....**

Reg. No: .....

THIRD SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2018

Branch: Electrical & Electronics Engineering **Specialization: Energy Systems**

08EE7023(C) NANOMATERIALS AND NANOTECHNOLOGY

Time:3 hours **Max. marks: 60**

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.	Module 1	Marks
1.a	Explain Top-down approach with an example.	**3**
	Answer b or c	
b	Elaborate on the different applications of nanotechnology.	**6**
c	Explain the physical, chemical, electrical and optical properties of nanomaterials.	**6**
Q.no.	**Module 2**	**Marks**
2.a	With aneat sketch explain Ball Milling process of synthesis of Nanomaterials.	**3**
	Answer b or c	
b	Highlight the properties of Carbon Nanotubes. Explain any one method of producing Carbon Nanotubes.	**6**
c	With a neat sketch explain the working of a SEM.	**6**
Q.no.	**Module 3**	**Marks**
3.a	What are Nanowires and Nanoclays?	**3**
	Answer b or c	
b	Explain in detail about Nanocomposites and its features.	**6**
c	"High Performance Materials are the need of the day". Substantiate the statement with suitable examples.	**6**
Q.no.	**Module 4**	**Marks**
4.a	Draw the operating characteristics of an electric motor.	**3**
	Answer b or c	

b	Explain how to select an energy efficient motor? What are it's features?	**6**
c	Write short notes on (1)Motor Efficiency and (2) Load analysis	**6**
Q.no.	**Module 5**	**Marks**
5.a	List out the applications of Smart Materials with examples.	**4**
	Answer b or c	
b	Elaborate on the health hazards of nanoscale powders.	**8**
c	What is Self -Assembly? Is it natural. Explain with examples.	**8**
Q.no.	**Module 6**	**Marks**
6.a	Compare between NEMS and MEMS.	**4**
	Answer b or c	
b	Explain any two Nanofabrication techniques.	**8**
c	State your views on “Future of Nanomedicine”.	**8**