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Total Number of Pages: 01 **M.TECH**

P2NTBC12

2nd Semester Regular Examination – 2016-17
Nano Technology for Energy system
Branch:NANO TECH.
Time: 3 Hours
Max Marks: 100
Q.CODE: Z974
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions:** (2 x 10)

a) Explain driving mechanism in micro fluidic system?
b) Define piezoelectric membrane with examples?
c) What is the role of size effect in hydrogen storage capacity?
d) What is micro fuel cell?
e) What is thermo capillary pumping?
f) Give the name of metal hydride for the storage of hydrogen?
g) What do you mean by dehydriding kinetics?
h) Write a note on conversion and storage of renewable energy?
i) Name the different nano material for the Light Emitting Diode?
j) What do you mean by advanced turbine and its utility?

Q2 a) What are the important distinctive important chemical properties of material for automotive application? (10)
b) How nanotechnology used in sustainable energy? (10)

Q3 a) How catalytic reactors used in the field of nano technology for sustainable energy? (10)
b) Explain the integration and performance of micro fuel cell system thin film? (10)

Q4 a) What are the design methodologies of micro fuel cell power sources? (10)
b) Explain the integration and performance mechanism for the micro fabrication method? (10)

Q5 a) How electro mechanical systems operate in nano engine? (10)
b) Describe how micro heat engine fabricated? (10)

Q6 a) How Hydrogen storage capacity can be determine by using different metal? Explain it with suitable example? (10)
b) Explain gravimetric capacities in hydrogen storage method? (10)

Q7 **Write down the short notes about any two** (5 x 4)

a) Hydrogen reaction Kinetics
b) Micro fluidic devices in nano engine
c) Physical properties of nano material for automotive application
d) Fuel cell