Code No: **RT41035**   **R13**   **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February/March - 2018
MICRO ELECTRO MECHANICAL SYSTEMS
(Open Elective)

Time: 3 hours   **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1. a) Discuss the scope of the subject MEMS.   [3]
    b) Explain the basic characteristics of thermal sensors.   [4]
    c) What are the important applications of MOEMS devices?   [4]
    d) Explain the principle of working of magneto resistive sensor.   [4]
    e) Draw the block diagram of a general communication system.   [3]
    f) Write short note on fluorescence detection.   [4]

PART–B *(3x16 = 48 Marks)*

2. a) Discuss about the factors influencing the process of transferring the image
       through lithography.   [7]
    b) With the help f line diagram explain the functioning of MEMS microphone.   [9]

3. a) Discuss in detail about the functioning of shape memory alloys.   [7]
    b) Describe and explain the working of microplate type gas sensor.   [9]

4. a) Explain the principle of operation of various types of optical switches used in
       optical communication systems.   [9]
    b) Discuss the use of MOEMS devices for shear stress measurement.   [7]

5. a) Discuss the principle of working and applications of magnetic probe based
       storage device.   [9]
    b) Explain how a MOKE device works.   [7]

6. a) What are the advantages of using RF MEMS as compared to traditional units and
       systems?   [7]
    b) With the help of suitable diagram explain the features of electro wetting based
       fluid flow.   [9]

7. a) Explain various types of primary sensing principles used in biochemical sensors.   [8]
    b) With suitable diagram explain the working of chemoresistor.   [8]