**No. of Printed Pages : 03** **Roll No. .....**

# BB-603

## M. Tech. EXAMINATION, Dec. 2017

(Second Semester)

(B. Scheme) (Re-appear Only)

(ESEM)

ESEM-106-B

MATERIALS AND DEVICES FOR ENERGY APPLICATIONS

*Time :* 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

**Note** : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

## Unit I

**1.** Expand CVD and PE CVD. Differentiate between CVD and PE CVD and also discuss the advantages and disadvantages of these two. **15**

**2.** Explain the basic working principle of Sputtering and Diffusion with neat and clean diagrams. **15**

## Unit II

**3.** Write down the various techniques used for material characterization. Discuss the working and basic principle of any *one* along with advantages and disadvantages of technique. **15**

**4.** Write short notes on the following :

(a) Quantum efficiency analysis **8**

(b) AFM. **7**

## Unit III

**5.** Discuss in detail the working principle of single crystal and polycrystalline Si solar cells with the suitable diagrams. **15**



**6.** Write short notes on the following : **3×5=15**

(a) Recombination centers

(b) Knee voltage

(c) Avalanche Breakdown.

## Unit IV

**7.** Explain the process of fabrication of CNTs and the applications of CNTs as hydrogen storage material. **15**

**8.** Name the various polymer membranes used in fuel cells. Discuss acid/alkaline fuel cell in detail. **15**