(3 Hours) **[Total Marks: 80]**

N.B.: (1) Question No. 1 is **Compulsory**.
(2) Attempt any **three** questions out of the remaining **five**.
(3) Each question carries 20 marks and sub-question carry equal marks.
(4) Assume suitable data if required.

1. (a) Draw a DFG for calculating average Temperature of a room with 4 Sensor nodes. **(5)**

(b) What are the different Low Power modes in Cortex-M3 processor, explain any 1 in detail. **(5)**

(c) Draw waterfall model and explain features. **(5)**

(d) Discuss the criteria to choose RTOS in Embedded system? **(5)**

2. (a) Compare White-Box and Black-Box testing, mention typical application areas. **(10)**

(b) Draw FSM for Elevator System for a building with 4 floors. Each floor has a call button outside & elevator cabin has 5 buttons (G,1,2,3 ,4) , Explain model. **(10)**

3. (a) Explain Inter-process Communication in detail. **(10)**

(b) Differentiate between RTOS and GPOS. **(10)**

4. (a) Mention features of RISC and CISC cores. Which of them is used in the embedded systems? Why? **(10)**

(b) Draw an architecture of the ARM Cortex-M3 and discuss important features **(10)**

5 (a) Mention all Design metrics of Embedded system , which are the most tightly constrained Metrics. **(10)**

(b) Discuss various types of memories required in the embedded system. **(10)**

6. (a) Differentiate between Hard & soft real time systems with examples. **(10)**

(b) Write short note **(10)**
i) RS-232
ii) Bluetooth
