## B. ELECTRICAL ENGINEERING EXAMINATION, 2017
(4TH Year, Second Semester)

### SUBJECT: -REAL TIME SYSTEMS (Special Paper-II)

Time: Three hours                                                    Full Marks :100

(50 marks for each part)

Use a separate Answer-Script for each part

| No. of Questions | PART I | Marks |
|---|---|---|
| | *Answer any three.* | |
| | *Two marks reserved for neatness and well oraganized answers.* | |
| 1.(a) | Draw and explain the schematic block diagram of a real time system. | 5 |
| (b) | Define different task classes. | 6 |
| (c) | Discuss About Von-Neumann Architecture and Harvard Architecture. | 5 |
| 2. (a) | What is deadline? Define time value function. | 3 |
| (b) | Classify RTS based on deadline. | 8 |
| (c) | Explain elaborately the functional requirement of an automatic teller machine (ATM). | 5 |
| 3. (a) | State the different types of addressing mode and explain elaborately any there. | 10 |
| (b) | Discuss the advantage and disadvantage of load store design and memory register design. | 6 |
| 4.(a) | Discuss about fetch and execute cycle. | 7 |
| (b) | What is interrupt handling? How single interrupt system is different from multiple interrupt system? Explain. | 9 |
| 5. | Write short notes on any two:<br>(a)Watch dog Timer<br>(b)Von Neumann bottleneck.<br>(c) Semaphores and Mailboxes.<br>(d) Round Robin System. | 16 |

Ref No. : EX/EE/T/425B/2017 (Old)

## B.E. ELECTRICAL ENGINEERINGFOURTH YEARSECONDSEMESTEREXAMINATION, 2017 (Old)

(4ᵗʰYear, 2ⁿᵈ Semester)

### REAL TIME SYSTEMS

Time: Three Hours                                        Full Marks: 100/50√

(50 Marks for each part)

Use a separate Answer Script for each Part

### PART-II

*Answer Any Three Questions*

Two marks reserved for neat and well organized answers

6. State whether the following statements (Any Four) are 'True' or 'False'. Justify your answers citing suitable reasons.

                                                4X4=16

(i)    Development of quality software is a dynamic process, which leads to a dynamic product.

(ii)   Real time software should not be efficient in utilizing processor resources and hence they satisfy the temporal constraints associated with them.

(iii)  An RTS is a system that must satisfy explicit (bounded) response-time constraints or risks severe consequences, including failure.

(iv)    Software with proper documentation is often called "Brittleware" or "Vaporware".

(v)    W & M methodology is a life cycle model which rests on model building activities.

7a)  What were the reasons behind the phenomenon of "Software Crisis" faced in the earlier days of software development?

5

7b)  Hence, state any two definitions of the discipline of "Software Engineering".

3+3

7c)  Enumerate at least five significant characteristics of Real Time System Software.

5

8a)  What do you understand by the term "Software Life Cycle Model"?

4

8b)  Exemplify a situation where the Incremental Life Cycle Model would be the best suited one. Justify your answer.

5

8c) Identify the risks that could be associated with real time software development process.

7

9) Write short notes on any two:

i) Processor Environment Modelling (PEM) and thereby the requirement of auxiliary processors. Explain why and when auxiliary processors are chosen to be a part of the entire Real Time System.

ii) Control Transform and State Transition Diagram.

iii) Requirement Engineering and SRS document.

8+8

10) For the problem statement given below, identify the terminators as well as the data and event flows among the terminators and the system. Justify your findings. Draw the Context diagram and build the Event List that may be applicable to this problem.

3+3+2+4+4

A customer using a vending machine can choose between tea and coffee. The vending machine will accept the customers' money via 'accept payment', and will then check whether the correct payment has been made, using either 'check payment for tea' or 'check payment for coffee'. If the customer has made the correct payment, the appropriate drink will be dispensed, using either 'dispense tea' or 'dispense coffee'. If the customer has not made the correct payment, any money received will be refunded, via 'refund money'. The customer will have to reselect the appropriate beverage, if he/she wishes to try again.