

AQ-2887

Faculty of Engineering & Technology
M.E. Electrical (Electronics & Power) Engg. Semester—II (New-C.G.S.) Examination
EMBEDDED SYSTEMS DESIGN
Paper—2 EEPME 3
Sections—A & B

Time : Three Hours]

[Maximum Marks : 80

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Answer **THREE** questions from Section A and **THREE** questions from Section B.
- (3) Assume suitable data wherever necessary.
- (4) Illustrate your answers wherever necessary with the help of neat sketches.
- (5) Use pen of Blue/Black ink/refill only for writing the answer book.

SECTION—A

1. (a) Explain the different design metrics that one should consider while designing embedded system. 7
- (b) What are different implementation technologies used in embedded system ? 7

OR

2. (a) Differentiate general purpose processor, single purpose processor and ASIC with respect to design metrics with suitable example. 7
- (b) Describe ideal top down design process used in design technology. 7
3. (a) Explain the steps of design custom single purpose processor with example. 7
- (b) Describe different RT level combinational and sequential components used to design single function processor. 6

OR

4. (a) Given an analog input signal whose voltage ranges from 0 to 19 V and 8 bits for digital encoding for 5 V. Use successive approximation approach to find the correct encoding. 7
- (b) How combinational logic design can be formed from basic logic gates ? 6
5. (a) Explain data transfer mechanism in I²C protocol. Compare it with CAN protocol based on bit rate and area of application. 7
- (b) Explain daisy chain arbitration. 6

OR

6. (a) Explain memory hierarchy used in embedded system and what are the different type of memories used in embedded system design. 7
- (b) Explain with example and block diagram interrupt driven I/O using fixed ISR location with flowchart. 6

SECTION—B

7. (a) Explain FSM and concurrent process with suitable example. 7
- (b) Explain architecture of programmable logic device FPGA. How is it programmed ? 7

OR

8. (a) Explain programmable logic devices including FPGA. 7
- (b) What is data flow models ? Give suitable example. 7
9. (a) Explain the role of scheduler in RTOS. Compare preemptive and non-preemptive scheduling techniques. 7
- (b) How mailbox message is different from queue message ? 6

OR

10. (a) Explain interrupt routines in RTOS environment. 6
- (b) Explain with suitable example how semaphores are used to solve shared data problem. What are counting semaphores ? 7

11. (a) In relation to embedded Linux, how TCP/IP networking is done ? Explain network configuration. 7
- (b) With suitable example explain Interprocess Communication (IPC) using mailbox/queue. 6

OR

12. (a) Explain Linux Kernel architecture. 6
- (b) What are the various types of file systems used in embedded Linux ? Explain with suitable example. 7

