10. Write short note on following kernel objects (Any **three**) :

(a) Semaphore

(b) Mutex

(c) ISR

(d) Mailbox and Message queue. 13

11. Discuss in detail the case study of automation field on Automatic Chocolate Vending Machine (ACVM). Cover all the aspects of designing of ACVM like requirement of system, its specification, hardware and software architecture, working, utility etc. 13

OR

12. Discuss in detail the case study of Digital Camera. Cover all the aspects of designing of Digital Camera like basic circuit requirements, block diagram, its specification, hardware architecture, software concept, working, utility etc. 13

Faculty of Engineering & Technology
Seventh Semester B.E. (Electronics Engg.)
(C.B.S.) Examination
EMBEDDED SYSTEM

Time—Three Hours] [Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

(1) All questions carry marks as indicated.

(2) Solve Question No. **1 OR** Questions No. **2**.

(3) Solve Question No. **3 OR** Questions No. **4**.

(4) Solve Question No. **5 OR** Questions No. **6**.

(5) Solve Question No. **7 OR** Questions No. **8**.

(6) Solve Question No. **9 OR** Questions No. **10**.

(7) Solve Question No. **11 OR** Questions No. **12**.

(8) Due credit will be given to neatness and adequate dimensions.

(9) Assume suitable data wherever necessary.

(10) Illustrate your answers wherever necessary with the help of neat sketches.

1. (a) What do you mean by Embedded System ? Explain the different characteristics needed to design an Embedded System. 6

(b) Explain various optimizing parameters of design metric. 7

OR

2. (a) List any ten applications of Embedded System. 5

(b) Explain any two recent trends in Embedded System. 8

3. (a) Explain software architecture of Embedded System in detail. 8

(b) Explain the role of Interrupt Service Mechanism in Embedded System. 6

OR

4. Write short notes on :

(a) Device Driver 5

(b) Context Switching Process 5

(c) Processors used for Embedded System 4

5. (a) Draw the ARM programmer's model and explain register bank used in various operation modes. Also explain current program status register (CSR) of ARM processor. 8

(b) Give the differences between RISC and CISC Systems. 5

OR

6. (a) Explain the exception handling process in ARM processer in detail. Also give the vector address for each exception. 8

(b) Explain the instructions of ARM processor used for multiplication operation. 5

7. Write short notes on (Any **two**) :

(a) GPRS Protocol

(b) I^2C Protocol

(c) CAN Protocol. 14

OR

8. Explain the following communication protocol in detail (Any **two**) :

(a) IEEE 802.16

(b) IEEE 802.11

(c) Bluetooth. 14

9. (a) Draw and explain the architecture of Kernel in detail. 8

(b) What do you mean by task in Embedded System ? How can task scheduler manage the task in Kernel ? 5

OR