

**B.Tech. - VIEP - ELECTRONICS AND
COMMUNICATION ENGINEERING
(BTECVI)**

Term-End Examination

00318

June, 2018

BIEL-024 : EMBEDDED SYSTEMS DESIGN

Time : 3 hours

Maximum Marks : 70

*Note : Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted. Any missing data may be suitably assumed.*

1. (a) Draw the pin diagram of 8051. 7×2=14
- (b) How many times will this loop execute ?
START : MOV A, #01H
 JNZ START
- (c) What are the functions of the following pins of 8085 microprocessor ?
 - (i) ALE
 - (ii) HOLD
- (d) Give the meaning of the following opcodes :
 - (i) POP
 - (ii) PUSH

- (e) Mention the hardware interrupts in 8085 microprocessor in order of their priority.
- (f) What is the function of the following :
- (i) Stack Pointer Register
 - (ii) Program Counter
- (g) Explain program status word register.
2. (a) Explain memory management in RTOS with different memory allocation strategies and algorithms used in RTOS. 5
- (b) How is interrupt handling done in RTOS environment ? Explain all the three alternative systems for responding to a hardware source call on interrupts. 5
- (c) What is real time operating system and how is it different from general purpose operating system ? Discuss with examples. 4
3. (a) Draw and explain the embedded system design life cycle in detail. 7
- (b) Write short note on in-circuit emulator. 7
4. (a) Explain software and hardware interrupts. 6
- (b) Explain the following : $4 \times 2 = 8$
- (i) Compiler
 - (ii) Cross-Compiler
 - (iii) Assembler
 - (iv) Interpreter

5. (a) What is the difference between isolated I/O and memory mapped I/O ? What are advantages and disadvantages of each? 8
- (b) Explain the following : 3×2=6
- (ii) Embedded system
 - (iii) Hard RTS
 - (iv) Watchdog timer
6. (a) Draw and explain bluetooth architecture. Also give specifications. 5
- (b) What is the importance of networks in an embedded system ? What types of networks are used in an embedded system ? Also give example. 5
- (c) Differentiate between 12C bus and CAN bus protocols. 4
7. Write short notes on any *two* of the following : 2×7=14
- (a) Boundary Scan Architecture
 - (b) PIC Microcontroller
 - (c) Integrated Development Environment
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