



**EMBEDDED SYSTEMS (16EC429) QUESTION BANK**

**UNIT –I**

1. A) Explain briefly about typical characteristics of Embedded system. [CO1][L2][4M]
2. B) Define Embedded System. Classify different types of embedded systems. [CO1][L2][8M]
3. With the help of neat block diagram, Explain Architecture of Embedded System. [CO1][L1][12M]
4. A) Write short notes on a) Timers b) Clocks c) Address bus & Data bus [CO1][L2][6M]  
B) Mention various applications of Embedded System? [CO1][L1][6M]
5. What is a memory? Classify the various types of embedded memories [CO1][L2][12M]
6. A) Differentiate between SRAM & DRAM [CO1][L4][6M]  
B) Explain the purpose of embedded systems [CO1][L2][6M]
7. What is meant by a processor? Explain various types of embedded processor [CO1][L2][12M]
8. Describe the overview of design process of embedded system [CO1][L2][12M]
9. A) Mention typical feature of embedded systems [CO1][L2][4M]  
B) Write a short note about the following  
i) Cross-assembler ii) IDE iii) Prototyper iv) Linker [CO1][L2][8M]
10. A) Explain various programming languages used for the development of embedded systems [CO1][L2][6M]  
B) Explain various tools used for the development of embedded systems [CO1][L2][6M]

**UNIT-II**

1. Describe RISC & CISC design philosophy in detail [CO2][L2][12M]
2. Briefly explain about memory architectures in embedded systems [CO2][L2][12M]
3. What is a Sensor? Classify various types of sensors used in embedded systems [CO2][L2][12M]
4. What is a Actuator? Classify various types of actuators used in embedded systems [CO2][L2][12M]
5. A) Write short notes on  
i) Brownout protection ii) Real Time Clock. [CO2][L2][4M]  
B) Explain in brief about the following communication interfaces [CO2][L2][8M]  
i) SPI ii) I2C
6. A) Explain in brief about the following communication interfaces [CO2][L2][8M]  
i) UART ii) 1-Wire Interface  
B) Write short notes on  
i) Reset circuit ii) Oscillator [CO2][L2][4M]
7. A) Explain in brief about the following communication interfaces [CO2][L2][8M]  
i) Parallel Interface ii) RS-232 & RS-485  
B) Write short notes on  
i) Watchdog timer ii) Embedded firmware [CO2][L2][4M]
8. Explain in brief about the following communication interfaces [CO2][L2][12M]  
a) USB b) IEEE 1394
9. Explain in brief about the following communication interfaces [CO2][L2][12M]  
a) IrDA b) Bluetooth
10. Explain in brief about the following communication interfaces [CO2][L2][12M]  
a) Wi-Fi b) Zigbee

### UNIT-III

1. A) What is Arduino UNO board? Explain overview of arduino UNO board. [CO3][L2][8M]  
B) Explain in brief about the Arduino platform. [CO3][L2][4M]
2. A) Mention the features of Timer present in ATmega328/P microcontroller [CO3][L2][6M]  
B) List out the features of ATmega328/P Microcontroller [CO3][L1][6M]
3. With neat sketch, explain block diagram of ATmega328/P Microcontroller [CO3][L3][12M]
4. With neat sketch, explain pin diagram of ATmega328/P Microcontroller [CO3][L3][12M]
5. A) What is Interrupt vector? Explain about the interrupts in ATmega328/P  $\mu$ C. [CO3][L2][6M]  
B) Define I/O port? Explain about various I/O ports of ATmega328/P  $\mu$ C [CO3][L2][6M]
6. A) What is Serial port? Explain about the Serial port in ATmega328/P  $\mu$ C. [CO3][L2][6M]  
B) What is ADC? Explain in brief of ADC module in ATmega328/P  $\mu$ C [CO3][L2][6M]
7. Define PWM? Explain how PWM signals are generated in ATmega328/P  $\mu$ C [CO3][L2][12M]
8. A) Mention the features of ADC module in ATmega328/P  $\mu$ C [CO3][L2][6M]  
B) Mention the features of USART module in ATmega328/P  $\mu$ C [CO3][L2][6M]
9. A) What is USART? Explain in brief about USART in ATmega328/P  $\mu$ C [CO3][L2][8M]  
B) Mention the use of PWM signals with an example. [CO3][L5][4M]
10. Define Interrupt. Explain about internal and external interrupts of ATmega328/P  $\mu$ C [CO3][L2][12M]

### UNIT-IV

1. A) Explain about the Arduino programming control structures with an example [CO4][L2][8M]  
B) Explain about the comparison operators with an example. [CO4][L2][4M]
2. Explain the functions of digital I/O, analog I/O & advanced I/O in Arduino programming, with an example. [CO4][L2][12M]
3. A) Explain about various data types of Arduino programming with an example [CO4][L1][8M]  
B) Explain about various Constants of Arduino programming [CO4][L1][4M]
4. A) Explain the following elements of Arduino programming [CO4][L1][8M]  
i) Sketch ii) Further Syntax [CO4][L1][8M]  
B) Explain about the arithmetic operators with an example. [CO4][L2][4M]
5. Explain following operators in Arduino programming with an example [CO4][L3][12M]  
i) Boolean operators ii) Pointer access operators iii) Bitwise operators
6. Explain following elements of Arduino programming with an example [CO4][L3][12M]  
i) Interrupts ii) External interrupts iii) Communication iv) USB
7. Explain following elements of Arduino programming with an example [CO4][L2][12M]  
i) Variable scope & Qualifiers ii) Utilities iii) Conversion
8. Explain following elements of Arduino programming to perform computations [CO4][L2][12M]  
i) Math ii) Time iii) Trigonometry iv) Random numbers
9. A) Explain about various functions of characters in Arduino programming [CO4][L2][6M]  
B) Explain about operators in Arduino programming with an example [CO4][L2][6M]
10. A) Write a Arduino program to display digital sensor value in serial monitor [CO4][L5][6M]  
B) Write a Arduino program to display "Hello world" value in LCD [CO4][L5][6M]

