

# KADI SARVA VISHWAVIDYALAYA

B.E SEMESTER - V EXAMINATION (NOV/ 2016)

SUBJECT CODE: EC - 502  
DATE: 11/11/2016

SUBJECT NAME: Microcontrollers and Interfacing  
TIME: 10:30 TO 1:30  
TOTAL MARKS: 70

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Instructions:

1. Answer each section in separate Answer Sheet.
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted along with its respective question number.
5. Use the last page of main supplementary for rough work.

## Section - 1

Q: 1

- (A) Explain Block diagram of 8051 Microcontroller. **05**
- (B) Describe the function and format of PSW. **05**
- (C) Explain organization of internal RAM of 8051 microcontroller in detail **05**  
**OR**
- (C) Explain the difference between microprocessor and microcontroller. **05**

Q: 2

- (A) Describe following instructions with example. **05**  
(1) MOVC A,@A+DPTR (2) RLC A
- (B) Draw Timer/Counter control logic diagram and Explain it **05**  
**OR**
- (A) Describe the function and format of TMOD. **05**
- (B) How many ports are there in 8051? Draw the structure of any two ports & Explain. **05**

Q: 3

- (A) Explain function of following pins of 8051 (1) ALE (2) EA (3) RST (4) PSEN **05**
- (B) Describe the function and format of SCON. **05**  
**OR**
- (A) Explain different addressing modes of 8051 with suitable example. **05**
- (B) Write an assembly language program to generate a square wave of 2 KHz  
With Timer 0 on port P2.0 of 8051. Assume crystal frequency = 11.0592 MHz **05**

## Section -2

Q: 4

- (A) Write an assembly language program to copy word 'LDRP ITR' to External RAM Location starting from 5000H 05
- (B) Write an assembly language program to divide the content of External memory Location 4000h by the content of internal memory location 30h. Store the Quotient in R3 and remainder in R4. 05
- (C) Write a C language program to convert HEX number into Decimal number. 05
- OR**
- (C) Write a program to copy the content of code memory 10H to 20H to External Data memory 10H to 20H. 05

Q: 5

- (A) Draw and Explain Clock and Reset circuit for 8051. 05
- (B) Explain interrupt mechanism in 8051. 05
- OR**
- (A) Define Baud Rate. Explain how data is transferred serially in 8051. 05
- (B) Draw LCD interfacing with 8051 and also Write an assembly language program to Display IN 1<sup>ST</sup> LINE "WEL COME" 05

Q:6

Answer the following Question.

- (A) Draw and Explain Seven segment interfacing with 8051 also write a program to Display "0 to 5" Number on seven segment display 05
- (B) Draw and Explain interfacing of ADC0804 with 8051 05
- OR**
- (A) Write short note on RTC 12887. 05
- (B) Draw interfacing diagram of temperature sensor (LM35) with 8051. 05

-----All the Best -----

**KADI SARVA VISHWAVIDYALAYA**  
**B.E. SEMESTER 5<sup>TH</sup> EXAMINATION APRIL-2015**

**SUBJECT CODE: EC-502**

**SUBJECT NAME : MICROCONTROLLER & INTERFACING**

**DATE: 21/04/2015**

**TIME: 10.30 AM To 01.30 PM**

**TOTAL MARKS: 70**

**Instructions:**

1. Answer Each Section in Separate Answer sheet.
2. Use of Scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted along with its respective question number.
5. Use the last page of supplementary for rough work.

**SECTION-1**

**Q.1 (A) Explain Difference between Microprocessor and Microcontroller. [05]**

**(B) Explain PSW (Program Status Word) of 8051 microcontroller with example. [05]**

**(C) Explain Addressing Modes of 8051 Microcontroller with suitable examples. [05]**

**OR**

**(C) Draw only Pin Diagram of 8051 Microcontroller. [05]**

**Q.2 (A) Explain the Features of 8051 Microcontroller. [05]**

**(B) Explain Following Instruction (Any Five). [05]**

1) DIV AB

2) RRC A

3) MOV A,@R0

4) DJNZ R0,Lable

5) MOV A,35H

6) MOVX A,@R1

**OR**

**Q.2 (A) Draw & Explain TMOD and TCON Register. [05]**

**(B) Explain Following Functions (Any Five). [05]**

1) AD0 to AD7

2) EA

3) VCC & VSS

4) RESET

5) DPTR

6) ALE

**Q-3 (A) Write program to generate square wave on port pin P3.7with frequency of 5 KHz and duty cycle 50%. Use timer interrupt. Use timer 1 in mode 1. Assume crystal frequency 11.0592 Mhz. [05]**

**(B) Explain Different Types of Jump Instruction with Suitable Example. [05]**

**OR**

**Q-3 (A) Describe SCON & PCON Special Function Register. [05]**

**(B) Write a Short note on Serial Communication. [05]**

## **SECTION-2**

- Q.4 (A)** Explain interfacing of LCD with 8051 microcontroller. [05]  
**(B)** Write a Assembly Language Program to display “KSV UNIVERSITY” on LCD Screen. (1<sup>st</sup> Line, 4<sup>th</sup> Position) [05]  
**(C)** Write a C program to add two sixteen bit Numbers 1234H and 5678H. [05]

**OR**

- (C)** Explain CALL and RETURN Instruction with Suitable Example. [05]

- Q.5 (A)** Explain 8051 interfacing with DAC 0808 (Digital to Analog Converter). [05]  
**(B)** Explain 8051 Interfacing with RTC (Real Time Clock). [05]

**OR**

- Q.5 (A)** Write an assembly as well as C program to transfer the message “ELECTION” serially at 2400 baud, 8-bit data, and 1 stop bit. Perform this program for 25 times.  
**(B)** Explain interrupt enable (IE) SFR and Interrupt priority (IP) SFR. [05]

- Q-6 (A)** Explain interfacing of stepper motor with microcontroller. [05]  
**(B)** Explain interfacing of External 8K EPROM and 4K RAM with 8051microcontroller. Draw circuit diagram. [05]

**OR**

- Q-6 (A)** Draw and explain interfacing of 4x4 matrix keyboards with 8051 Microcontroller.  
**(B)** Explain Different Types of Memory. [05]

**-----ALL THE BEST -----**

**KADI SARVA VISHWAVIDHYALAYA**  
**BE Semester V Electronics & Communication Dept.**  
**Examination – November- 2015**

**Sub code: EC-502**  
**Date: 21/11/2015**

**Sub Name: Microcontroller & Interfacing**  
**Total Marks: 70**  
**Time: 10:30am to 01:30pm**

**Instructions:**

1. Answer Each Section in Separate Answer sheet.
2. Use of Scientific Calculator is permitted.
3. All questions are separate.
4. Indicate clearly, the options you attempted along with its respective question number.
5. Use the last page of supplementary for rough work.

**SECTION I**

- Q.1 (a)** Draw block diagram of 8051. [05]
- (b) Define : 1. Loop 2. Look up table [05]
- (c) Draw pin diagram of 8051. [05]
- OR**
- (c) Explain: 1) RRC A and RR A 2) RLC A and RL A [05]
- Q.2 (a)** Draw and explain Flag register. [05]
- (b) List out all addressing modes of 8051 and explain any one. [05]
- OR**
- Q.2 (a)** Explain TMOD Register for Mode 2. [05]
- (b) Explain RAM organization of 8051. [05]
- Q-3 (a)** Write an 8051 Program to generate square wave of 50% duty cycle on P1.5 bit . [05]
- (b) Write an 8051 Program to find sum of three BCD data stored in RAM location starting from 40H. The result must be in BCD. [05]
- OR**
- Q-3 (a)** Write an 8051 Program to convert the given ASCII to hexadicimal number. [05]
- (b) Write an 8051 Program to transfer a letter 'Y' serially at 9600 baud continuously and also send a letter 'N' through port 0, which is connected to a display device. [05]

## SECTION II

- Q.4 (a)** Write status of Accumulator after execution of following code. [05]

MOV A,#85H  
SWAP A  
ANL A,#0F0H

- (b)** Write all logical instructions and explain any one in detail with example. [05]
- (c)** A switch is connected to pin 2.7. Write a program to monitor the status of SW and perform the following: [05]  
a) If SW = 0, the stepper motor moves clockwise.  
b) If SW = 1, the stepper motor moves counterclockwise.

**OR**

- (c)** Explain port 3 of 8051 in detail. [05]
- Q.5 (a)** Explain call and return with example. [05]
- (b)** Write interrupt vector table for 8051. [05]

**OR**

- Q.5 (a)** Define simplex, half-duplex, full duplex, baud rate and bps. [05]
- (b)** Draw IP and IE register. [05]
- Q-6 (a)** Draw and explain ADC device interfacing. [05]
- (b)** Write an 8051 program for LCD interfacing. [05]

**OR**

- Q-6(a)** Write an 8051 program for key board and design it. [05]
- (b)** Write an 8051 program for driving a Relay and design it. [05]

**KADI SARVA VISHWAVIDYALAYA**  
**B.E. SEMESTER 5TH EXAMINATION NOVEMBER-2014**

**SUBJECT CODE:** Microcontroller & Interfacing

**TIME:10.30 AM To 01.30 PM**

**SUBJECT NAME :** EC - 502

**DATE:** 14/11/2014

**TOTAL MARKS: 70**

**Instructions:**

1. Answer Each Section in Separate Answer sheet.
2. Use of Scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate clearly, the options you attempted along with its respective question number.
5. Use the last page of supplementary for rough work.

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**SECTION-1**

- Q.1 (A)** Draw architecture of 8051 and explain it in brief. [07]  
**(B)** Write a difference between microprocessor and microcontroller. [03]  
**(C)** Explain addressing modes of 8051 with example. [05]
- OR**
- (C)** Draw and explain Pin configuration for Port-1 and Port-3 of 8051. [05]

- Q.2 (A)** Answer the following questions. [05]
1. Why we need crystal frequency of 11.0592 MHz for serial data Communication.
  2. Why does port 0 need pull up resistors?
  3. The initialize content of stack is 07H when microcontroller is reset. Why?
  4. Give the pin description of 8051 (1) ALE (2) EA
  5. Exchange the content of R0 and The R1.

- (B)** Explain organization of internal RAM of 8051 microcontroller in details. [05]

**OR**

- Q.2 (A)** Draw and explain following SFR in brief. [05]  
(1) PSW (2) TMOD  
**(B)** Write short note on Serial Communication of 8051. [05]

- Q.3 (A)** Write an assembly language program to generate square wave of 1 KHz on P1.1 using [05]  
Timer 0, Mode 1. Assume crystal frequency = 11.0592 MHz  
**(B)** Write an assembly language program to count no of 1's in 16 bit no stored in DPTR. [05]

**OR**

- Q.3 (A)** Write an assembly language program to find a square of a 8 –bit number using Look-up [05]  
Table method.  
**(B)** Write an assembly language program to divide the content of External memory [05]  
location 1000h by the content of internal memory Location 25h. Store the quotient in  
R0 and reminder in R1.

## SECTION-2

QUESTION PAPER

- Q.4 (A)** Draw LCD interfacing with 8051. Write assembly language program to display IN 1ST LINE [07]  
"LDRP"  
**(B)** Draw external memory interfacing diagram for 32K EPROM and 8K RAM with 8051. [03]  
**(C)** Draw and Explain interfacing of ADC 0804 with 8051. [05]

**OR**

- (C)** Draw and explain interfacing of DAC0808 with 8051. [05]

- Q.5 (A)** Describe following instructions [1] MOVX A,@DPTR [2] SWAP A [3] CPL A [4] SETB P0.1 [05]  
[5] RL A  
**(B)** Write an assembly language program to multiply two data 62H and 44H. Store answers [05]  
LSB in RAM location 40H and MSB in 41H.

**OR**

- Q.5 (A)** Describe following instructions with example.  
(1) MOVC A, @A+DPTR (2) CJNE R1,#n,addr [05]  
**(B)** What is ISR? Describe various types of interrupt in 8051. [05]

- Q.6 (A)** Draw and explain interfacing of RTC12887 with 8051. [05]  
**(B)** Draw and explain interfacing of Stepper motor with 8051. [05]

**OR**

- Q.6 (A)** Answer the following questions. [05]  
(1) Dual role of PORT2.  
(2) How to initialize port1 as input and port 2 as output.  
(3) What is advantage in using EQU directives to define a constant value?  
(4) Up on reset ,all the bits of ports are configured as \_\_\_\_\_ (input / output)  
(5) Limitation of Resistor indirect addressing mode in the 8051.  
**(B)** Draw and explain Relay interfacing with 8051. [05]

-----ALL THE BEST-----

**KADI SARVA VISHWAVIDHYALAYA**

**B.E. SEMESTER V EXAMINATION (NOV 2015)**

**Subject Code:-EE-503**

**Subject Name:- Microprocessor and Interfacing**

**Date:-23/11/2015**

**Time:-10:30 a.m TO 1:30 p.m**

**Total Marks - 70**

**Instructions:**

1. Answer each section in separate answer sheet.
2. Use of scientific calculator is permitted.
3. All the questions are compulsory.
4. Indicate clearly, the options you attempt along with its respective question number.
5. Use the last page of main supplementary for rough work.

**Section-1**

**Q-1. (All Compulsory)**

- (A) (1) The memory address of the last location of a 1K byte memory chip is given as FBFFH. Specify the starting address. 05  
(2) Specify the crystal frequency required for an 8085 system to operate at 1.1MHz. 05
- (B) Some of the pins of 8085 are listed below. Mention function of each. 05  
(1) ALE (2) HOLD (3) SID (4) READY (5) S0, S1
- (C) Write detailed note on memory classification. 05
- OR**
- (C) What is demultiplexing? How it is done in microprocessor 8085 for address and data bus? Explain with neat diagram. 05

**Q-2 Answer the following questions.**

- (A) What are the control signals? How do we generate them? Give their importance with diagram. 05
- (B) Distinguish between the following pairs of instructions. 05  
(i) RAL and RLC  
(ii) JMP 1000H and CALL 1000H
- OR**

- (A) Write an Assembly language program (ALP) to Load 59D (decimal) in accumulator. Increment it by 1 and store the result in the memory location 2041H. 05
- (B) Draw and explain programming model of 8085 microprocessor. Explain working of 16 bit registers. 05

**Q-3 Answer the following questions.**

- (A) Point out that following instructions are valid or invalid. Correct the invalid instructions. 05

- (B) (i)MVI AB (ii) LDA BD (iii) MOV 05 (iv) ADD A,B (v)STA C  
(B) Write an **Assembly language program (ALP)** to add two numbers F0H and 20H. Then add the result to 30H **with carry**.

**OR**

- (A) What is **instruction cycle**? Explain using waveforms the **fetch & execute** cycle with reference of clock. 05  
(B) What is **A-to-D conversion**? How does it happen? Explain with example. 05

**Section – 2**

**Q-4. (All Compulsory)**

- (A) Show the **register contents** as each of the following instructions is being executed. 05

MVI C, FFH Content of C = \_\_\_\_\_

LXI H, 2070 H Content of H = \_\_\_\_\_ and L = \_\_\_\_\_

LXI D, 2070 H Content of D = \_\_\_\_\_ and E = \_\_\_\_\_

MOV M, C

LDA 2070H Content of A = \_\_\_\_\_

RST5

- (B) What is **stack and stack pointer**? Explain the working and use of stack in subroutine program. 05

- (C) Draw and explain the **logical block diagram of the 8251** with functions of each block. 05

**OR**

- (C) Compare **serial and parallel data transfer**. 05

**Q-5 Answer the following questions.**

- (A) Explain (i) T-state (ii) Machine cycle (iii) Instruction cycle. 05  
(B) Explain the **Addressing modes** supported by 8085 by giving suitable examples. 05

**OR**

- (A) Draw the functional block diagram of **IC 8255** and List the operating modes. 05

- (B) What is **interfacing**? How is it done? State the significance of a control word. 05

**Q-6 Answer the following questions.**

- (A) Write a note on **status flag register**. 05  
(B) Explain the function of **RIM** and **SIM** instructions. 05

**OR**

- (A) Explain the initialization of **8259** interrupt controller. 05

- (B) Explain with block diagram the function of **8254** programmable interval timer. 05

\*\*\*\*\* ALL THE BEST \*\*\*\*\*