



Reg. No. :

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## Question Paper Code : X 20490

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020

Fifth/Sixth Semester

Electrical and Electronics Engineering

EE 6502 – MICROPROCESSORS AND MICROCONTROLLERS

(Common to Electronics and Instrumentation Engineering/ Instrumentation and Control Engineering and Robotics and Automation Engineering)

(Regulations 2013)

(Common to : PTEE 6502 – Microprocessors and Microcontrollers for B.E.

(Part-Time) – Electrical and Electronics Engineering –

Fourth Semester – (Regulations – 2014))

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. What is the use of stack pointer ?
2. Mention the use of ALE.
3. What is a recursive procedures ?
4. Define stack and stack related instructions.
5. Classify the addressing modes of 8051 microcontroller.
6. List any four special function registers.
7. Draw the command word format of 8255 in I/O mode.
8. List some of the features of 8259 Programmable Interrupt Controller.
9. What is baud rate ?
10. What is duty cycle in PWM ?

PART – B

(5×13=65 Marks)

11. a) i) Explain the interrupt structure of 8085 microprocessor. (7)  
ii) With pin diagram explain 8085 microprocessor. (6)
- (OR)
- b) i) Explain the registers of 8085 microprocessor. (7)  
ii) What is meant by memory interfacing ? Explain with an example. (6)



12. a) i) Explain the addressing modes of 8085 microprocessor with example for each. (7)
- ii) Write a 8085 assembly language program to divide a 8 bit number by another 8 bit number and store the remainder and quotient in memory locations 4252 and 4253 respectively. (6)
- (OR)
- b) Write an 8085 assembly language program to solve the following equation :  $Z = 2X + Y$  where X and Y are stored in memory locations 4200 and 4201 respectively. The value of Y should be stored in 4202 (Lower byte) and 4203 (higher byte).
13. a) i) Draw the data memory structure of 8051 microcontroller and explain. (7)
- ii) Explain with block diagram, how to access external memory devices in an 8051 based system. (6)
- (OR)
- b) Discuss in detail, the hardware and software support provided by 8051 for serial communication. (13)
14. a) i) Explain the working of 8254 timer with a neat block diagram and its command word format. (7)
- ii) Explain the working of 8259 with a neat block diagram. (6)
- (OR)
- b) Explain the working of 8279 as a keyboard/display controller and explain its command registers and their functions. (13)
15. a) Explain with a neat diagram the closed loop control of servo motor using microcontroller. (13)
- (OR)
- b) A switch is connected to pin P2.7, write a ALP to monitor the status of switch and perform the following :
- i) if sw = 0 stepper motor moves clockwise (7)
- ii) if sw = 1 stepper motor moves counter clockwise. (6)

**PART – C****(1×15=15 Marks)**

16. a) With a neat circuit diagram explain how a  $4 \times 4$  keypad is interfaced with 8051 microcontroller and write 8051 ALP for keypad scanning.
- (OR)
- b) Draw the schematic for interfacing a stepper motor with 8051 microcontroller and write 8051 ALP for changing speed and direction of motor.