

4. Matching type item with multiple choice code

CO3 [K₂]

List I	List II
A. RB0	i. Parallel Slave Port bit
B. RC6	ii. External interrupt input bit
C. RD5	iii. Write control input bit
D. RE1	iv. USART asynchronous transmit bit

- a) A-ii, B-i, C-iii, D-iv b) A-iii, B-iv, C-ii, D-i
c) A-ii, B-iv, C-i, D-iii d) A-iii, B-i, C-ii, D-iv

5. Which timer is used to turn off the mobile display when there is no GUI interaction?

CO3 [K₂]

- a) RTC b) Watchdog timer
c) Hardware timer d) Software timer

6. A communication protocol specifies the

CO4 [K₂]

- a) Interrupt service mechanism b) Memory requirement during communication
c) Minimum rate of data transfer during communication d) Ways of arbitration when several devices need to communicate through the bus

7. **Assertion (A):** Port 1 is called as “quasi – bidirectional” port.

CO2 [K₂]

Reason (R): The output of Port 1 is pulled high with pull up resistors.

- a) Both A and R are correct, R is correct explanation of A b) Both A and R are correct, but R is not correct explanation of A
c) A is correct R is wrong d) A is wrong R is correct

8. The microcontroller can access the Keypad through_____

CO5 [K₂]

- a) Ports b) Timers
c) Serial communication d) Memory

9. Which of the following register(s) is/are used to implement indirect addressing mode in PIC microcontroller?

CO3 [K₂]

1. FSR
2. W register
3. INDF register
4. OPTION register

- a) 1,3 b) 2
c) 1,2 d) 1,2,3

10. Select the correct sequence for compare mode operation in PIC microcontroller CO4 [K₂]
1. Select the Timer or Timer mode to operate.
 2. Enable the special event trigger pin.
 3. Configure CCP pin.
- a) 2-1-3 b) 1-2-3
- c) 3-2-1 d) 3-1-2

PART B (10 x 2 = 20 Marks)

11. List the single bit instructions in 8051. CO1 [K₂]
12. Name any four peripheral devices in 8051. CO1 [K₂]
13. Infer the importance of writing programs in embedded C. CO2 [K₂]
14. Mention the features PIC16F877A. CO3 [K₂]
15. Classify the types of reset available in PIC16F877A. CO3 [K₂]
16. Construct the frame format of OPTION Register in PIC16F877A timer. CO3 [K₂]
17. Develop an embedded C program to turn ON and OFF the LEDs with delay in Port B of PIC16F877A. CO4 [K₃]
18. Build the schematic of temperature sensor interfacing with PIC. CO4 [K₃]
19. Compare actuators and sensors. CO5 [K₂]
20. Draw the schematic of Automated Teller Machine. CO5 [K₂]

PART C (6 x 5 = 30 Marks)

21. Classify and explain the data transfer and logic instructions available in 8051. CO1 [K₂]
22. Develop an embedded C program to blink alternate LEDs in PORT1 using timer programming. CO2 [K₃]
23. Explain the Program memory organization in PIC microcontroller. CO3 [K₂]
24. Write a program to create a delay of 2 second using Timer1. Assume other necessary data. CO4 [K₃]
25. Explain the interfacing of temperature sensor using PIC microcontroller with a neat sketch. CO5 [K₂]

26. Illustrate the interfacing of keypad with PIC microcontroller. CO4 [K₂]

Answer any FOUR Questions
PART D (4 x 10 = 40 Marks)

27. Explain the architecture of 8051 with a neat block diagram. CO1 [K₂]

28. Illustrate and explain the pin configuration of PIC16F877A. CO3 [K₂]

29. Describe the working of I²C bus in PIC16F877A. CO3 [K₂]

30. Demonstrate the working of closed loop control of DC motor with a neat diagram using PIC microcontroller. CO4 [K₂]

31. Explain the construction and working of ticket vending machine in detail with necessary diagram. CO5 [K₂]
