

- N.B. :** (1) Answer any **four** questions.
(2) **Figures** to the right indicate **full** marks.

- Q.1** Write short notes on any four of the following **20**
- a) Embedded system
 - b) Data types in C
 - c) Photo detector circuit
 - d) CISC and RISC architecture
 - e) Resolution of 20 bit ADC
- Q.2(a)** Distinguish between general purpose computer and embedded system. **10**
- Q.2(b)** Microcontroller 8751 has two timers of 16 bit each. Generate timer out pulse for every 10 seconds assuming clock frequency to be 10 MHz. **10**
- Q.3(a)** What is the syntax for if - else statement? Give appropriate example. **10**
- Q.3(b)** Write a program to find $n! / k! (n-k)!$ by using function and explain program execution steps. **10**
- Q.4(a)** Explain different addressing modes used in PIC microcontrollers. **10**
- Q.4(b)** Write a program to monitor bit PC5.If it is HIGH, send 55H to port B; otherwise send AAH to Port D. **10**
- Q.5(a)** What is sigma-delta ADC? **10**
- Q.5(b)** Input to a bio-potential amplifier is 1 mV superposed over 80 mV of electrode potential. Find the output of the amplifier for a gain of 500, assuming saturation level of the amplifier to be ± 4 V. **10**
- Q.6(a)** Explain the construction and advantages of AFE 4490 for spO2 monitoring. **10**
- Q.6(b)** Explain task synchronization in RTOS. **10**
