Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University), Coimbatore – 641 043

Master's Degree Examination –November 2018
Semester-I

Class : I M.Sc. **Time: 3 hours**
Major : Physics **Max. Marks: 60**

17MPHC05- Advanced Electronics

Part A **10 x 1/2 = 5**

Choose the correct answer

1. The Barkhausen criterion for oscillations is given by
   a. Aβ>1 b. Aβ=1 c. Aβ<1 d. 1-Aβ=∞
2. The signal voltage is compared with ---------- in a comparator
   a. bias voltage b. output voltage c. reference voltage d. feedback voltage
3. A two stage transistor amplifier in which the output of one fed to the input of the other is called as
   a. ring counter b. multivibrator c. shift register d. ripple counter
4. The flip- flop that will change the state on successive clock pulses is called as
   a. T flip-flop b. D flip-flop c. JK flip-flop d. RS flip-flop
5. The process of combining multiple signals into one, in such a manner that each individual signal can be retrieved at the destination is called
   a. modulation b. decoding c. multiplexing d. demodulation
6. In which of the following schemes, numerous signals are combined for transmission on a single communication channel?
   a. FDM b. PPM c. PCM d. PWM
7. The total number of pins in 8051 is
   a. 58 b. 84 c. 68 d.40
8. The 16 bit register in 8051 is
   a. program counter b. program status word c. stack pointer d. Accumulator
9. 8051 has ------ arithmetic flags
   a. 4 b. 5 c. 3 d. 6
10. The instruction which clears each bit of register A to zero is
    a. CLR A,0 b. CLR A c. CLA 0 d. CPL A,0

Part B **5 x 4 = 20**

Answer ALL questions

Each answer should not exceed 200 words or one page

11.a. Discuss the frequency response of an operational amplifier.

(Or)

11.b. Describe the working of op – amp as an adder.

12.a. Explain how square waves are generated using Schmitt trigger.

(Or)

12.b. Describe the working of R-S flip-flop using NAND gates.

13.a. Describe the generation of pulse code modulation signals.

(Or)

13.b. Explain in detail about delta modulation.

14.a. List the major differences between microprocessor and microcontroller.

(Or)

14.b. Explain the counters and timers in 8051 microcontroller.

15.a. Write an assembly language program for addition using 8051 microcontroller.

(Or)

15.b. Write an assembly language program for multiplication using 8051.

Part C **5 x 7 = 35**

Answer ALL questions

Each answer should not exceed 600 words or three pages

16.a. Explain the operation of a differential amplifier using an op – amp with a neat diagram.

(Or)

16.b. Describe the internal architecture of 555 timer with a diagram.

17.a. Explain the method of designing a decade counter.

(Or)

17.b. Describe the working of a shift register with waveforms.

18.a. Discuss about pulse amplitude modulation and pulse width modulation in detail.

(Or)

18.b. What is frequency shift keying? Discuss FSK demodulation in detail.

19.a. Explain the internal architecture of Intel 8051 with a block diagram.

(Or)

19.b. Discuss about the input, output pins, ports and circuits of Intel 8051.

20.a. Describe the various addressing modes of 8051 microcontroller with examples.

(Or)

20.b. Explain the instruction types of 8051 with examples

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