2017

ELECTRONICS

[General]

PAPER – IV (A + B)(Theory)

Full Marks : 65

Time : 3 hours

The figures in the right hand margin indicate marks

[OLD SYLLABUS]

Paper – IVA

(Communication Electronics and Microwave)

Answer any one question form Group-A and two question each from Group-B and C respectively

GROUP – A

Answer any one question :

1. (*a*) Draw the equivalent circuit of two wire transmission line.

(*b*) Deduce telegraphar's equation.

(*c*) Define primary constants and secondary constants of a transmission line.

$$2\frac{1}{2}+7+\left(1\frac{1}{2}+1\frac{1}{2}\right)$$

2. (*a*) Find different components of E & H field inside a hollow rectangular waveguide when TE mode of propagation takes place.

(*b*) Why TEM mode can not propagate through a rectangular wave guide ?

$$10+2\frac{1}{2}$$

GROUP–B

Answer any **two** questions :

3. (*a*) Show that band width required for a AM wave is $2\,w_m$, where w_m is the frequency of modulating signal.

(*b*) The total power content of an AM signal is 1000W. Determine the power being transmitted at each carriea frequency and each of the side band when the modulation is 100%.

$$4+(2+2)$$

4. A TE_{10} wave at 10 GHz propagates in a rectangular wave guide ($a = 2{\cdot}5$ cm and $b = 1{\cdot}25$ cm) filled with teflon having $\epsilon_r = 2{\cdot}4$. Determine : (*i*) the phase constant (*ii*) the guided wave length (*iii*) the plase velocity of the wave, (*iv*) the percent bandwidth for single mode propagation in terms of cut-off frequency of dominant mode and first higher order mode. 2 + 2 + 2 + 2

5. (*a*) Define (*i*) antenna gain (*ii*) antenna efficiency (*iii*) beam width and (*iv*) effective apperture.

   (*b*) Find the input impedance of a short circuited transmission line. (1 + 1 + 1 + 1) + 4

GROUP–C

Answer any **two** questions :

6. Define skip distance and maximum useable frequency. 2 + 2

7. What are Simplex and Half Duplex communication systems ? 2 + 2

8. Write short note on any *one* : 4

   (*i*) Hybrid Junction

   (*ii*) Direction Couplar.

Paper – IVB

(*Microprocessors and their applications*)

Answer any **one** question each form every Group

GROUP – A

Answer any **one** question :

9. (*a*) How are address and data buses demultiplexed ?

   (*b*) Write down the names of flag register of 8085 microprocessor. $(4 + 4) + 3\frac{1}{2}$

10. (*a*) With the timing diagram explain how an instruction can be fetched from memory.

(*b*) What are general purpose register's ? $8 + 3\frac{1}{2}$

GROUP–B

Answer any **one** question :

11. Write short notes on : $2 + 2 + 2 + 2$

(*i*) Static RAM

(*ii*) Dynamic RAM

(*iii*) EEROM and

(*iv*) EPROM.

12. (*a*) What are tri state buffer and compiler ?

(*b*) What are High and Low level language ?

$(2 + 2) + (2 + 2)$

GROUP–C

Answer any **one** question :

13. What is the role of stack in microprocessor ? What are PUSH and POP Instructions ? $2 + (1 + 1)$

14. Explain 'Interupts' in 8085 microprocessor with an example. 4

[Internal *Assessment* : 5 Marks]

OLD

Part-III *3-Tier*

2017

ELECTRONICS

(General)

PAPER—IVC

(PRACTICAL)

Full Marks : 15

Time : $1\frac{1}{2}$ Hours

The figures in the margin indicate full Marks.

Two experiments are to be performed,
Experiments will be selected by Lucky Draw.

2×5

1. Write an assembly language programme using μp 8085 to add one 8 bit number with one 16 bit number. Store the result in specified memory locations.

2. Write an assembly language programme using μp 8085 to find the even numbers from a series of data. Store the result.

3. Write an assembly language programme using μp8085 to subtract the hex number stored at the memory location XX01H from the hex content of XX00H and store the result at XX02H.

4. Write an assembly language program using μp 8085 to multiply one 8-bit number with another 8-bit number stored at two consequtive memory locations using shift and add method. Store the result at some other memeory location.

5. Write an assembly language programme using μp 8085 to arrange 05-bytes of data in ascending order.

6. Write an assembly language programme using μp 8085 to count the number of 4's in the content of B register and store the count in D register.

7. Write an assembly language programme using μp 8085 to transfer a block of data stored in memory location

XX50H to XX5FH. The data are to be stored from the location starting from XX70H to XX7FH in same order.

8. Write an assembly language programme *using μp* 8085 to transfer a block of data stored in memory location XX50H to XX5FH. The data are to be stored from the location starting from XX70H to XX7FH in reverse order.

9. Write an assembly language programme using μp 8085 to tsimulate a digital clock.

Distribution of Marks

		Marks
Experiment (5 + 5)	:	10
Viva-Voce	:	3
Laboratory Note Book	:	2
Total	:	15