Seat No. : _____

MI-102

March-2019

B.Sc., Sem.-III

202 : Electronics

Time : 2:30 Hours]   [Max. Marks : 70

Note : Symbols used have their meanings as usual.

1. (a) (i) Show that the tapped anti-resonance circuit can be used for impedance transformation. **7**

    (ii) Explain working of magnetically coupled circuit. Show that for this circuit the co-efficient of coupling can be given as $K = \dfrac{M}{\sqrt{L_1 L_2}}$ **7**

OR

    (i) Explain how a reactance T network can be used for impedance transformation. Derive equation of critical coupling.

    (ii) Explain reactance L-section for impedance transformation.

    (b) Answer following short questions in **one** sentence : (any **4** from **6**) **4**

    (1) What is the condition of critical coupling ?

    (2) Define co-efficient of coupling.

    (3) What is mutual inductance ?

    (4) When a network can be said as matched on an image basis ?

    (5) Why parallel LC circuit is used as power absorbing load on a generator with large internal resistance ?

    (6) Why it is customary to use an iron core transformer at Audio frequencies for transformation of impedances ?

2. (a) (i) What do you understand by wave shaping ? Explain Linear wave shaping and non linear wave shaping. **7**

    (ii) Give response of High pass RC circuit to square wave input. **7**

OR

    (i) What do you understand by Filters ? Explain the neper and the decibel and explain relation between the two.

    (ii) Derive equation for the characteristic impedance of a symmetrical T-section.

(b)   Answer following short questions in **one** sentence : (any **4** from **6**)   **4**

(1)   What does Weber Fechner law states ?

(2)   Nepers is the convenient measure of the power losses or gains of network.. Which equation is it represented by ?

(3)   How decibel "db" is defined ?

(4)   What do you understand by symmetrical networks ?

(5)   What is a square wave ?

(6)   What is cut off frequency in terms of R and C in case of High Pass RC circuit ?

3.   (a)   (i)   Give circuit diagram, truth table and logic equations for sum and carry for full-adder.   **7**

(ii)   Give brief explanation of Adder-Subtractor with diagram.   **7**

OR

(i)   Give functional diagram of a 555 timer and explain its monostable operation.

(ii)   Explain the Schmitt trigger operation of the 555 Timer.

(b)   Answer following short questions in **one** sentence : (any **3** from **5**)   **3**

(1)   Explain the meaning of positive-edge and negative-edge triggered ?

(2)   What is the symbol for the input sensitive to NT's ?

(3)   What is meaning of the hysteresis when applied to a Schmitt Trigger ?

(4)   What is an astable circuit ?

(5)   How you will define rise time ?

4.   (a)   (i)   List the components of Computer and explain function of each.   **7**

(ii)   Explain briefly following terms: Instruction, machine language, assembly language, Compiler, Interpreter, Assembler and Operating System.   **7**

OR

(i)   Give classification of instructions of 8085.

(ii)   Draw and explain the Programming model of 8085 showing all its registers.

(b)   Answer following short questions in **one** sentence : (any **3** from **5**)   **3**

(1)   What are op-code and operand ?

(2)   Give example of one byte instruction.

(3)   Give example of two byte instruction.

(4)   How many bits does a nibble have ?

(5)   How many bits does a byte have ?

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