

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 $K = \frac{M}{\sqrt{L_1 L_2}}$ 7

OR

- (i) Explain how a reactance T network can be used for impedance transformation. Derive equation of critical coupling. 7
- (ii) Explain reactance L-section for impedance transformation. 7
- (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. 7
- (ii) Derive equation for the characteristic impedance of a symmetrical T-section. 7

- (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 ?