

Con/2207-07.

[REVISED COURSE]
 (3 Hours)

ND-9089
 [Total Marks : 100]

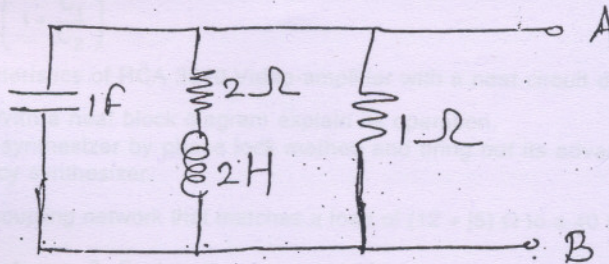
N.B.: (1) Questions No. 1 is compulsory.

(2) Attempt any four questions out of remaining six questions.

1. Answer the following questions (any four) :

- (a) Define intercept point. Derive the relation for the same in terms of IMD power (intermodulation distortion power). 20
- (b) Explain Miller's theorem.
- (c) Explain the frequency selective networks.
- (d) Explain the working of PLL as variable modulus divider.
- (e) Explain general features of audio amplifiers.

2. (a) Derive an expression for the noise factor of n cascaded stages. What is the significance of the first stage? 10
- (b) Determine the power density spectrum of the thermal noise voltage across terminals A-B of the circuit shown below. 10



3. (a) Design a lossless matching network to couple the impedance of $100 + j25.1\Omega$ to 50Ω source impedance at 20 MHz. 10
- (b) Explain different methods of neutralization and feedback techniques used in wideband amplifiers. 10
4. (a) Explain the operation of a PLL. Derive the transfer function of a 2nd order PLL. 10
- (b) Explain intermodulation distortion in diode ring modulator. 10
5. (a) What is DDS? Explain its operation with a neat block diagram. 10
- (b) Design a direct frequency synthesizer to generate 15.8 MHz from 1 MHz reference oscillator. 10
6. (a) Derive an expression for output voltage of a double balanced mixer. 10
- (b) Explain with neat circuit diagram the applications of balanced modulator IC 1596 as :
 - (i) AM modulator
 - (ii) Product detector.
7. Write short notes on : 7
 - (a) Transmission line transformer 7
 - (b) Graphic equalizer 6
 - (c) PLL as signal synchronizer.