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Note : Attempt all the **twenty** questions. Each question carries 2 marks. Answer should not exceed 15 words.

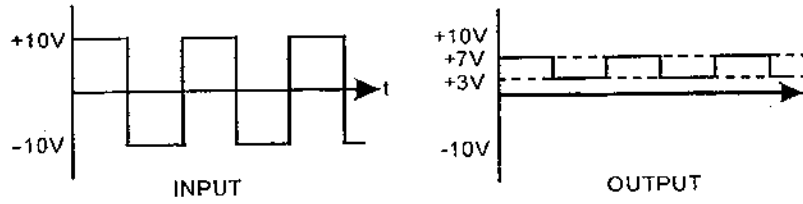
1 Using small signal model of a transistor amplifier determine the expression for output admittance y_0 .

2 What will be the effect of current series feedback in an amplifier on input impedance, output impedance, gain, bandwidth and internal noise ?

3 Which pass filters can be used as differentiator and integrator ?



- 4 Draw the circuit diagram of a clipper whose input and output waveforms are given below. Assume all components are ideal.



- 5 Simplify the Boolean function : $F = A'B'C' + B'CD' + A'BCD' + AB'C'$

- 6 Draw and explain CMOS as inverter.



7 What is the advantages of Master Slave flip flop over normal flip flop ?

8 Obtain a 16×8 memory using 16×4 memory ICs.

9 Illustrate that the input-output relation is approximately linear over a much wider range for the closed loop system compared to its open-loop behaviour.



10 List three major standard test input signals used in control systems.

11 The characteristics equation of a control system is given below. Is this system stable ?

$$3s^5 + 6s^4 + 2s^2 + s + 7 = 0$$

12 Illustrate the basic time division multiplexing scheme. Which is used to convey multiple signals over telephone lines using wide band coaxial cable ?



13 What is dispersion in optical signal propagation ?

14 What is Vestigial Sideband transmission ?

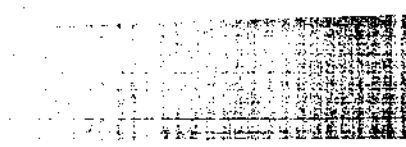
15 List the advantages higher bandwidth fibre optic communication offers, compared to copper wires.



16 If the power gain of an antenna is 1.32, find the effective aperture at 4 GHz frequency.

17 Explain the principle of operation of a microwave negative resistance parametric amplifier.

18 How can we write -34.6_{10} as signed floating point binary number in 8 bit mantissa and 8 bit exponent ?



19 How instruction code is mapped to a microinstruction address ?

20 Show the sequence of events in the execution of CALL instruction by the 8085.



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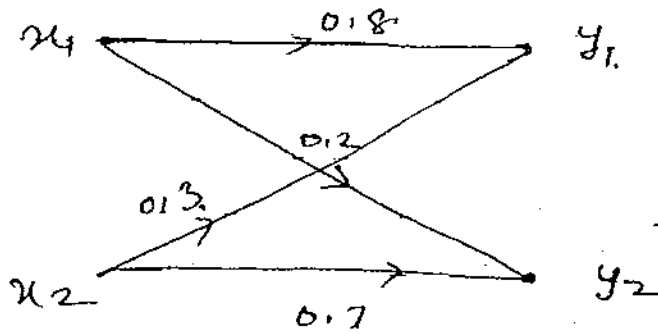


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- 36 Find the mutual information and channel capacity of the channel shown below. Given $p(x_1) = 0.6$, $p(x_2) = 0.4$.



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37 In satellite communication, distinguish between left hand and right hand circular polarizations. What is depolarization ? Discuss the causes of depolarization.



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SPACE FOR ROUGH WORK / रफ कार्य के लिए जगह

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