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No.

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मध - 015

Electronic Circuits and Applications (1080)

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Assume suitable data if required.
5. Use of non-programmable calculator is allowed.
6. All questions are compulsory.

UNIT - I

1. Solve any two. 20
- a) What is significance of parameter CMRR. Explain any one method which is use to improve CMRR.
- b) For a dual input balanced output differential amplifier.
 $R_C = 4.7k\Omega$, $R_{S1} = R_{S2} = 100\Omega$, $R_E = 6.8k\Omega$, $h_{fe} = 100$,
 $h_{ie} = 2.8k\Omega$, $V_{CC} = +15V$, $V_{EE} = -15V$, $V_{BE} = 0.7V$
Calculate :
i) Operating point values. ii) Differential gain
iii) Common mode gain iv) CMRR
- c) Draw circuit diagram of schmitt trigger circuit and explain its operation with waveforms.

UNIT - II

2. Solve any two. 20
- a) Draw and explain circuit diagram of double tuned amplifier with the help of frequency response.
- b) Draw the hybrid ' π ' equivalent of a CE transistor valid for high frequency and explain significance of each parameter.
- c) Write notes on :
i) Cascode amplifier. ii) Synchronous Vs stragger tuning.

UNIT - III

3. Solve any two. 20

- a) Draw circuit diagram of directly coupled class - A amplifier & device equation for.
 - i) Efficiency
 - ii) Max. efficiency.
- b) Calculate efficiency of complementary symmetry power amplifier using ideal emitter follower circuit and two dc power supplies of + 20V and - 20V. If is driving load of 8Ω for sinewave input of
 - i) $V_{in} = 10V(\text{rms})$
 - ii) $V_{in} = 5V(\text{rms})$
 - iii) What value of $V_{in}(\text{rms})$ yields maximum efficiency.
- c) Draw circuit diagram of push-pull amplifier and derive the equation.
 - i) Efficiency.
 - ii) Max. efficiency.

UNIT - IV

4. Solve any two. 20

- a) Explain :
 - i) Advantages of -Ve F/B in Amplifier.
 - ii) Condition to get sustained oscillations
- b) Draw circuit of Hartley oscillator, explain its operation & derive the expression for its frequency.
- c) Derive the equations for voltage gain, input impedance output impedance for voltage series feedback.

UNIT - V

5. Solve any two 20

- a) Design a Regulator using IC 723 to have O/P Voltage of 20V and load current of 100mA.
- b) What is difference between linear regulators and switching regulators. Draw circuit diagram of SMPS and explain its operation in detail.
- c) Write short note on :
 - i) UPS.
 - ii) Three terminal regulators.
