Code No: 133AQ **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year I Semester Examinations, November/December - 2017
ELECTRONIC CIRCUITS
(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) Discuss a small signal JFET model of a common drain amplifier. [2]
b) List the benefits of H-Parameters. [3]
c) Distinguish the negative feedback and positive feedback. [2]
d) Discuss how does negative feedback reduce distortion in an amplifier? [3]
e) What is cross-over distortion? [2]
f) Compare voltage and power Amplifiers. [3]
g) Describe about the double ended clipping. [2]
h) Define clamping. What for clamping circuits are used? [3]
i) Discuss about a Schmitt trigger. [2]
j) Name the methods of triggering in multivibrators? Distinguish between them [3]

PART-B

(50 Marks)

2.a) Evaluate the expression for R_i, A_i, A_v and R_o for CE amplifier with un bypassed Re.
b) State Millers theorems. Explain its significance in transistor circuit analysis.[7+3]

OR

3.a) Classify the amplifier circuits based on frequency range, type of coupling, power delivered and signal handled.
b) Define h-parameters? Why they called so? Define them and what are the benefits of h-parameters. [5+5]

4.a) Discuss the circuits of voltage shunt feedback amplifier and derive the expressions for input impedance R_{if} and output impedance R_{of}.
b) Show that for voltage shunt feedback amplifier trans resistance gain, Ri and Ro are decreased by a factor $(1+A\beta)$ with feedback [5+5]

OR

5.a) Explain the relevant information explain how the negative feedback improves stability reduce noise and Increase input impedance.
b) With a neat sketch explain the working of a Colpitt's oscillator. [5+5]

6.a) Evaluate the expression for maximum conversion efficiency for a simple series fed Class A power amplifier. What are the drawbacks of transformer coupled power amplifiers?

b) With a neat diagram explain the principle of operation of class B pushpull amplifier. [5+5]

OR

7.a) Define thermal resistance? Explain the thermal electrical analogy related to a transistor with heat sink.

b) Explain and analyze a transformer coupled class A power amplifier and also define the total harmonic distortion with three point method. [5+5]

8.a) Sketch the response of an RC high-pass for square wave input.

b) Explain the working of a simple diode comparator. Draw the output wave form for a ramp input. [5+5]

OR

9.a) Explain the working of a transistor clipper. With the help of a neat circuit diagram and waveforms.

b) Explain the response of an RC high-pass filter to behave as a good differentiator. [5+5]

10.a) Show that an astable multivibrator can be used as a voltage to frequency convertor.

b) Evaluate an expression for the gate width of a monostable multivibrator. [5+5]

OR

11.a) Explain the behavior of a BJT as a switch. Give Applications.

b) Explain the phenomenon of "latching" in a transistor switch. [5+5]

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