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**Question Paper Code : 40954**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Third Semester

Electronics and Communication Engineering

EC 6304 – ELECTRONIC CIRCUITS – I

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

PART – A

(10×2=20 Marks)

1. What is diode compensation ?
2. Sketch the fixed biasing circuit of JFET.
3. Draw the circuit of cascade amplifier.
4. Why CE configuration is preferred for amplification ?
5. What is IDSS in a JFET ?
6. Why MOSFETs are used ?
7. Define 3dB frequency.
8. What is beta frequency ?
9. Mention the advantages of current steering circuit.
10. How does a MOSFET work as an amplifier ?

PART – B

(5×13=65 Marks)

11. a) Explain the voltage divider bias method using BJT and derive an expression for stability factors.

(OR)

- b) With neat diagram, explain the working of self-bias and voltage divider bias for common source amplifier.

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12. a) Write short notes on multistage amplifiers. Draw a two stage RC coupled amplifier and explain. Also compare cascade and cascode amplifier.  
(OR)
- b) Derive the expressions for the voltage gain, current gain, input and output impedance of emitter follower amplifier.
13. a) Describe the small signal equivalent circuit of the MOSFET and determine the values of small signal parameters.  
(OR)
- b) Enumerate on voltage swing limitations, general conditions under which a source follower amplifier would be used.
14. a) With neat sketch explain hybrid  $\pi$  CE transistor model. Derive the expression for various components in terms of 'h' parameters.  
(OR)
- b) Explain the high frequency analysis of JFET with necessary circuit diagram and derive its gain bandwidth product.
15. a) Draw and explain the MOSFET cascode current source circuit and also discuss its advantage.  
(OR)
- b) Describe the operation of a PMOS amplifier with an enhancement load and a depletion load with necessary diagrams.

PART - C

(1×15=15 Marks)

16. a) Compare and contrast on the design of bandwidth of single and multistage amplifiers.  
(OR)
- b) Summarize the working principle of CMOS differential amplifier with neat diagram. Also determine its CMRR.

 ECE