Roll No .....

EI-403 (Old)

B.E. IV Semester

Examination, June 2016

Analog Electronics

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.
v) Assume suitable data if any missing.

1. a) What is 'Q' point?
   b) Justify the necessity of biasing in transistor.
   c) What do you mean by h-parameters?
   d) Describe current flow mechanism in a p-n-p transistor. Draw and discuss input and output characteristics of common base configuration.

   OR

   Explain the steps to draw AC and DC load lines and obtain their equations with the help of a basic common emitter amplifier circuit.

2. a) Define the term "Depletion".
   b) What is threshold voltage of MOSFET?
   c) What is meant by body effect in MOSFET?
   d) Explain the operation of a MOSFET under the three region cut-off, linear region and saturation.

   OR

Describe the structure of JFET and explain with the help of circuit diagram how JFET can be used as an amplifier.

3. a) What is the use of emitter bypass capacitor?
   b) What is cascade amplifier?
   c) What is Bootstrapping in the context of biasing?
   d) Describe effect of base coupling capacitor on gain of amplifier. Obtain zero frequencies and discuss the result.

   OR

   What is Darlington pair? Derive an expression for the input impedance of a Darlington pair emitter follower.

4. a) What is doubled tuned amplifier?
   b) What are applications tuned amplifiers?
   c) Write down the expression for the bandwidth of a tuned circuit in terms of quality factor and resonant frequency.
   d) Describe tuned amplifier. Draw and discuss frequency response.

   OR

   Derive the equation for the gain bandwidth product of a single tuned amplifier circuit.

5. a) What are the advantages of class B push-pull amplifier?
   b) What is cross-over distortion?
   c) Classify power amplifiers.
   d) Describe the operation of transformer couple class A power amplifier with the help of a circuit diagram and deduce expression for efficiency.

   OR

   Describe class B push-pull amplifier. Calculate power supplied by source, power delivered to the load, power dissipated at the collector and efficiency.

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