

ECS-15

B.E. (Illrd Sem.) (CGPA) (El. & Commn. Engg.)
Examination-2013

ELECTRONIC CIRCUITS

Paper - EL-305

Time Allowed : Three Hours
Maximum Marks : 60

Note : Attempt all questions.

Q.I Write short answers—

2 each

- (a) What is difference between voltage amplifier and power amplifier.
- (b) List five merits of negative feedback.
- (c) What is the condition of sustained oscillation.
- (d) Explain the term CMRR.
- (e) What are the applications of comparator.

Q.II (a) Draw the circuit of a push-pull amplifier using complement symmetry without transformer and discuss its working.

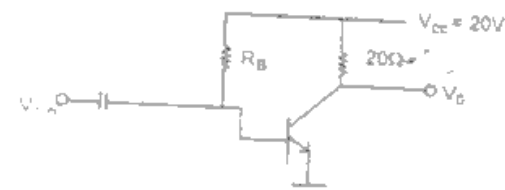
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(b) Explain with the circuit diagram shunt regulators.

or

(a) Draw the circuit diagram of single tuned capacitive coupled amplifier and derive the expression for voltage gain and efficiency.

(b) Calculate the collector efficiency and overall efficiency of a class A, CE amplifier circuit below and with the parameters $V_{CEQ} = 10V$, $I_{CQ} = 500$ mA and $P_{out}(\text{Peak}) = \pm 250$ mA



Q.III (a) If an amplifier has a B.W. of 300KHz and voltage of 100, what will be new bandwidth and gain if 10% negative feedback is introduced. What will be the gain bandwidth product before and after feedback.

(b) List five characteristics of a transistor which are modified by negative feedback

or

(a) Draw the emitter follower circuit and analyse its feedback mechanism.

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Contd.

✓(b) Explain the current series feedback circuit.

Q.IV (a) Explain the working of monostable multivibrator.

(b) Explain the working of Hartley oscillator.

or

✓(a) Explain the working of Colpitts oscillator. Give its advantages, disadvantages and applications.

(b) Determine the value of capacitor to be used in an astable multivibrator to provide a train of pulses 2 μ s wide at a repetition rate of 100 KHz if $R_1 = 10\text{ k}\Omega$.

Q.V (a) Draw the circuit diagram of an emitter coupled differential amplifier using Darlington input. What are its advantages.

(b) Write short notes on balanced choppers.

or

✓(a) What are various configurations of a differential amplifier.

(b) Determine the output voltage of a differential amplifier for the input voltage of 300 μ V and 240 μ V. The differential gain of amplifier is 50 and value of CMRR is 100.

Q.VI ✓(a) What are the characteristics of an Ideal OP-Amp. 6

✓(b) What is slew rate? How is it related to full power bandwidth. 4

or

✓(a) Draw the non-inverting amplifier using OP-Amp and derive the expression for its output voltage. 6

✓(b) Draw the circuit diagram of precision rectifier and write its application. 4