

Roll No.

Total No. of Questions : 6] [Total No. of Printed Pages : 4

EGS-174

B.E. 3rd Semester (CGPA) Elect. and Commun.

Engg. (Zero Sem.) Examination - 2018

ELECTRONICS CIRCUITS

Paper-EL-305

Time : 3 Hours]

[Maximum Marks : 60

Note : Attempt all questions.

1. Write short answers. 2×5=10
 - (i) Define regulated power supply and related parameters.
 - (ii) Define feedback and its types.
 - (ii) What is Darlington configuration? Draw its circuit.
 - (iv) What are conditions for sustained oscillations in an oscillator?
 - (v) What is Schmitt trigger ckt?
2. (i) Draw the circuit of a push pull amplifier in class A configuration and explain its working in detail. Write advantages and disadvantages of push pull power amplifier over single ended power amplifier. 6

EGS-174

(1)

Turn Over

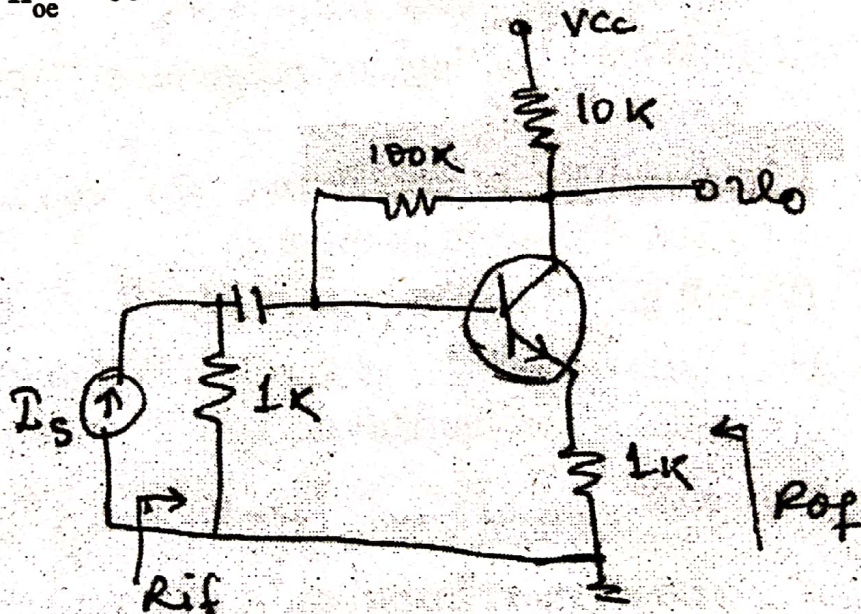
- (ii) Derive efficiency and power relations for class B configuration. 4

or

- (i) Name the protection circuits used in voltage regulators. Explain any one of them with circuit diagram. 5

- (ii) Compare class A, Class B, Class AB and Class C Amplifiers, based on conduction angle, efficiency, distortion, power rating and location of Q point. 5

3. In the following feedback amplifier, calculate A_{vf} , R_{if} and R_{of} . Assume $h_{ie} = 1.1K$, $h_{ge} = 50$, $h_{re} = h_{oe} = 0$. 10



EGS-174

(2)

or

- (i) Derive and show the effect of negative feedback on Input impedance in both series and shunt topologies. 5
 - (ii) What are the four possible topologies of feedback amplifier? Tabulate gain, feedback gain, input and output impedances for these topologies. 5
- 4.
- (i) Draw circuit diagram for phase shift oscillator and calculate frequency of oscillation. Compare BJT and FET phase shift oscillators. 5
 - (ii) Derive the condition for sustained oscillations in L-C oscillators (General form) 5

or

- (i) Draw and Explain the working of monostable multivibrator and prove that the o/p Pulse width $t_p = 0.69RC$. 5
- (ii) Design an astable multivibrator using silicon transistor to generate a rectangular waveform of amplitude 8 volts at a frequency of 15 KHz with a duty cycle of 0.6. Choose $C_1 = C_2 = 0.01 \mu\text{F}$ and $I_{c\text{max}} = 20\text{mA}$. Draw its circuit diagram. 5

EGS-174

(3)

Turn Over

5. (i) Explain how chopper Amplifiers are used for low frequency input signals. Discuss series and shunt chopper stabilized amplifiers. 5
- (ii) Derive the current gain and I/P resistance formulae for Darlington amplifier. 5

or

- (i) What is differential amplifier? Explain its working using transfer characteristics. Also, explain how CMRR can be improved in differential amplifier. 6
- (ii) Discuss advantages and disadvantages of direct coupled amplifiers. 4
6. (i) What is virtual ground? Find close loop gains of Inverting and non inverting OP-AMPs, using their equivalent circuit. 5
- (ii) Draw the internal diagram 555 timer and explain its working in astable mode. 5

or

Write short note on 'any two' of the following related to OPAMP. 10

- (i) Log and Antilog Amplifier
- (ii) Integrator and differentiator
- (iii) Precision rectifier

EGS-174

(4)