SCHEEM –E

Sample Question Papers

Course Name : Electrical and Electronics Engineering Group

Course Code : EE/EP/ET/EJ/EN/EX/IE/IS/IC/DE/MU/IU/ED/EI

Semester : Third **12058**

Subject Title : Basic Electronics

Max Marks : 100 **Time: 3 Hours**

Instructions:

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q. No. 1 Attempt Any TEN of the following: **(2 X 10 = 20)**

a. What is the meaning of term rectification? State its need.

b. Which filter is preferred to get pure DC output? Draw the circuit diagram of the same

c. Draw constructional diagram for N channel JFET.

d. What is regulator? What is its need?

e. Define voltage, current and power gain for small signal amplifiers.

f. State the minority and majority carriers in N type and P type semiconductors.

g. State operating principle of photodiode

h .Define Rectifier efficiency and ripple factor for rectifiers

i. Draw CB and CC configuration of BJT. List one application of CB and CC amplifier.

j. Why an ordinary junction transistor is called a bipolar device?

k. Define load and line regulation with respect to regulator

l. State the meaning of small signal amplifier. List two applications of it.

.

Q. No. 2 Attempt Any FOUR of the following: **(4 X 4 = 16)**

a. Give four important features of IC723. What is the use of C_L & C_S terminals?

b. Define the terms Static and Dynamic resistance of diode. What will be static resistance of the diode operated at 0.67 V and 2mA

c. With respect to JFET define:

1. Drain resistance 2. Transconductance 3. Amplification factor.

4. Give mathematical relation between them.

d. Derive the relation between α and β with respect to BJT

e. Draw single stage CE amplifier and explain function of different components..

f. Compare centre tap and bridge rectifier on the basis of

1. TUF 2. PIV 3. No. of diodes 4. Ripple frequency.

Q. No. 3 Attempt Any FOUR of the following: (4 X4 = 16)

a. Explain construction and working principle of LED.

b. Draw circuit diagram of Half wave rectifier with capacitor filter. What is the peak inverse voltage across the diode with and without capacitor connected?

c. Construct a dual power supply capable of giving ±15V using 78xx and 79xx series ICs

d. Draw the pin diagram of IC723.

e. Draw two stage R-C coupled amplifier. Draw its frequency response.

f. Draw characteristics of UJT and explain.

Q. No. 4 Attempt Any FOUR of the following: (4 X 4 = 16)

a. Draw and explain voltage divider bias method.

b. Draw characteristics of PN junction diode and Zener diode.

c. Draw the diagram for emitter bias method for BJT. Describe its operation.

d. Why different stages of amplifier are cascaded? State different methods used for cascading.

e. Compare CB and CE and CC configuration on the basis of –

i). Input impedance ii). Current gain iii). Power gain iv). Input – output phase relation

f. Compare direct coupled, RC coupled and Transformer coupled amplifiers.(4 points)

Q. No. 5 Attempt Any FOUR of the following: (4 X 4= 16)

a. Draw direct coupled amplifier, give its advantages and disadvantages.

b. Explain Thermal runway. How it can be avoided.

c. Draw experimental set up to obtain zener diode characteristics. State function of each element in set up.

d. For a given CE amplifier, output voltage V_o = 2V, input voltage V_{in} = 20mv find out its gain in dB. Calculate half power point.

e. What is amplification? Classify amplifiers on different basis.

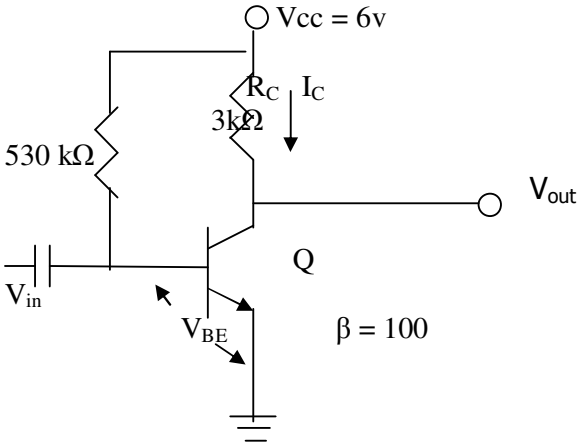
f. Draw and explain construction of n – channel JFET.

Q. No. 6 Attempt Any FOUR of the following: (4 X 4 = 16)

a. Justify whether zener diode can be used as a voltage regulator.

b. A π filter with FWR has C1 = C2 = 50μf and L = 5H. The load current is 0.250mA at 50V DC. Find the ripple factor.

c. Study the following fixed bias circuit.



Draw the D.C. load line & determine the operating point.

d. Explain block diagram of DC power supply

e. Explain the effect on the voltage gain of single stage CE amplifier if emitter bypass capacitor is removed.

f. Identify the following characteristics. State in which region transistor is operated at point A, B and C.

