Scheme – I

Sample Question Paper

Program Name : **Diploma in Electronics Program Group**

Program Code : **DE/EJ/IE/IS/ET/EN/EX**

Semester : **Second**

Course Title : **Basic Electronics**

22216

Marks : **70** **Time: 3 Hrs.**

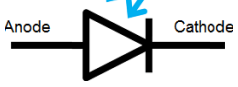
Instructions:

(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.

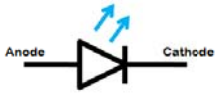
Q.1) Attempt any FIVE of the following. **10 Marks**

a) Name the components of following symbols:

1]



2]



b) State any two application of FET.
c) State type of transistor configuration for obtaining highest current gain.
d) Sketch the symbol of P-Channel and N-Channel Enhancement type MOSFET.
e) State any two limitations of Zener diode regulator.
f) Define: Load regulation and Line regulation.
g) Identify the type of diode for the given V-I characteristics shown in figure 1:

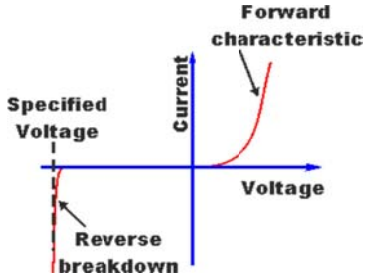


Figure 1

Q.2) Attempt any THREE of the following. **12 Marks**

a) Sketch the block diagram of Regulated DC power supply, explain working of each block with input and output waveforms.
b) Sketch fixed bias and self bias BJT biasing circuit.
c) Differentiate Zener breakdown and Avalanche breakdown on basis of:
   1. Definition
   2. Breakdown characteristics
d) Explain the thermal runaway phenomenon for BJT

Q.3) Attempt any THREE of the following. **12 Marks**

a) Sketch input and output characteristics of CE configuration. Label various regions on characteristics.

b) Explain the working of negative clipper with circuit diagram.

c) A JFET has a drain current of 5mA .If I_{DSS} = 10mA and $V_{GS(off)}$ = -6V .Find the value of i) V_{GS} ii) V_p

d) Explain working of Zener as a voltage regulator with circuit diagram.

Q.4) Attempt any THREE of the following. **12 Marks**

a) Define the following parameters of rectifier:-
   1. Peak Inverse Voltage (PIV)
   2. Ripple factor
   3. Efficiency
   4. Transformer Utilization Factor.

b) Describe operation of voltage divider biasing with circuit diagram.

c) Compare CB and CC configuration of transistor with respect to
   1. Voltage Gain
   2. Input – output terminals
   3. Input Impedance
   4. Output Impedance

d) Calculate input impedance of JFET if reverse gate source voltage of 15V and gate current is 10^{-3} uA

e) Sketch the block diagram of Regulated DC power supply, explain working of each block with output waveforms.

Q.5) Attempt any TWO of the following. **12 Marks**

a) Justify ‘ for FET amplification factor depends on its transconductance

b) Explain the working of bridge rectifier connected with capacitor filter, sketch circuit diagram and output waveforms with respect to ac signal input,

c) Compare LED and photo diode on basis of:
   1. Function
   2. Symbol
   3. Construction

Q.6) Attempt any TWO of the following. **12 Marks**

a) Compare P-N Junction diode and Zener diode on following parameters:
   1. Doping Level
   2. Breakdown voltage
   3. Applications

b) Draw the circuit diagram of CE amplifier, explain its working with input and output characteristics.

c) Identify the given circuits in figure 2 and draw input and output waveforms for following circuits :

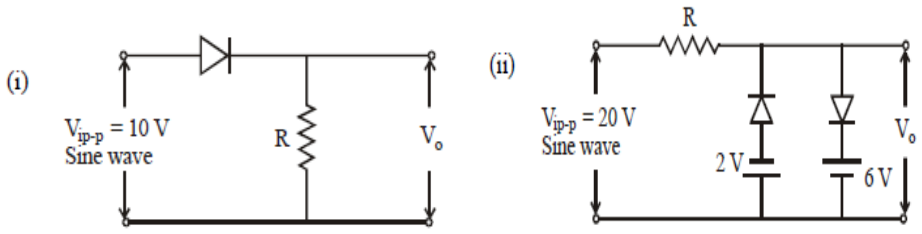


Figure 2

Scheme – I

Sample Test Paper - I

Program Name : **Diploma in Electronics Program Group**

Program Code : **DE/EJ/IE/IS/ET/EN/EX**

Semester : **Second**

22216

Course Title : **Basic Electronics**

Marks : **20** **Time: 1 Hour**

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.1 Attempt any FOUR. **08 Marks**

a) Define the following terms of PN junction diode:
   1. Knee voltage
   2. Dynamic resistance.

b) State any two types of rectifier circuit.

c) Explain the function of capacitor in filter circuit.

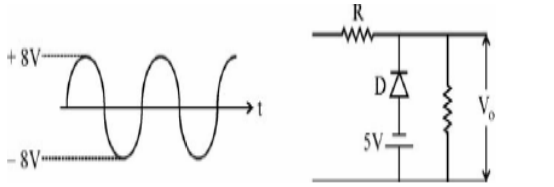
d) Sketch the characteristics of Zener diode.

e) Compare LED and Photo diode on basis :
   1. function
   2. symbol

f) State the function of Clipper circuit.

Q.2 Attempt any THREE. **12 Marks**

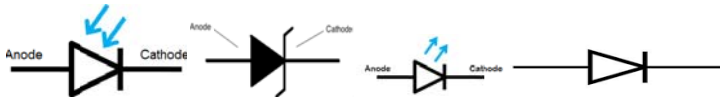
a) Draw the output waveform Vo at the output of figure 1for the given input waveform.



a)Input waveform b) Circuit diagram

Figure 1

b) Name the component of symbols given in Figure 2:



(a) (b) (c) (d)

Figure 2

c) Explain the working principle of LED with neat diagram

d) Compare Half wave rectifier and Centre tapped full wave rectifier on the basis of following parameter:

i. No.of diodes
ii. Ripple factor
iii. PIV
iv. TUF

e) Describe the working of Positive Clamper with circuit diagram and waveforms.

f) Explain the energy band diagram for conductors, insulator, and semiconductors.

Scheme – I

Sample Test Paper -II

Program Name : **Diploma in Electronics Program Group**

Program Code : **DE/EJ/IE/IS/ET/EN/EX**

Semester : **Second**

Course Title : **Basic Electronics**

22216

Marks : **20** **Time: 1 Hour**

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.1 Attempt any FOUR. **08 Marks**

a) State the need of biasing for BJT.

b) State any two advantages of Transistorized series regulator.

c) Sketch the output waveform at point A and ,B of figure 1.

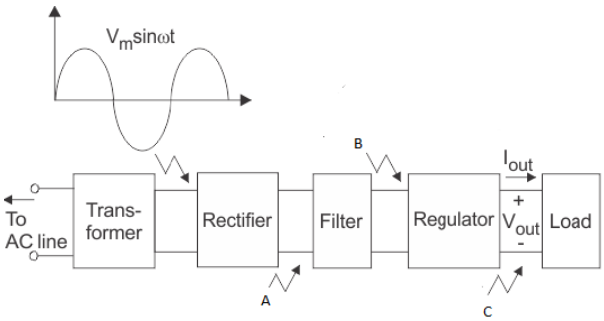


Figure 1

d) Sketch the circuit diagram of fixed bias.

e) Explain working of transistorized shunt voltage regulator with diagram.

f) Draw the symbols of :p channel MOSFET and n channel MOSFET

Q.2 Attempt any THREE. **(12 Marks)**

a) Identify the circuit given in figure 2 and explain its working.

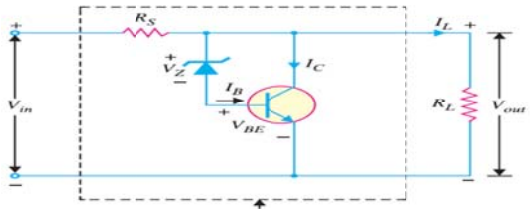


Figure 2

b) Explain working of n-channel JFET with diagram.

c) Identify given circuit and explain its working.

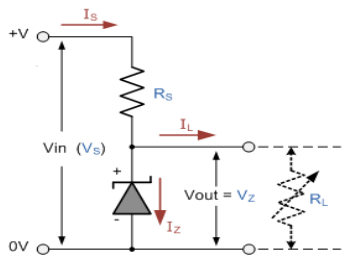


Figure 3

d) Draw the output characteristics of CE configuration , label its different region.

e) Identify circuit given in figure 4 and draw input and output waveforms for following circuits:

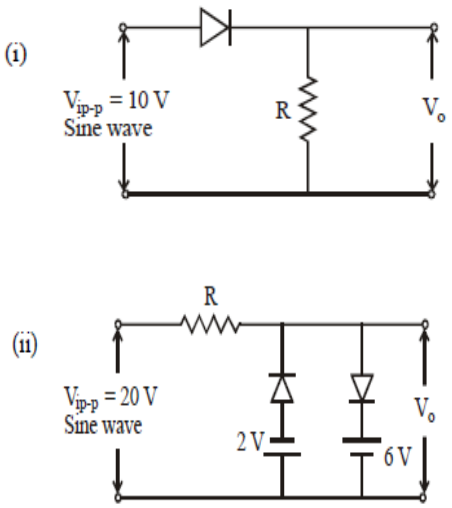


Figure 4

f. Compare CB with CE, configuration of transistor on the basis of:

i. Input current,
ii. output current,
iii. Application
iv. Output voltage