

Scheme – I

Sample Question Paper

Program Name : Electrical Engineering Program Group
Program Code : EE/EP/EU
Semester : Second
Course Title : Elements of Electronics
Marks : 70

22213

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) A) Attempt any FIVE of the following.

10 Marks

- (a) State the applications of Laser diode
- (b) Name the circuit to obtain D. C. signal from A. C. signal
- (c) List configurations of BJT
- (d) Write down output voltage for IC 7815 and IC 7912.
- (e) Suggest the diode material suitable to rectify 0.5V AC signal
- (f) Define the term Load regulation
- (g) Write DeMorgan's Theorems.

Q.2) Attempt any THREE of the following.

12 Marks

- (a) Sketch reverse biased characteristics of Zener Diode and PN junction diode. Write comment on these characteristics
- (b) Compare half wave rectifier and bridge type full wave rectifier on the basis of Ripple factor, Rectification efficiency TUF and PIV
- (c) Explain the need of biasing of BJT. List types of biasing
- (d) Sketch circuit diagram of Transistorized series regulator and state functions of each component

Q.3) Attempt any THREE of the following.

12 Marks

- (a) Sketch block diagram of D C regulated power supply and sketch waveform at the output of every stage
- (b) Describe working of the Wein Bridge oscillator with circuit diagram.
- (c) Compare BJT and FET on the basis of terminals, input impedance, operating principle and symbol
- (d) List out advantages and disadvantages of bridge rectifier

Q.4) Attempt any THREE of the following.

12 Marks

- (a) Sketch circuit diagram of crystal oscillator. State its any two advantages and applications
- (b) Describe the working of LC filter circuit.

- (c) In a common base configuration Current amplification factor is 0.8. If emitter current is 1 mA, determine the value of base current.
- (d) Explain operation of LED
- (e) A half wave rectifier is used to supply 50V D.C. to a resistive load of 500 Ω (Ohm). The diode has a resistance of 25 Ω (Ohm). Calculate required input A.C. voltage

Q.5) Attempt any TWO of the following.

12 Marks

- (a) Sketch frequency response of RC coupled two stage amplifier. Write procedure to calculate bandwidth and state any two methods to improve bandwidth.
- (b) Figure 1 shows voltage regulator circuit. Explain use of IC7805. Give output voltage and state use of diode D1

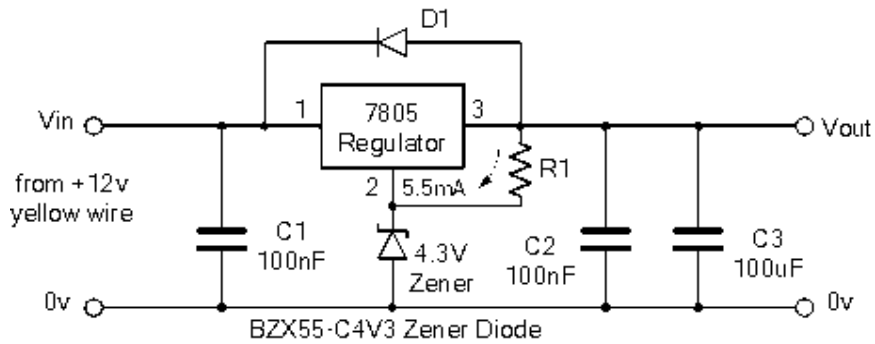


Figure 1

- (c) Construct the JK flip flop using S R. flip flop. Write its truth table State race around condition

Q.6) Attempt any TWO of the following.

12 Marks

- a) Describe type of oscillator shown in Figure2. Calculate it's output frequency

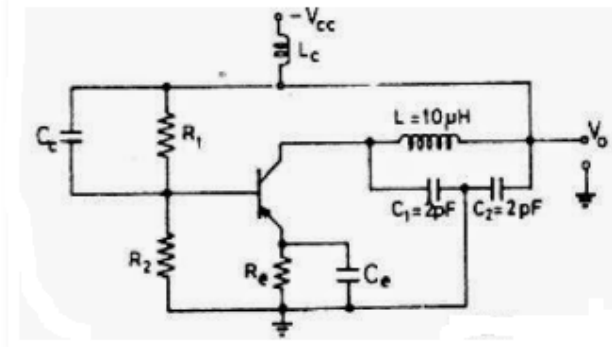


Figure 2

- b) Identify type of BJT configuration having following feature
 - i. BJT configuration having highest current gain
 - ii. BJT configuration having current gain less than one
 - iii. BJT configuration having highest input impedance
 - iv. BJT configuration called as emitter follower
 - v. BJT configuration suitable for voltage amplification
 - vi. BJT configuration suitable for impedance matching
- c) Sketch implementation of EX OR and EX NOR logic gate using NAND and NOR gate

Scheme – I

Sample Test Paper - I

Program Name : Electrical Engineering Program Group
Program Code : EE/EP/EU
Semester : Second
Course Title : Elements of Electronics
Marks : 20

22213

Time : 1 Hour.

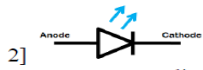
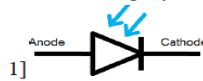
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Q.1) Attempt any FOUR of the following.

08 Marks

- a. Name the components of following symbols



- b. State any four application of opto-coupler
c. List the four specification of zener diode
d. Explain operation of Laser Diode
e. Define ripple factor and Knee Voltage of diode,

Q.2) Attempt any THREE of the following.

12 Marks

- a. Describe advantages and disadvantages of Full Wave rectifier
b. In the Figure1 the Zener diode has Zener voltage of 6 V. Calculate output voltage V_0

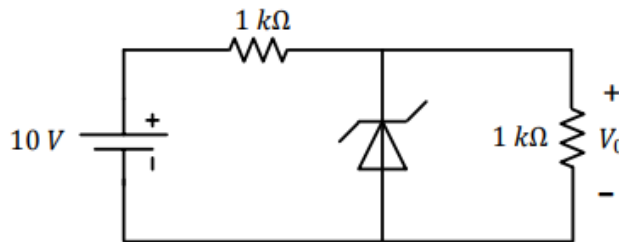


Figure 1

- c. Sketch input/output waveforms for half and full wave rectifiers.
d. Define following parameters of rectifier
(i) Average DC. value of current
(ii) Rectifier Efficiency
(iii) PIV factor
(iv) TUF

Scheme – I

Sample Test Paper - II

Program Name : Electrical Engineering Program Group
Program Code : EE/EP/EU
Semester : Second
Course Title : Elements of Electronics
Marks : 20

22213

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 of the following.

08 Marks

- a. List Features of IC 723 Voltage Regulator
- b. State Barkhausen criteria for obtaining sustained oscillation.
- c. Sketch symbol of following devices
 - i. NPN BJT
 - ii. N channel FET
- d. Calculate the current through the Zener diode shown in Figure 1

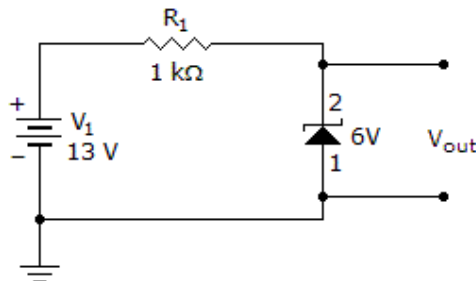


Figure 1

- e. Sketch circuit diagram of single stage CE amplifier with voltage divider biasing method
- f. Convert: $(2E9A)_{16} = (?)_2$

Q.2) Attempt any THREE of the following.

12 M

- a) Construct X-OR gate using only NAND gates.
- b) A Colpitts Oscillator circuit having two capacitors of 24 nF and 240 nF and are connected in parallel with an inductor of 10 mH . Determine the frequency of oscillations of the circuit, the feedback fraction and draw the circuit diagram .
- c) Explain working of the Hartley oscillator with circuit diagram.
- d) Construct the D and T flip flop using S R Flip flop.
- e) Explain the process to overcome race around condition.