14EC506A

Hall Ticket Number:

III/IV B.Tech (regular) DEGREE EXAMINATION

OCTOBER, 2016 — **Electronics and Communication Engineering**

Fifth Semester — **Pulse & Switching Circuits**

Time: Three Hours — **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (1X12=12 Marks)

a What do you mean by linear wave shaping?
b Define rise time.
c Write the condition for perfect compensation.
d What do you mean by a comparator?
e What for clamping circuits are used?
f. State clamping circuit theorem.
g How many types of multivibrators are there? Name them.
h What do you mean by loading of a binary?
i. Which signals are commonly used for triggering?
j. What do you mean by a linear time base generator?
k What are the applications of time base generators?
l. Which amplifier is required in miller time base generator?

UNIT – I

2.a Derive an expression for the output of a low pass circuit excited by a ramp input. 6M

2.b A symmetrical square wave of peak to peak amplitude 10V and frequency 2KHz is impressed on an RC low pass circuit .If R=5K ohms, C=0.1μF,calculate and plot the output. 6M

(OR)

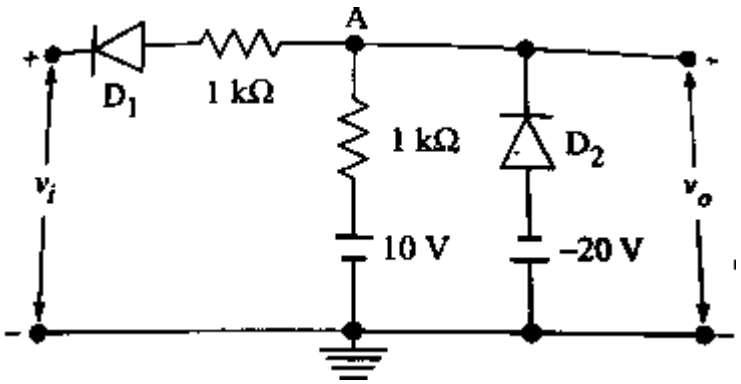
3.a Derive the condition for perfect compensation of an attenuator. 6M

3.b A 1KHz square wave output from an amplifier has a rise time of 350ns and tilt=5%.Determine the upper and lower 3-dB frequencies. 6M

UNIT – II

4.a With the help of a circuit diagram, explain the working of a simple diode comparator. 6M

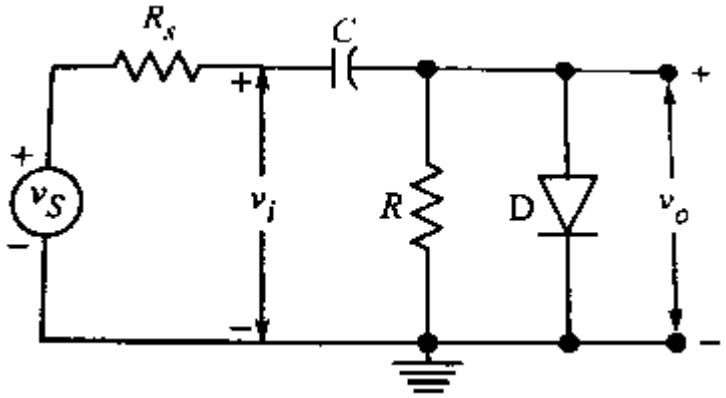
4.b Draw the transfer characteristics for the clipper circuit shown. Find the value of input voltage at which output will be zero. 6M



(OR)

5.a State and prove clamping circuit theorem. 6M

5.b In the below mentioned figure Rs=Rf=50 ohms, R=20 kohms, C=2μF. A symmetrical square wave of amplitude 20v and frequency 5khz is applied at t=0. Draw the first three cycles of the output waveform. 6M



UNIT – III

6.a Derive the expression for the frequency of oscillation of an astable multivibrator. 6M

6.b Design a Schmitt trigger circuit for the following specifications: UTP=8V, LTP=5V, Vcc=15V, Ic (sat) =2mA, hFE (min) =25. 6M

(OR)

7.a Derive an expression for the gate width of a monostable multivibrator. 6M

7.b Silicon n-p-n transistors with hFE (min) =40 are available. Design an astable multivibrator to generate a square wave of 1KHZ frequency with duty cycle of 25%. Square wave amplitude=12V, Vcc=12V, Ic (sat) =10mA. 6M

UNIT – IV

8.a Explain the working of a transistor constant current sweep circuit. 6M

8.b Derive the expressions for sweep speed error, transmission error. 6M

(OR)

9.a Explain the basic principles of the Miller and bootstrap time base generators. 6M

9.b Find the component values of a bootstrap sweep generator, given Vcc=18V, Ic (sat) =2mA, hFE (min) =30. 6M