



SE-6771

**B. E. III (Sem. V) (Comp.) Examination**  
**April / May – 2011**  
**Pulse & Waveform CKTS**  
*(Old Scheme)*

Time : 3 Hours]

[Total Marks : 100

**Instructions :**

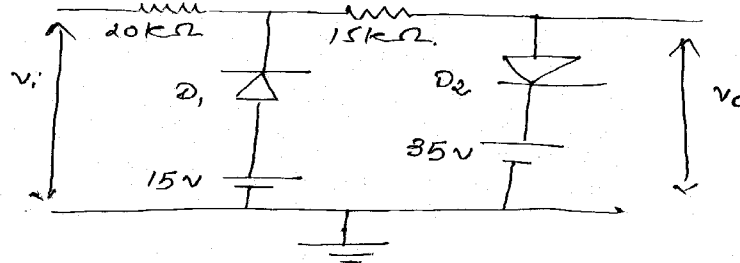
(1)

नीचे दशांशिक निशानीवाणी विगतो उत्तरवही पर अवश्य कर्तवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. 3 (Sem. 5) (Comp.)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Pulse &amp; Waveform CKTS (OLD)"/>	<input type="text"/>
Subject Code No. : <input type="text" value="6"/> <input type="text" value="7"/> <input type="text" value="7"/> <input type="text" value="1"/>	<input type="text" value="Student's Signature"/>
Section No. (1, 2,.....): <input type="text" value="Nil"/>	

- (2) Attempt all questions.  
(3) Assume data if necessary.  
(4) Figures to the right indicates full marks.

- 1 (a) Attempt the following : 10
- (1) \_\_\_\_\_ attenuates all low freq. signals and X'mitts only high freq. signals.
  - (2) Process of converting pulses into pipes is known as \_\_\_\_\_.
  - (3) \_\_\_\_\_ CKt is also known as dc restorer CKt.
  - (4) \_\_\_\_\_ is the process of cutting and removing the part of the i/p waveform.
  - (5) In \_\_\_\_\_ clamping a refrance voltage is connected in series with diode. (bias / unbias)
  - (6) The freq. at which the gain is \_\_\_\_\_ of its max. value is called the cut off freq.
  - (7) Lower cutoff freq. of lowpass CKt is \_\_\_\_\_ and higher cut off freq. of high pass CKt is \_\_\_\_\_.
  - (8) Define X'mission error.
  - (9) Define :
    - (i) Positive clamping
    - (ii) Negative clamping.
- (b) For the step impect signal for the low pass circuit, Derive 10
- (i) Equation for the O/p voltage.
  - (ii) Equation for the rise time.
  - (iii) Relationship between Rise time and upper 3-dB freq.

- 2 (a) For a circuits shown in fig.  $V_i$  is a sinewave of peak voltage 60 V. Sketch the O/p waveform. Show all necessary calculation and also find the maximum diode current. 8



- (b) Explain practical clamping CKT in detail. 7

**OR**

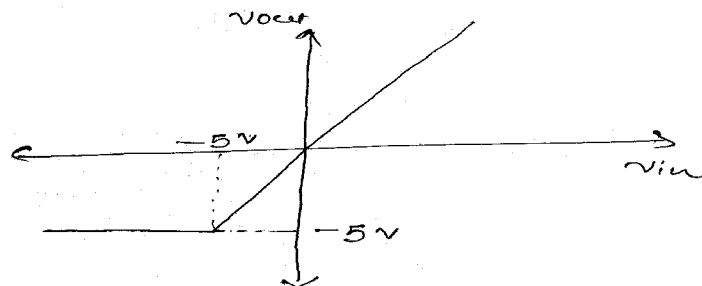
- 2 (a) For the high pass RC CKT, show that for the symmetrical square wave of frequency  $f$ , the percentage tilt is given by 8

$$P = \frac{nf_1}{f} \times 100\%$$

- (b) A square wave whose peak to peak amplitude is 2V. The duration of the positive section is 0.1s and that of the negative section 0.2 s. If this waveform is impressed upon an RC integrating CKT whose time constant is 0.2 s, what are the steady state maximum and minimum values of the o/p waveform ? 7

- 3 Attempt any **three** : 15

- (1) Explain comparators.
- (2) Explain the response of low pass filter for pulse i/p for three condition :
  - (a)  $RC \gg TP$
  - (b)  $RC \cong TP$
  - (c)  $RC \ll TP$
- (3) Design a diode clamper ckt clamp the positive peaks of the i/p to a zero level. The freq. of the i/p voltage is 750 Hz.
- (4) Design a diode clipper circuit having the X'fer char. as shown below.



- 4 (a) Answer the following : 10
- (1) Explain dead-band condition in schmitt trigger.
  - (2) State the difference between the schmitt trigger and window detector.
  - (3) What is an absolute value output circuit ? Comment on the the gain of such circuit.
  - (4) State the salient features of IC 8038.
  - (5) (i) \_\_\_\_\_ is the comparator that converts a sine waveform into square waveform.  
(ii) The applications of V to F converter are \_\_\_\_\_ and \_\_\_\_\_ .
- (b) (1) Design a DC re-inserter circuit, shifting the 5  
negative peak of the input wave at 1.5 V.  
Consider  $4V_{PP}$  sine wave.
- (2) State the limitations of op-amp as comparator. 4
- 5 Attempt any **two** : 16
- (1) Explain the frequency multiplier circuit as an application of PLL.
  - (2) Design voltage control oscillator having parameters :  
 $V^+ = 12 \text{ V}$ ,  $C_1 = 0.001 \mu\text{F}$ . Determine the nominal frequency of output. Also compute modulation in output frequencies if  $V_c$  is varied between 9.5 V and 11.5 V.
  - (3) Draw internal block diagram of IC 565 and explain its working.
- 6 Attempt any **three** : 15
- (1) Zero crossing detector.
  - (2) Half wave rectifier using op-amp.
  - (3) Peak detector.
  - (4) Sample and hold circuit with its requirements.
  - (5) Frequency to voltage converter using IC 9400.
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