Code No: R7220401 **1**

II B.Tech. II Semester(R07) Regular Examinations, April/May 2009
PULSE AND DIGITAL CIRCUITS
(Common for Electronics & Computer Engineering, Electronics & Control Engineering, Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Obtain the expression for percentage tilt P in the response of an RC high pass Network to a symmetrical square-wave.
   (b) Explain about ringing circuit.
2. (a) Explain about diode-differentiator comparator.
   (b) State and explain clamping circuit theorem.
3. (a) Explain the transistor switch in saturation region.
   (b) Explain the diode switch.
4. (a) Explain about unsymmetrical triggering of the bistable multivibrator.
   (b) Obtain the expression for gate width of a collector coupled mono stable multivibrator.
5. (a) Explain about the transistor Bootstrap time-base generation.
   (b) What are the methods of generating a time-base wave form.
6. (a) Explain about the frequency division in the sweep circuit.
   (b) Explain about stability of relaxation dividers.
7. (a) What is sampling gate? And explain the basic operating principle of gates?
   (b) Explain about four diode sampling gate.
8. (a) Explain about a diode-logic AND gate.
   (b) Explain about DTL NAND gate.

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Code No: R7220401 **2**

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PULSE AND DIGITAL CIRCUITS
(Common for Electronics & Communication Engineering, Electronics & Control Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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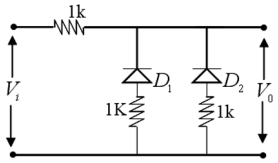
1. (a) Explain about ramp i/p response of RC low pass n/w.
   (b) Explain step response of RL circuit.
2. (a) For the clipper circuit shown below write the transfer characteristic equations (V_0 as a function of V_i) & draw the transfer characteristic plot, indicating all intercepts slopes & voltage levels.(Assume diodes as ideal).



   (b) Explain about effect of diode characteristics on clampling voltage.
3. (a) Explain about breakdown voltage considerations of transistor.
   (b) Explain the piecewise linear diode characteristics.
4. (a) Design a collector coupled astable multivibrator for the following specifications with silicon transistor. $I_{c(Sat)} = 10mA, h_{fe}(min) = 20$; V_{cc} =10V; pulse width=10μsec; duty cycle=40%
   (b) Explain the operation of emitter coupled bistable multivibrator.
5. (a) Explain about the transistor Miller time-base generator.
   (b) Explain the linearity connection in current sweep circuit.
6. (a) Explain about astable relaxation circuits.
   (b) Explain about basic principles of synchronization.
7. (a) Explain about the reduction of pedestal in a gate circuit.
   (b) Explain the operation of unidirectional diode gate.
8. (a) Explain about transistor inverter circuit.
   (b) Explain about DTL NOR gate.

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Code No: R7220401 **3**

II B.Tech. II Semester(R07) Regular Examinations, April/May 2009
PULSE AND DIGITAL CIRCUITS
(Common for Electronics & Communication Engineering, Electronics & Control Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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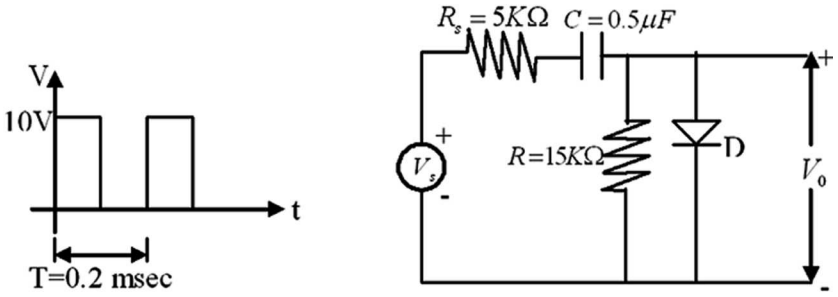
1. (a) Explain about square wave response of an RC low pass network.
   (b) Explain about attenuators.
2. (a) Define comparator and explain some applications of voltage comparators.
   (b) For the network shown below. Draw the output wave for the first three cycles, labeling all voltage levels and time constants.



   For 'D' $R_f = 100\Omega$, $R_r = \infty$, $V\gamma = 0V$.

3. (a) Explain about breakdown voltage considerations of transistor.
   (b) Explain about transistor switching times.
4. (a) Explain the need and usefulness of commutating capacitors in multivibrator circuits.
   (b) Explain the operation of an emitter coupled monostable multivibrator.
5. (a) Explain about general features of a time base signal.
   (b) Explain about exponential sweep circuit.
   (c) Explain about a transistor current time-base generator.
6. (a) Explain about astable relaxation circuits.
   (b) Explain about frequency division in the sweep circuit.
7. (a) Explain about unidirectional sampling gates.
   (b) Explain some applications of sampling gates.
8. (a) Explain about DTL NAND gate.
   (b) Explain about diode-logic OR gates.

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Code No: R7220401 **4**

II B.Tech. II Semester(R07) Regular Examinations, April/May 2009
PULSE AND DIGITAL CIRCUITS
(Electronics & Communication Engineering, Electronics & Control Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Explain the pulse response of an RC high pass circuit.
   (b) Explain the step response of RLC circuit.
   (c) Explain the application attenuator in CRO probe.
2. (a) Explain about transistor clippers.
   (b) State and explain clamping circuit theorem.
3. (a) Explain about diode switch.
   (b) Explain the transistor switching times.
4. (a) Silicon transistor with $h_{fe}(min)$=20 are available. Design a bistable multivibrator for the following specifications, V_{CC} = 15V; V_0 = 1D V_{P-P}; I_C(sat) = 10mA; $I_{CBO} = 0mA$, V_{CE}(sat)=0.3V; V_{BE}(off)= -5V.
   (b) Explain the operation of collector coupled monastic multivibrator.
5. (a) Explain the basic principles of Miller and Boot strap time base generators.
   (b) Explain about transistor current time-base generator.
6. (a) Explain about basic principles of synchronization.
   (b) Explain about stability of Relaxation dividers.
7. (a) Explain about bi-directional sampling gates.
   (b) Explain some applications of sampling gates.
8. (a) Explain about diode logic AND gate.
   (b) Explain about DTL NOR gate.

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