Code :9A04404

1

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
PULSE & DIGITAL CIRCUITS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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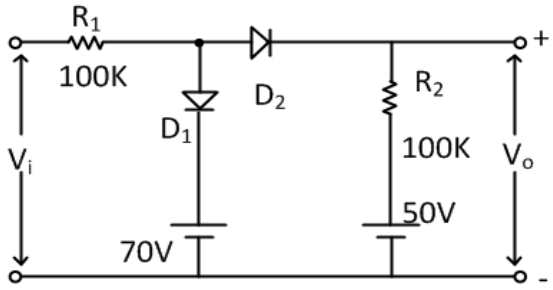
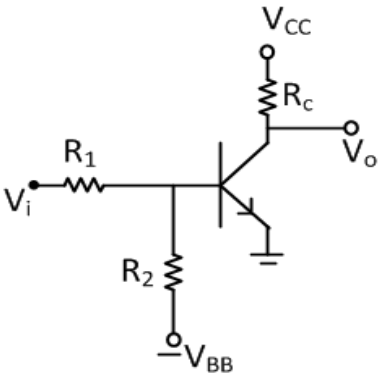
1. (a) Explain how RC circuits are used as integrators and differentiators. Sketch the output waveform for square wave input.
   (b) A pulse of 5v amplitude and pulse width 0.5msec is applied to high pass RC circuit consisting of R = 22kΩ and C = 0.47 μf. Determine the % tilt is the output waveform.
2. (a) With the help of neat circuit explain the working of negative clamping circuit. What is the effect of Rs & Rf is clamping circuit output.
   (b) The input voltage of the two level clipper is varying linearly from 0 to 100v. Draw the output waveform and transfer characteristics.



3. (a) With graph describe the diode switching times. What is the piece wise Linear model of diode?
   (b) For a CE transistor circuit $V_{cc} = 5_v$, R_c = 2kΩ, V_{bb} = -5v, h_{FE}min =10, input voltage levels are 0v & 5v. Find the values of R_1 & R_2.



4. (a) Explain the working of Monostable Multivibrator circuit and derive the expression for gate width.
   (b) Design a Astable multivibrator with frequency 1KHz,h_{fE}=50, 1_{csat} = 5MA, V_{CEsat} = 0.2,V_{cc} =12. Assume $R_1 = R_2$.
5. (a) Draw and explain Sweep circuit using UJT.
   (b) Draw and explain Transistorized Bootstrap sweep circuit.
6. (a) With the help of waveform explain the synchronization with frequency division.
   (b) Explain the synchronization of a sweep generator with pulse synchronizing signal.
7. (a) With neat diagram, explain the working of bidirectional sampling gate using two transistors.
   (b) Write short notes on:
      i. Chopper amplifier
      ii. Sampling scope.
8. (a) Explain 2 input NOR Gate of RTL logic operation with Truth Table.
   (b) Draw and explain totempole two input NAND gate circuit.

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Code :9A04404 **2**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
PULSE & DIGITAL CIRCUITS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Derive the output and draw the response of highpass RC circuit for (i) step input (ii) Square input.
   (b) What is an attenuator? Explain the under and over Compensation in attenuator.
2. (a) Explain the two level transistor clipper circuit Derive the equation for input voltage swing.
   (b) Draw the voltage comparator response for ramp input. State the comparator applications.
3. (a) Explain the various switching times involved in transistor. How do you justify that transistor acts as switch.
   (b) Describe the breakdown in diodes in detail.
4. (a) Explain the symmetrical and unsymmetrical Triggering of Bistable Multivibrator.
   (b) Design a oneshot multivibrator to develop an output pulse of 500μ sec. duration. Assume h_{FEmin}=25,
   I_{csat}= 5MA, V_{cc}=10v and V_{BB}= -4V.
5. (a) Draw and explain practical transistor current time Base Generator.
   (b) Derive the expressions for slope errors and sweep speed for the bootstrap sweep circuit.
6. (a) Explain the principle of synchronization and frequency division in blocking oscillator.
   (b) Explain the methods of pulse synchronization of relaxation devices with examples.
7. (a) Draw the circuit of bidirectional sampling gates using diodes. Derive the expression for gain.
   (b) What do you mean by pedestal? How pedestal can be reduced in samping gate.
8. (a) Explain the positive logic AND gate and Negative logic AND gate circuit using Diode logic.
   (b) With necessary circuit explain about wired AND and wired OR logic.

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Code :9A04404 **3**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
PULSE & DIGITAL CIRCUITS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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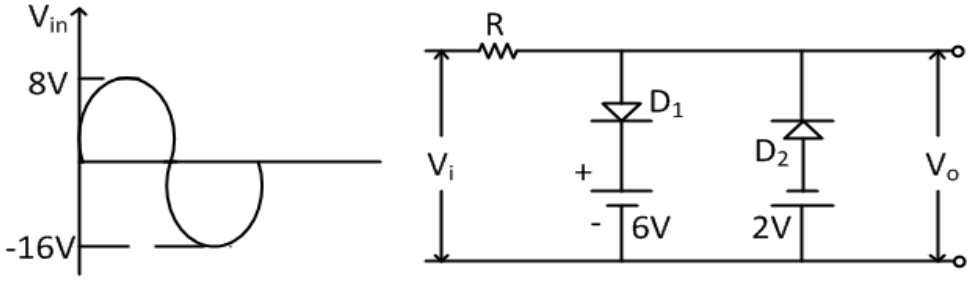
1. (a) Explain how a lowpass RC circuit acts as an integrator?
   (b) Explain RC double differentiator circuit?
2. (a) State and prove clamping circuit Theorem?
   (b) Determine V0 for the network shown in figure for the given wave form? Assume ideal diodes?



3. (a) Write short notes on:
      i. diode switching times
      ii. switching characteristics of transistor.
   (b) Explain the phenomenon of latching in a transistor?
4. (a) Draw The circuit diagram of Schmitt trigger and explain its operation? Derive the expression for UTP and LTP?
   (b) Discuss the various methods of triggering a multivibrator.
5. (a) Draw and explain the typical wave form of time base voltage?
   (b) Derive the expression for slope, transmission and displacement error?
6. (a) i. What do you mean by synchronization?
      ii. What is the condition to be met for pulse synchronization.
   (b) Draw and explain the block diagram of frequency divider without phase jitter?
7. (a) With the help of neat diagram explain the working of two diode sampling gate.
   (b) Draw the circuit diagram of unidirectional diode gate.
8. (a) Draw the circuit diagram of diode resistor logic OR gate explain its operation?
   (b) i. Define positive and negative logic.
      ii. Define fan-in, fan-out.

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Code :9A04404 4

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
PULSE & DIGITAL CIRCUITS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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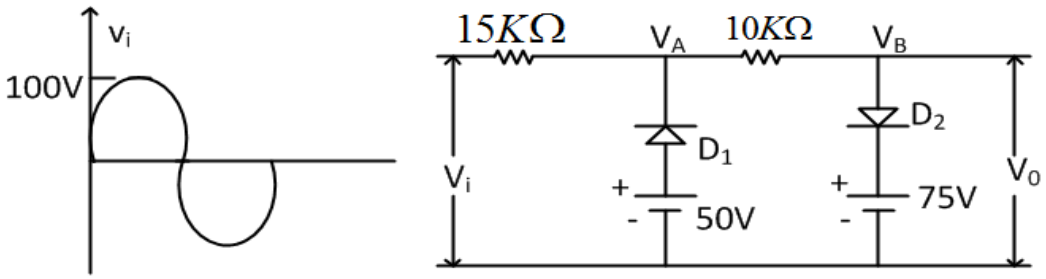
1. (a) Explain the operation of RC highpass circuit when exponential input is applied?
   (b) The limited ramp is applied to an RC differentiator draw the output wave forms for the following:
   (i) T = RC (ii) T = 0.4 RC (iii) T = 10RC
2. (a) Draw the basic circuit diagram of negative peak clamper and explain its operation?
   (b) For the circuit shown in figure Vi is a sinusoidal voltage of peak 100V Assume ideal diodes sketch one cycle of output voltage. Determine The Maximum diode current



3. (a) Define the following:
   (i) storage time (ii) delay time (iii) Rise time (iv) Falltime
   (b) Explain how diode acts as a switch?
4. (a) Draw the circuit diagram of self bias with symmetrical triggering using diodes explain the working.
   (b) Discuss the various methods of triggering a multivibrator.
5. (a) Draw the circuit diagram of fixed amplitude sweep circuit and explain its operation.
   (b) Draw the simple current sweep circuit? Explain its working with the help of diagram.
6. (a) Explain how the symmetric signals are used to synchronize a sweep circuit.
   (b) Explain how mono stable multivibrator is used as frequency divider.
7. (a) i. What is sampling gate? Explain how it different from logic gates?
      ii. What is pedestal? How it effects the output of a sampling gates?
   (b) Derive the expression for gain and minimum control voltage of a bidirectional two diode sampling gates.
8. (a) Why totem pole is used in DTL? Draw The circuit diagram and explain DTL gate?
   (b) i. Give some applications of logic gates.
      ii. Draw The pulse train representing a 11010111 in a synchronous positive logic digital system.

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Code :9A04406 **1**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
ELECTROMAGNETIC THEORY & TRANSMISSION LINES
(Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Derive the electrostatic field intensity due to infinite line charge.
   (b) If point charge $3\mu c$ is located at the origin in addition to the two charger -4 μc and $5\mu c$ are located at (2,-1,3) and (0,4,-2) respectively, find the potential at (1,0,1) assume zero potential at infinity.

2. (a) Determine the magnetic field intensity due to infinite long co-axial transmission line.
   (b) State the ampere's circuit law.

3. (a) Define and derive the displacement current and its density.
   (b) A coil comprises 50 turns of wire wrapped around a square frame with each side measuring 20 cm. if the coil is centered at the origin on plane Z=0 such that its sides are paralled to the x-axis and y-axis and is subject to B = 2cos y cos10^3 + azwb/m^2 , calculate the induced emf on the coil.

4. (a) Derive the Helmholtz's equation for a linear, isotropic homogenous nature of medium.
   (b) Define depth of skin.
   (c) Define surface resistance.

5. (a) Derive the expression for reflection coefficient and transmission coefficient of parallel polarization.
   (b) A uniform plane have in air with $E = 8\cos(wt - 4x - 3z)ayv/m$ incident on a dielectric slab (z $\geq$ 0) with Ur=1.0, Ex=2.5, $\sigma = 0$, find
      i. the polarization of the wave ,
      ii. the angle of incident
      iii. the reflected E field
      iv. the transmitted H field.

6. (a) Explain the characteristics of TE and TM waves.
   (b) Verity that the alternation is a minimum at a frequency which is $\sqrt{3}$ times the cut-off frequency.

7. (a) Define the characteristic impedance and propagation constant ,alternation constant,velocity of propagation and wave length of transmission line interms of primary constants.
   (b) A telephone line, 10 km ling has the following constants; $z0 = 300\angle 0^0\Omega$, $\beta = 0.1$ wiper /km and $\alpha = 0.05$ radians km.
   Determine the receiving end current when 20 mA are sent at the transmitting end if the receiving end is shorted.

8. (a) Define and derive the input impedance of open and short circuited transmission lines.
   (b) Explain the double stab matching for a transmission line, how it over come the disadvantages of single stub matching technique.

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Code :9A04406 **2**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
ELECTROMAGNETIC THEORY & TRANSMISSION LINES
(Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks
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1. (a) The finite sheet $0 \leq x \leq 2$, $0 \leq y \leq 2$ on the Z=0 plane has a charge density Ps = $\mathrm{xy}\left(\mathrm{x}^2+\mathrm{y}^2+25\right)^{3/2}\mathrm{nc/m}^2$.
Find (i) total electric field at (0,0,5) (ii) The force experienced by a-1 mc charge located at (0,0,5).
   (b) (i) Define electric flux intensity and density.
(ii) Describe the Gauss's law.

2. (a) Determine the magnetic field intensity due to infinite ling co-axial transmission line.
   (b) State ampere's circuit law.

3. (a) Describe the electric and magnetic boundary conditions between dielectric to dielectric.
   (b) A dielectric interface is defined by $4\mathrm{x}+3\mathrm{y}=10\mathrm{m}$. The region including the origin is free space, where $\mathrm{D}_1 = 2\mathrm{ax}-4\mathrm{ay}+6.5\mathrm{aznc/m}^2$ in the region, $\mathrm{Er}_2 = 2.5$.find D_2 and the angle θ_2 that makes with the normal.

4. (a) Derive the relation between E & H.
   (b) In free space $\mathrm{H} = 0.1\cos\left(2\mathrm{X}10^8\mathrm{t}-\mathrm{kx}\right)\mathrm{ay\ A/m}$ calculate
(i) K λ and T (ii) calculate the time t_1 it takes the wave to travel $\lambda/8$.

5. (a) (i) Define Brewster angle (ii) Define critical agnle
(iii) Define surface impedance (iv) Define skin depth.
   (b) A uniform place wave in air with $\mathrm{E} = 8\cos\left(\mathrm{wt}-4\mathrm{x}-3\mathrm{z}\right)\mathrm{ay\ v/m}$ incident on a dielectric slab ($\mathrm{z} \geq 0$) with $\mu r = 1.0, E8 = 2.5, \sigma = 0$ find
      i. the polarization of wave
      ii. angle of incident
      iii. the reflected E field
      iv. the transmitted H field.

6. (a) Explain the characteristics of T.E & T.M waves.
   (b) Verity that the alternation is a minimum at a frequency which is $\sqrt{3}$ times the cut-off frequency .

7. (a) Determine the
      i. Characteristic Impedance
      ii. Propagation constant
      iii. Primary constants.
   (b) A telephone line 10 km long has the following constants $\mathrm{Z}_0 = 300\angle 0^0\Omega, \beta = 0.1neper/km\ and\ \alpha = 0.05rad/km$. Determine the receiving end current when 20 mA are sent at the transmitting end. If the receiving end is shorted.

8. (a) Define the open and short circuited input impedance and derive the relation between Zoc,. Zsc and P, Z0.
   (b) Explain the applications of smith chart.

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Code :9A04406 **3**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
ELECTROMAGNETIC THEORY & TRANSMISSION LINES
(Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Define electric field intensity. Derive expression for different types of charge densities.
   (b) In spherical coordinates $\rho = \frac{10^{-6}}{r} cm^3$ find the
      i. Total charge in the region described by
      $10 \leq r \leq 20m, 28^0 \leq \theta \leq 31^0, 0.9\pi \leq \Phi \leq 0.96\pi$
      ii. The total charge in a sphere of 1 mm radius centered at the origin.

2. (a) Derive Maxwell's equations for magneto static field.
   (b) The current filament are parallel to Zaxis one passes through $(0, -0.5, 0)$ and carries 10A inaZ direction the other passes through (0,0.5,0) and carries 100A in a Z direction find Hx on the yaxis.

3. (a) Derive the equation for continuity for time varying fields.
   (b) A certain material has $\sigma = 0 and \varepsilon r = 1$ if $H = 4\sin(10^6 t - 0.01z)\ \overline{ay}$ A/M make use of Maxwell's equations to find μr.

4. (a) Derive wave equation for conducting medium.
   (b) Find $\alpha, \beta, \gamma and \eta$ for ferrite at 10GHZ.
   $\varepsilon r = 9, \mu r = 4, \sigma = 10ms/m$.

5. (a) Derive the expression for reflection coefficient for Horizontal polarization.
   (b) An elliptical polarized wave has
   $E = 3\sin(wt - \beta z)\overline{ax} + 2\sin(wt - \beta z + 75^0)\overline{ay} v/m$ find the time average power.

6. (a) for a parallel plane wave guide of 3cm separation determine the propagation characteristics for a signal at 10GHZ (i) TE10 waves (ii)TEM waves.
   (b) Define the significance of following terms to parallel plane guides.
   (i) wave impedance (ii) phase and group velocities.

7. (a) Derive the characteristic impedance of transmission line interms of its line constants.
   (b) A 8MHZ the characteristic impedance of transmission line is $(40 - j2)\ \Omega$ and propagation constant is (0.01+j0.18)m find the primary constants.

8. (a) Derive the relation between reflection coefficient and characteristic impedance.
   (b) What are the advantages and disadvantages of single stub matching?

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Code :9A04406 4

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
ELECTROMAGNETIC THEORY & TRANSMISSION LINES
(Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. (a) State and explain coulomb's law? Obtain an expression in vector form?
   (b) A charge $Q_2 = 121X10^{-9}C$ is located in vacum at $P_2\,(-0.03, 0.01, -0.04)$ find the force on Q_2 due to $Q_1 = 100\mu C at P_1(0.03, 0.08, 0.02)$. All distances are in meters.

2. (a) State and derive the mutual inductance? Also derive coefficient of coupling.
   (b) Evaluate the inductance of a solenoid of 2500 turns wound uniformly over a length of 0.5m on cylindrical paper tube 4cm in diameter? The medium is air.

3. (a) What is in consistency of amperes law? How it is rectified by Maxwell? Explain.
   (b) In a medium of $\mu r = 2$ find $\overline{E}, \overline{B}$ and displacement current density if $\overline{H} = 25\sin(2X10^8t + 6x)\,\hat{y}\,mA/m$

4. (a) Find the relation between E and H for uniform plane wave?
   (b) A plane sinusoidal electromaginetic wave travelling in free space has $E_{max} = 1500\mu V/m$
      i. Find the accompanying Hmax.
      ii. The average power transmitted.

5. Write short notes on the following.
   (a) Surface impedance
   (b) Brewster angle
   (c) Total internal reflection.

6. What are the field components for TE waves? Derive then and draw the sketches for TE_{10} mode.

7. (a) Starting from equivalent circuit derive the transmission line equations for v and I in terms of source parameters?
   (b) A low transmission line of 100Ω characteristic impedance is connected to a load 300Ω calculate the reflection coefficient and standing wave ratio?

8. (a) Derive the expression for input impedance of a transmission line?
   (b) What is significance of standing wave ratio in transmission line? Calculate the reflection coefficient and VSWR for a 50Ω line termitted with
      i. matched load
      ii. short circuited load
      iii. +j50Ω load
      iv. -j50Ω load.

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Code :9AHS401 **1**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks
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1. Explain the Determinants of demand and their impact on demand? Illustrate your answer with the help of graph.
2. Write short notes on:
   (a) Elasticity of Demand=zero
   (b) Elasticity of Demand=infinite
   (c) Elasticity of Demand=one
   (d) Elasticity of Demand>one
   (e) Elasticity of Demand<one
3. Explain production function with two variable.
4. Compare and contrast the features of perfect markets with monopoly.
5. Explain the features of partnership? Explain its advantages and disadvantages.
6. There are two projects A and B. The capital investment in both the projects is Rs. 1,00,000/-. The returns on the projects are us as under:

Year	Project A	Project B
1	20000	40000
2	25000	30000
3	30000	25000
4	40000	20000

   Calculate the payback period and decide which project to choose and why?
7. Journalize the entries and prepare ledger and trial balance from the following.

1998		Rs.
May 1	purchased goods from Teja 50% of it invoiced to Mani	30,000
May 2	sold goods to Kapil Rs. 15,000/- and received a cash of	3,000
May 4	Purchased goods from Sai for Rs. 12,000/- and paid	2,000
May 6	Bought Indica car and presented it to his son-in-law	250,000
May 7	cash paid to M/s. Jasper Industries Ltd.,	250,000
May 8	Purchased Santro car for office use kapil became insolvement, a dividend of 50 ps. In a rupee is	300,000
May 10	received	
May 11	Bought Indica car and presented it to his son-in-law	300,000
May 12	Sai account settled with a discount of	500

8. From the following balance sheet of ABC Co. Ltd., calculate the following ratios
   (a) Current Ratio
   (b) Quick ratio
   (c) Debt equity ratio.
   Balance sheet of ABC co., Ltd., as on 31.12.2008

Liabilities	Rs.	Assets	Rs.
Equity share capital	1000	Plant and machinery	975
debentures	900	Stock	550
Creditors	200	Debtors	550
Outstanding expenses	100	Cash in hand	375
Profit and loss account	100	Prepaid expenses	50
Bank loan (long term)	200		
Total	2500		2500

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Code :9AHS401 **2**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. What is Law of Demand? What are the assumptions of Law of Demand?
2. Explain different types of elasticity of demand. Explain the significance of each type.
3. Explain marginal rate of technical substitution, isoquants and isocosts.
4. Explain the price-output determination under perfect competition.
5. Define joint stock company. What are the features of a company form organization?
6. Company is considering an investment proposal which requires an initial outlay of Rs. 1,00,000 and has a life of five years with no salvage valve. The company's tax rate is 50%. The firm uses straight -line depreciation method. The estimated cash flow before tax are as follows.

Year Cash flows	1	2	3	4	5
Before tax	10,000	11,000	14,000	15,000	25,000

   You are required to calculate:
   (a) pay-back period
   (b) Net present value. The company's required rate of return of return is 10%.

7. Write Journal, Ledger and trial Balance from the following transactions.

1998		Rs.
Jan 1	Commenced business with cash	100000
Jan 2	Bought goods for cash	10000
Jan 3	Sold goods for cash	5000
Jan 4	Purchased goods on credit from Mahesh	5000
Jan 5	Sold goods to venkatesh	2000
Jan 6	Goods returned to Mahesh	1500
Jan 7	Sold goods to Akhilesh for cash	2300
Jan 8	Venkatesh returned goods	800
Jan 9	Purchased office premises	200000

8. From the following balance sheet calculate (1) current ratio (2) Quick Ratio (3) Debt equity Ratio and other possible ratios:

Liabilities	Rs.	Assets	Rs.
Equity share capital	400000	Land & buildings	500000
Reserves	80000	Machinery	220000
Debt	480000	Inventory	180000
Current liabilities	240000	Debtors	240000
Profit and loss account		Bills receivables	60000
	1200000		1200000

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Code :9AHS401 **3**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. Explain demand. Explain law of demand. What are the exceptions to law of demand?
2. Elasticity of demand is a number. Explain what is the significance when it varies between zero and infinite?
3. Explain the cost output relationship in the short run.
4. Explain different pricing methods?
5. Define co-operative society. What are the features of co-operative society? What are the advantages and disadvantages of co-op. society?
6. Company Z is planning to expand its production by installing a new machine. Company X and Y are selling the same machine at. Rs. 5,00,000/- the life of machine is 5 years. But the expected benefits are as follows:

Year	1	2	3	4	5
Company X	50000	60000	70000	80000	90000
Company Y	75000	100000	125000	150000	125000

   The salvage value of company X's machine is expected to be Rs. 20000 while that of company Y's machine is nil. Calculate (i) pay back period (ii) ARR.

7. Prepare trading and profit and profile and loss account and balance sheet, on 31-03-1997 with the following particulars

Particulars	Debit Rs.	Credit Rs.
Sales	-	100,000
Purchases	175,000	-
Drawings	-	25,000
Rent to be collected	-	6,000
Income tax paid	3,500	-
Carriage	2,200	-
Discount allowed	600	-
Discount received	-	300
Wages	31,000	-
Interest on investments	-	4,500
Commission received	-	2,000
Bills receivable	-	35,000
Bills payable	-	20,000
Sundry creditors	45,000	-
Sundry debtors	-	100,000
Bank loan	25,000	-
Capital	-	100,000
Plant & machinery	60,000	-
Bank	20,000	-
Advertising	5,000	-
Instalment due on Hire purchase	-	4,500
	367,300	397,300

8. Summarized accounts of ashok Ltd., for the year ended 31.12.1978

BALANCE SHEET.

Liabilities	Rs.	Assets	Rs.
Share capital	250	fixed assets 500 less: depre 80	420
General reserve	100	Cash	55
Debentures	180	Debtors	65
Term loans	30	Inventories	90
Creditors	70		
Total	630	total	630

INCOME STATEMENT.

Net sales	350
Less of cost of material	70
Wages	90
Gross profit	190
Less: admn, selling & general cost	50
Earning before depreciation, interest and tax	140
Less depreciation	30
Operating profit	110
Less: interest	25
Earning before tax	85
Less tax	15
Earning after tax	70
Less: dividend	25
Retained earnings	45

Calculate the activity ratios.

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Code :9AHS401 4

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. Explain law of demand and its chief characteristics. The law of demand does not hold good in case of luxuries. Explain other instances of exceptions.
2. What are the factors governing the demand forecasting?
3. (a) Explain what is break even point.
   (b) A firm has fixed cost of Rs. 5,000/-, variable cost per unit Rs.3 and selling price of Rs. 5/-.
   Determine the break even point in terms of volume and value.
4. Write short notes on:
   (a) Limit pricing
   (b) Going rate pricing
   (c) Market skimming pricing
   (d) Sealed bid pricing.
5. What are the different forms of public enterprises? Explain their features.
6. Write short notes on:
   (a) Net present value
   (b) IRR
   (c) Profitability index.
7. Mr. Sharma is providing you the list of balances of his business on 31-12-1998. Prepare the final accounts for him.

Trail Balance on 31-12-1998

Particulars	Debit Rs.	Credit Rs.
Capital	-	50,000
Drawings	7,500	-
Purchases and sales	72,100	95,000
Returns	1,300	2,700
Debtors, creditors	18,200	35,750
Stock (1-1-1998)	19,800	-
Bad debts	3,000	-
Bills receivable	12,000	-
Bills payable	-	23,000
Cash in hand	800	-
Office expenses	6,210	-
Sales van	15,000	-
Expenses of sales van	1,400	-
Discount	-	2,910
Rent, taxes	10,700	-
Telephone charges	1,050	-
Postal charges	950	-
Furniture & fittings	5,000	-
Printing & stationery	2,750	-
Commission	8,400	-
Carriage in ward	3,200	-
Salaries and wages	20,000	-
	209,360	209,360

Adjustments:
(1) Closing stock Rs. 61,700/-.
Depreciate furniture by 10%, sales van by
(2) 20%
(3) Rent outstanding Rs. 900/-.
(4) Bad debts Rs. 200/-.
(5) Provide 5% for bad and doubtful debts. 1/4th of the salaries & wages belongs to
(6) Factory

8. From the following data calculate:

   (a) Inventory Turnover Ratio

   (b) Average period of holding the stock.

Sales	Rs. 10,00,000
Sales returns	Rs. 1,00,000
Opening stock	Rs. 2,00,000
Closing stock	Rs. 4,00,000

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Code :9A02401 **1**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
PRINCIPLES OF ELECTRICAL ENGINEERING
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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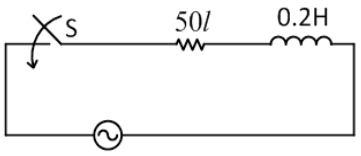
1. (a) Explain the following terms:
   i. Unit step
   ii. Unit impulse
   iii. Unit Ramp.
   (b) In the circuit shown in figure obtain the expression for current i(t) with an impressed a.c voltage given by v=150 sin(500t+0.788) volts



V = 150 sin (500t + 0.788) volts

2. (a) Define:
   i. Open circuit impedance parameters
   ii. Hybrid parameters.
   (b) The following observation are made, while making measurements on a two-port network.
   i. With port 22^1 short circuited, a voltage of 10v applied to port 11^1 results in I_1=2.16A and I_2=2.175.
   ii. With port 11^1 open circuited and a voltage of 6V applied to port 22^1, I_2=1A and V_1=5V. Determine the b-parameters of the network and write the loop equation in the matrix form.

3. (a) Explain about the classification of fitters.
   (b) Design and m-derived π-section high pass fitter having a cutoff frequency of a 2 kHz. Take R_k=600u and f_α=2.1 kHz. Find the alternation at f=2.05 KHz and 25k Hz.

4. (a) Explain lattice type attenuator.
   (b) Design a bridge t-attenuator which produces an alternation of load and working between two 100u impedance.

5. (a) Explain the function of commuter, yoke and brushes.
   (b) A shunt generator has and R_a=0.1u and R_{sh}=250u. Determine
   i. The load current
   ii. The field current
   iii. Armature current
   iv. Armature voltage when it supplies a load of 22 KW at 440 V.

6. (a) Explain the necessity of starter.
   (b) A 15 KW de shunt motor has armature and field winding resistance of 0.25u and 200u respectively. Its no-load speed in 1200 r.p.m and it draws a current of 10A , when connected across a 300V source. Calculate the speed of the motor an full load. Assume these is no change in flux from no load to full load.

7. (a) What are the losses present in a transformer.
   (b) Explain the equivalent circuit parameter of a transformer.

8. Write short notes on:
   (a) Stepper motor.
   (b) Capacitor motor.

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Code :9A02401 **2**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
PRINCIPLES OF ELECTRICAL ENGINEERING
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks
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1. (a) Derive the expression for transient voltage across R,L and C when a series R-L-C circuit in excited by an a.c voltage A sin(wt+ϕ) when the switch in closed at time t=0.
   (b) For the circuit of figure1, find the expression for the current supplied by the source.

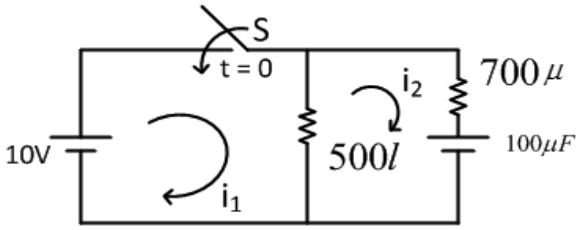
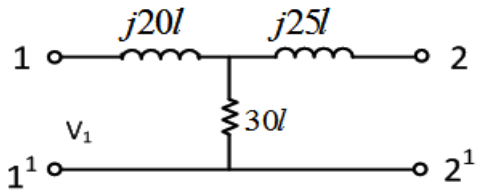


Figure 1

2. (a) Define and explain short circuit admittance parameter or y-parameters.
   (b) Determine the z-parameter of the network shown in figure.



3. (a) Design constant K low pass filter.
   (b) A proto type high pass filter has a cutoff frequency of 8 k Hz and nominal impedance of 600u. Calculate the values of inductance and capacitance used in the filter.

4. (a) Design symmetrical π-attenuator.
   (b) Design a symmetrical lattice attenuator with a characteristic resistance of 75u and producing an attenuator of 12dB.

5. (a) Explain the principle of operation of DC generator.
   (b) A lay shunt compound generator deliveries a load current of 100A at 400 voltage and has armatures series field and shunt fields resistance of 0.047 u,0.02u and 200u respectively. Calculate the generators emf and armature current. Allow 1.5 voltage per brush for contact drop.

6. (a) Explain the produce and predetermining the efficiency by using surmburne's test.
   (b) A 120Kw , belt drives shunt generator running at 500rpm on 250 V bus bars continuous to run as a motor when the belt breaks, then taking 20kW. What will be its speed? R_a=0.02u ,R_{sh}=80u. Contact voltage drop under each brush 1.5 V. Ignore armature reactions.

7. (a) Explain the constructional features of transformer.
   (b) The primary winding of a transformer has 300 turns. When connected across a 220V, 50 Hz supply. Its draws a current of 5A at a pf of 0.25 on no load. Determine:
      i. The maximum value of the core flux.
      ii. Magnetizing current and
      iii. The loss in core.

8. Write short notes on:
   (a) Stepper motor.
   (b) AC Tachometers.

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Code :9A02401 **3**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
PRINCIPLES OF ELECTRICAL ENGINEERING
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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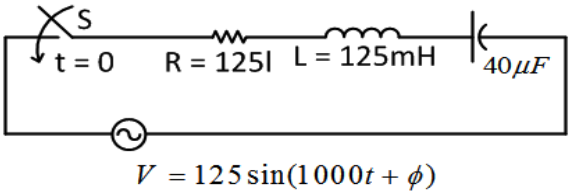
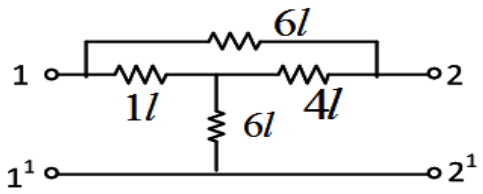
1. (a) Analyze a simple transient R-C circuit supplied form DC voltage source with C initially changed to V_0 volts.
   (b) For the series R-L-C circuit shown in figure, Determine the current i(t), when the switch 's' in closed at time t=0. When $\varphi = 90^0$



2. (a) Express y-parameter in terms of z-parameters.
   (b) Find y-parameters for the resistive network shown in figure.



3. (a) Design m-derived high pass filter.
   (b) Design m-derived low pass filter (both T and π sections) having a cutoff frequency of 1 kHz resonant frequency of 1200 Hz and design impedance of 500 u.

4. (a) Design T-type attenuator.
   (b) Design T-type attenuator to praide alternator of 15dB. Take characteristic impedance=200u.

5. (a) Derive emf equation of DC generator.
   (b) A Lang shunt compound generator delivers a load current of 50A at 400V and has armature series field, and shunt field resistance of 0.04u, 0.02u and 220u respectively. Calculate generators electromotive force and armature current. Allow 1.5V per brush for contact drop.

6. (a) What are the losses present in DC machine?
   (b) A 200V shunt motor has an armature resistance of 0.4u and a field resistance of 200u. When draining of a load of constant torque at 500rpm. The armature takes 25A, If it is desired to raise the speed from 500 to 700 rpm. What resistance must be inserted into the shunt field circuits? Assuming the magnetization curve to be linear.

7. (a) Explain working of 1-φ transformer under no load condition.
   (b) A 10Kva ,6600/220V, 50Hz transformers in rated at 2.5v/turn of the winding coils. Assume the transformer to be ideal and calculate
      i. Transformation ratio
      ii. Primary current
      iii. Secondary current

8. (a) Explain principle of operation of shaded pole motor.
   (b) Explain the working principle of stepper motor.

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Code :9A02401 4

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
PRINCIPLES OF ELECTRICAL ENGINEERING
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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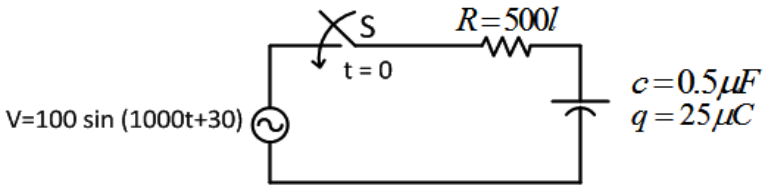
1. (a) Obtain the expression for transient voltage across R,L and C in a series R-L-C circuit excited by a D.C voltage when the switch in closed at t=0.
   (b) Obtain the transient current i(t) in the R-C series circuit shown in figure with the impressed voltage V.



2. (a) Define ABCD meters. Explain their importance.
   (b) Voltage V_1 and V_2 at the ports of a 2-port network are given by the equations.
   $V^1 = 60I_1 + 20I_2 : V_2 = 20I_1 + 40I_2$
   Find the Z, Y and ABCD parameters of the network.

3. (a) Explain about the characteristics of fitter.
   (b) A prototype high pass fitter has a cutoff frequency of 8 kHz and nominal impedance of 600u. Calculate the values of inductance and capacitance used in the fitter.

4. (a) Design symmetrical T-attenuator.
   (b) Design a T-attenuator pad to give an alternator of 20dB. The characteristic resistance is 500u.

5. (a) Draw and explain the characteristics of DC shunt generator.
   (b) A separately excited generator running at 1500rpm supplies 250A at 125V to a circuit of constant resistance. What will the field current unattered? The armature resistance is 0.05u and the total drop at the brushes is 1.5V. Ignore armature reaction.

6. (a) Explain different speed control methods of D.C motor.
   (b) A 400V, eight-pole shunt motor has a wave connected armature winding with 1000conductors. The useful flux per pole is 0.015W and the armature and field resistance are 0.4u and 200u respectively. Ignoring the effect of armature reaction, find the speed and the total developed torque when a current of 25A is taken from the mains. If the iron, friction and windage losses aggregate to 1000w. Find the useful torque brake horse power, and efficiency at this speed.

7. (a) Explain open circuit and short circuit tests conducted on 1-φ transformer.
   (b) The open circuit and short circuit tests on a 4 kVA , 200/400V ,50 Hz single phase transformer gave the following results OC test on the LV side: 200V,1A,100W sc test with LV side shorted: 15 V,10A,85W.
      i. Determine the parameters of equivalent circuit.
      ii. Draw the equivalent circuit referred to the LV sides.

8. Write a short notes on :
   (a) AC servomotor.
   (b) Synchro.

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Code :9A04401 **1**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
SWITCHING THEORY & LOGIC DESIGN
(Common to Electrical & Electronics Engineering, Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)
Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks
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1. (a) A person on SATURN possessing 18-fingers has a property with$(1{,}00{,}000)_{18}$. He has 3 daughters and two sons. He wants to distribute half of the money equally to his sons and remaining half to his daughters equally. How much his each son and each daughters will get in Indian currency?
   (b) An Indian started on an expedition to SATURN with Rs 1,00,000. The expenditure on SATURN will be in the ratio of 1:2:7 for food, clothing and travelling, How much he will be spending on each item in the currency of SATURN.

2. (a) Find the complement of the function f=A+BC, then show that $F.\overline{F} = 0$ and $F + \overline{F} = 1$.
   (b) Reduce the following Boolean expressions into the indicated number of literals:
      i. A^1C^1+ABC+AC^1 to 3 literals
      ii. ($x^1.y^1+z^1$)+z+xy+wz to 3 literals
      iii. $A^1B(D^1+C^1D)$+B(A+A^1CD) to 1 literal.
      iv. (A^1+C)(A^1+C^1)(A+B+C^1D) to 4 literals.

3. Define cyclic PI chart and using branching method find the minimal expression of the switching function: f(w,x,y,z)= $\sum m(0,1,5,7,8,10,14,15)$.

4. (a) Design BCD to xs-3 code converter using logic gates.
   (b) What is meant by Hazards? Explain the different types of Hazards. Obtain Hazard free realization circuit for the function:f(A,B,C,D)= $\sum m(0, 2, 6, 7, 8, 10, 12)$.

5. (a) Find the minimal threshold-logic realization for the function f(A,B,C,D)= $\sum m(2, 3, 6, 7, 10, 12, 14, 15)$
   (b) What are the capabilities and limitations of T-gate?

6. (a) Design a sequential circuit with two D-Flip-Flops A and B and one input x. When x=0, the state of the circuit remains the same. When x=1, the circuit goes through the state transitions from 00 to 01 to 11 to 10 back to 00 and repeats.
   (b) Convert SR-Flip-Flop into JK-Flip-Flop.

7. Find the equivalence partition for the machines'M' shown in fig(1) below:
   (a) Show the standard form of the corresponding machine.
   (b) Find a min. length sequence that distinguishes states A and B.

PS	NS,Z	
	X=0	X=1
A	B,1	H,1
B	F,1	D,1
C	D,0	E,1
D	C,0	F,1
E	D,1	E,1
F	C,1	E,1
G	C,1	D,1
H	C,0	A,1

8. (a) Explain the Salient features of the ASM chart
   (b) Draw an ASM chart and state diagram for the synchronous circuit having the following description: "The circuit has a control input 'x', clock and outputs A and B. If x=1, on every clock edge(rising of falling) the code on BA changes from 00 → 01 → 10 → 11 → 00 and repeats. If x=0, the circuit holds the present state".

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Code :9A04401 **2**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
SWITCHING THEORY & LOGIC DESIGN
(Common to Electrical & Electronics Engineering, Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. (a) What is self complematary code? Explain with example?
   (b) Convert the following numbers.
      i. $(3456)_{10}$ to base 8
      ii. $(6547)_{12}$ to base 16
2. (a) Show that the dual of the exclusive-or is equal to its complement?
   (b) Show that a positive logic NAND gate is negative logic NOR gate and ViceVersa.
3. Minimize the function using karraugh-map and obtain minimal SOP function? f(A,B,C,D)= π(1,2,3,4,6,9,10,12,14)+d(5,7,11).
4. (a) Write a short notes on 4 - to - 1 multiplexer?
   (b) What are the applications of decoders and multiplexer?
5. (a) Realize the following Boolean function using threshold gate?
   F(a,b,c,d)= Σ(0,1,3,4,5,7,9,11,13)
   (b) What is programmable logic array?
6. (a) Draw the circuit of a negative edge triggered JK filp flop with active high preset & clear, explain its operation with the help of truth table
   (b) Define:
      i. Hold time
      ii. Setup time
7. (a) Distinguish between melay and moore machines?
   (b) Find the equivalence partition for the given machine and standard form of corresponding reduced machine.

PS	NS^2	
	X=0	X=1
A	B,0	E,0
B	E,0	D,0
C	D,1	A,0
D	C,1	E,0
E	B,0	D,0

8. Construct an ASM block that has 3 i/p variables (A,B,C), 4 output variables(W,X,Y,Z) and 2 exit paths for this block, output Z is always 1 and W is 1 if A and B both are 1, If C=1 and A=0 ,Y=1 and exit path 1 is taken. If C=0 or A=1,X=1 and exit path 2 is taken. Realize the above using multiplexer and register?

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Code :9A04401 **3**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
SWITCHING THEORY & LOGIC DESIGN
(Common to Electrical & Electronics Engineering, Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks
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1. (a) Explain error correction and error detection codes with examples?
   (b) Convert the following hexadecimal number to octal, decimal and binary (i) CA 732 (ii) 1AC78
2. (a) Draw the logic diagram to implement the following Boolean expressions
      i. Y=A+B+B^1(A+C^1)
      ii. Y=A(B⊕D)+C^1
      iii. Y=A+CD+ABC
      iv. Y=(A⊕C)^1+B
   (b) Express the Boolean function F=A+B^1C as a sum of min - terms.
3. For the given function
   F(A,B,C,D)= $\Sigma(0,3,4,7,8,9,11,12,14,15,16,20,23,24,27) + \Sigma d(1,2,10,13,17,18,19,22,26)$
   obtain the minimal SOP expression using kmap.
4. (a) Explain the operation of priority encoder?
   (b) Give the applications of multistage synthesis.
5. (a) Design a BCD to excess - 3 code converter using
      i. ROM
      ii. PAL
   (b) Compare combinational and sequential logic circuits?
6. (a) Design a Mod -6 synchronous counter using JK flip flop?
   (b) Classify the sequential circuits with one example?
7. Find the equivalence partition and corresponding reduced machine instandard form for the machine given below.

PS	NS,Z	
	X=0	X=1
A	E,0	C,0
B	C,0	A,0
C	B,0	G,0
D	G,0	A,0
E	F,0	B,0
F	E,0	D,0
G	D,0	G,0

8. Construct an ASM block that has 3 input variable(A,B,C), 4 output variables(W,X,Y,Z) and 2 exit paths. For this block, output Z is always 1, and W is 1. If A and B both are 1, If C=1 and A=0,Y=1 and exit path 1 is taken. If C=0 or A=1,X=1 and exit path2 is taken, Realize the as one using PLA control and give the PLA table.

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Code :9A04401 4

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
SWITCHING THEORY & LOGIC DESIGN
(Common to Electrical & Electronics Engineering, Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering, Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. (a) The message below has been coded in Hamming code for BCD transmitted through a noisy channel. Decode the message assuming that at most a single error has occurred in each code word.
   10010010111001111101100011011
   (b) Noting that 3^2=9, formulate a simple procedure for converting base-3 numbers directly to base-9. Use the procedure to convert
   $2110201102220112)_3$ to base -9.

2. (a) Develop a circuit for each of the following Boolean expression using only NAND gates
   (i)Y=(A+C)(B+D) (ii) Y=AB(C+D)
   (b) What are the Huntington postulates. List out.
   (c) What are the differences between ordinary algebra and Boolean algebra.

3. (a) Simplify the following five variable Boolean function using K-map technique:
   F(A,B,C,D,E)= $\Sigma_M(0,4,8,12,16,18,20,22)+\Sigma_d(24,26,28,30,31)$.
   (b) Explain the following with respect to Q.M. Method
      i. Essential Row
      ii. Dominated Row
      iii. Dominating column

4. Implement the following function
   F(A,B,C,D)=$\Sigma_M(0,1,3,4,7,10,12,14)$ using
   (a) 16:1 MUX (b) 8:1 MUX (c) 4:1 MUX

5. (a) Design BCD to xs-3 code converter using PLA.
   (b) Discuss the comparision between PROM,PLA and PAL.

6. (a) Design the sequence detector which detects 110010 using T - Flip-Flops.
   (b) Draw the state diagram and state table of the serial binary adder and implement by using D-Flip-Flop.

7. (a) What are the capabilities and limitations of FSM
   (b) For the machine 'M' shown in fig(1) below, find a minimal state reduced macine using merger table.

PS		A	B	C	D	E	F
NS,Z	I_1	E,0	F,0	E,-	F,1	C,1	D,-
	I_2	B,0	A,0	C,0	D,0	C,0	B,0

   Fig: 1 Machine 'm' state table.

8. (a) What is ASM chart? How it differs from the conventional flow chart? What are the symbols in ASM?
   (b) Draw an ASM chart and state diagram for the circuit fig(2) shown below:

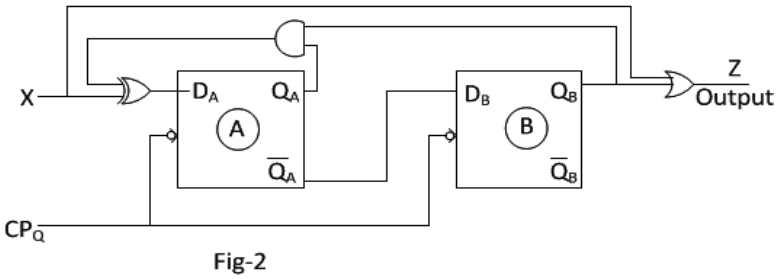

Fig-2

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Code :9A04402 **1**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
ELECTRONIC CIRCUIT ANALYSIS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Draw the small signal hybrid model of CB amplifier and derive and expression for its A_v,A_i, R_j & R_0.
   (b) The h- parameters of CE amplifier are h_{ie}=1100Ω, h_{fe}= 50, h_{re}= 2.5*10^{-4}, h_{oe}= 24μ A/v and R_s= 1 kΩ, R_l= 10kΩ. Find the current and voltage gain ,(with and without source resistance) input & output impedances.

2. (a) Describe the operation of transformer coupled amplifier and also derive the expression for its current gain.
   (b) With relevant circuit explain the different coupling schems used in amplifiers.

3. (a) Describe the emitter follower at high frequency and also derive the equation for higher cutoff frequency.
   (b) With hybrid π equivalent circuit. Derive the expressions for hybrid conductances.

4. (a) Draw the small signal model of MOSFET and derive the Expression for voltage gain of common source amplifier with unbypassed source resistance.
   (b) CD amplifier Uses FET having rd= 300 kΩ and μ =15. Calculate the output impedance and voltage gain for the load R_L= 300kΩ.

5. (a) With necessary diagram explain about the different feedback techniques in amplifiers.
   (b) In a voltage shunt feedback amplifier R_c=3kΩ, R_f=30kΩ, R_s= 8kΩ, h_{ie}= 1kΩ, h_{fe}=50,h_{re}=h_{oe}=0. Find the voltage gain, input impendence and output impendence with feedback.

6. (a) Explain the operation of R_C phase shift oscillator and derive the equation for frequency of oscillation.
   (b) With neat diagram explain about crystal oscillator.

7. (a) In class A power amplifier R_1=5Ω, V_{cEsat}=1v, V_{CEmax}=40v, $P_{c(max)}$=20w, transformer coupling n=2. Find the efficiency.
   (b) What is a phase inverter? How is it employed in class B power amplifier.

8. (a) With circuit diagram explain the stagger tuning operation. Give necessary graph.
   (b) Derive the expression for voltage gain in single tuned capacitive coupled amplifier.

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Code :9A04402 **2**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
ELECTRONIC CIRCUIT ANALYSIS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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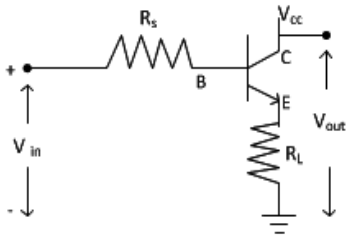
1. (a) Classify different types of amplifier?
   (b) For the emitter follower with R_s= 0.5kΩ and R_L= 5kΩ. calculate A_i,R_i,A_v assume h_{fe} = 50, h_{ie}=1kΩ, h_{oe}=25 μ A/V.



2. Draw the circuit diagram of two stage RC coupled transistor amplifier? Explain operation. Calculate the mid frequency range and low frequency range?

3. (a) Derive necessary equation for Hybrid- pi(π) common emitter transistor model?
   (b) An amplifier rated at 40W output is connected to a 10Ω speaker.
      i. calculate the i/p power required if power gain is 25dB.
      ii. calculate the i/p voltage if amplifier voltage gain is 40dB.

4. (a) Draw the circuit diagram of source follower circuit? And calculate the voltage gain, input admittance and output admittance?
   (b) Draw the circuit symbol for a p- channel MOSFET? And explain the small signal MOSFET circuit model?

5. (a) Derive the i/p impedance, o/p impedance for voltage series feed back amplifier?
   (b) When the negative feedback is applied to an amplifier of gain 100 the over all gain falls to 50. Calculate:
      i. The feed back factor'β'
      ii. If the same feedback factor maintained, the value of amplifier gains required if the over all gain is to be 75.

6. What is principle of oscillator? Draw the circuit diagram and derive the condition for oscillation?

7. Draw the circuit diagram of class A power amplifiers with transformer coupled? Explain the operation and calculate the efficiency?

8. (a) Draw the double tuned amplifier. Explain the operation.
   (b) What is stagger tuned amplifier explain?

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Code :9A04402 **3**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
ELECTRONIC CIRCUIT ANALYSIS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. (a) What are the different types of distortions in amplifier. Explain each?
   (b) By using Hybrid model derive performance characteristics for CB transistor amplifier.
2. Draw the circuit diagram of transformer coupled transistor amplifier? Explain operation , frequency response, advantages and applications.
3. (a) What is millers theory? Derive millers output capacitance using millers effect capacitance.
   (b) The Input power to a device is 10000W at a voltage of 1000V. The output power is 500W and output Impendance is 20Ω.
      i. Find the power gain in decibles.
      ii. Find the voltage gain in decibles.
4. (a) Draw the circuit symbols for P-channel MOSFET? and explain the small signal MOSFET circuit model?
   (b) Calculate the voltage gain, Input admittance, Input capacitance, output resistance for common source amplifier.
5. (a) What are the different types of feedback topologies? Explain with diagrams.
   (b) An amplifier has A_v= 1000±100. Determine the feed back needed to keep the gain with in ± 0.1%. Find A_{vf}?
6. Construct the Hartley oscillator? Explain the operation? Derive the condition for sustained oscillation?
7. (a) Draw the circuit diagram of class B push pull amplifier and explain the operation?
   (b) A class B push pull power amplifier is supplied with V_{cc}= 50V. the signal swings the collector voltage down to V_{min}= 5V. The total dissipation in both transistors is 40W, Find the total power and conversion efficiency.
8. (a) Classify the tuned amplifier? And what are the limitations.
   (b) Draw the single tuned amplifier explain the operation?

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Code :9A04402 **4**

II B.Tech II Semester(R09) Regular Examinations, April/May 2011
ELECTRONIC CIRCUIT ANALYSIS
(Common to Electronics & Instrumentation Engineering, Electronics & Control Engineering, Electronics & Communication Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Draw the small signal model of CE amplifier and derive the expression for it's A_I, A_v, R_i and R_0.
   (b) For the emitter follower with R_s= 500Ω and R_L= 5kΩ, Calculate A_I, A_v,A_{vs} and R_0. Assume h_{fe}=50,h_{ie}=1k Ω,h_{oe}= 25mA/V.
2. (a) Draw the circuit for Darlington pair and derive the expressions for A_1,A_v,R_i and R_0.
   (b) Describe the principle of operation of RC coupled cascade amplifier and analyse the frequency response.
3. (a) Derive the expression for CE short circuit current gain and explain the significance of fT is hybrid π model.
   (b) The low frequency parameters of a transistor are given below. V_{cc} =5v, I_c= 10MA, h_{ie}=500 Ω, h_{oe}=4*10^{-5}A/V,h_{fe}= 100, h_{re}=10^{-4}, f_p=50MHz,C_{ob}= 3pf. Compute the values of all hybrid π parameters.
4. (a) Draw the small signal equivalent circuit of common source amplifier and derive the expression for voltage gain and output admittance.
   (b) A common drain amplifier has rd = 300kΩ and $\mu = 15$. Calculate the output impendence and voltage gain for load resistance R_s= 100k Ω.
5. (a) Draw the equivalent circuit of current amplifier with current shunt feed back & Derive the expression for input resistance with feedback.
   (b) Discuss in detail about the benefits of negative feedback in amplifiers.
6. (a) Draw the general form of LC oscillators and derive the necessary conditions for oscillations.
   (b) Discuss about frequency and amplitude instability in oscillators.
7. (a) With neat circuit explain the operation of transformer coupled class A amplifier and derive the expression for efficiency.
   (b) Explain the class B push pull amplifier circuit & derive for its efficiency.
8. (a) What is the effect of cascading in Tuned amplifiers? Derive the relation for Bandwidth and no. of stages cascaded.
   (b) Distinguish between single Tuned , double tuned and stagger tuned amplifiers.

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