KADI SARVA VISHWAVIDYALAYA

B.E SEMESTER IV EXAMINATION (MAY/2014)

SUBJECT CODE : **EC- 403** SUBJECT NAME : **ADVANCE ELECTRONICS**

DATE: 13/05/2014 TIME: 10:30 TO 1:30 TOTAL MARKS: 70

Instructions:

1. Answer each section in separate Answer Sheet.
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted along with its respective question number
5. Use the last page of main supplementary for rough work.

Section - 1

Q:1 (All Compulsory)

(A) Explain the Switched mode power supply (SMPS) with necessary diagram. 05

(B) Explain class B push pull amplifier. 05

(C) Classify the amplifiers based on position of operation point (Q - Point) and also explain the Distortion in amplifier. 05

OR

(C) Draw and Explain a simplified circuit diagram of a regulated power supply and what type Of feedback is employed by this regulator? 05

Q:2 Answer the following Question.

(A) Explain the UJT as a Relaxation Oscillator. 05

(B) Write short note on mono stable multivibrator. 05

OR

(A) Explain construction, working and characteristic of UJT. 05

(B) Explain construction and working of Tunnel diode. 05

Q:3 Answer the following Question.

(A) Explain the advantages and disadvantages of negative feedback. 05

(B) What are the four possible topologies of feedback amplifier? Draw any two with necessary Details showing Vi, Vo, Ri, Ro, Ii, and Io. Derive input and output resistance for any one Topology. 05

OR

(A) Calculate Avf, Rof and Rif for an amplifier with voltage series feedback. Assume Rs=0, hfe=50, hie=1.1K, hre=hoe=0, Re=4.7K. 05

(B) Obtain GMf, AVf, and Rif expressions for single stage BJT-based current series feedback amplifier. Draw necessary circuit schematics. 05

Section - 2

Q:4 (All Compulsory)

(A) Draw the hybrid π model for a transistor in CE configurations and explain it. Derive the equation for transconductance gm. **05**

(B) Explain working principal of colpitt's oscillator. Also derive the expression for frequency of Oscillations. **05**

(C) Design RC phase shift oscillator for the frequency of 10 kHz. **05**

OR

(C) Write short note on: Validity of Hybrid – PI model. **05**

Q:5 Answer the following Question.

(A) State and explain any five characteristics of an ideal Op-Amp. **05**

(B) Draw and explain the block diagram of an Op-Amp. **05**

OR

(A) Derive the expression of voltage gain for inverting and non inverting mode of an OP-AMP. **05**

(B)Show the circuit and explain how to measure Input Bias Current and CMRR of an OP-AMP. **05**

Q:6 Answer the following Question.

(A) Draw 4-bit R-2R ladder type DAC and explain its working. **05**

(B) Explain working of successive approximation ADC with block diagram. **05**

OR

(A) Explain Dual slope A/D converter. **05**

(B) Switched capacitor type DAC. **05**

ALL THE BEST

KADI SARVA VISHWAVIDHYALAYA

BE 4th Semester Electronics & Communication Dept.

November-2014 Examination

Sub code: EC403 **Sub Name: Advanced Electronics**

Date: 05/11/2014 **Total Marks: 70**

Time: 10:30am to 01:30pm

Instructions:

1. Answer Each Section in Separate Answer sheet.
2. Use of Scientific Calculator is permitted. .
3. All questions are separate
4. Indicate clearly, the options you attempted along with its respective question number.
5. Use the last page of supplementary for rough work.

SECTION I

Q.1 (a)	Define following parameter. (1)CMMR (2) Fan-Out (3) Slew Rate (4) Propagation Delay (5) Power Dissipation.	**[05]**
(b)	Explain Tunnel diode with its negative resistance characteristics.	**[05]**
(c)	What is the negative feedback system? List the general characteristics of the negative feed back amplifier and explain any two of them with necessary equation.	**[05]**
	OR	
(c)	Draw and Explain with necessary figure the single stage CE transistor Amplifier response.	**[05]**
Q.2 (a)	Explain Class B- Push Pull Amplifier	**[05]**
(b)	Explain Monostable operation of transistor amplifier.	**[05]**
	OR	
Q.2 (a)	Explain Class B amplifier with its Cross over distortion.	**[05]**
(b)	Explain Class A power amplifier.	**[05]**
Q-3 (a)	Explain Block diagram of SMPS.	**[05]**
(b)	Write short note on Hybrid π model for a transistor on CE configuration and its circuit component.	**[05]**
	OR	
Q-3 (a)	What is UJT? Explain UJT as relaxation oscillator.	**[05]**
(b)	Describe in detail: Series Voltage Regulator with overload protection.	**[05]**

SECTION II

Q.4 (a)	What is oscillator? Explain the concept of oscillation. Explain the concept of oscillation Properly with Barkhausen criteria.	**[05]**
(b)	What is Digital to Analog Convertor ? Draw and Explain **Binary Weighted Resistor** DAC ? Give the advantages and disadvantages of **R-2R** Digital to Analog convertor.	**[05]**
(c)	Give brief description of Crystal Oscillator.	**[05]**
	OR	
(c)	The 4% negative feedback is employed in an amplifier with Av=140, fL=200Hz and fH=200 kHz, Ri=2kΩ, Ro=4.7kΩ Determine the following. Avf, Rif, Rof, fLF, fHF.	**[05]**
Q.5 (a)	Explain working principal of colpitt's oscillator. Also derive the expression for frequency of oscillations.	**[05]**
(b)	Draw and explain Hartley oscillator using FET. Calculate the value of tank circuit capacitor of a hartley oscillator for 50 kHz with L1 and L2 are of 100 μH.	**[05]**
	OR	
Q.5 (a)	Draw the circuit and explain the operation of Wien bridge Oscillator and derive expression for feedback factor-β and frequency.	**[05]**
(b)	Design a colpitt oscillator to get frequency of 100 kHz with an active BJT having hfe=45.Assume C1=0.001 μf, $V_E = V_{ceq}$=3v, Iceq=1mamp.	**[05]**
Q-6 (a)	Explain working of successive approximation ADC with block diagram.	**[05]**
(b)	Explain Ideal Operational amplifier characteristics in detail.	**[05]**
	OR	
Q-6(a)	Draw 4-bit R-2R ladder type DAC and explain its working. Compare it with weighted resistor type DAC.	**[05]**
(b)	Explain ideal Op-Amp closed loop basic configuration.	**[05]**

KADI SARVA VISHWAVIDYALAYA

B.E SEMESTER : 4th **EXAMINATION (April - May / 2015)**

SUBJECT CODE : **EC - 403** SUBJECT NAME :Advance electronics

DATE: 02/05/2015 TIME: 10:30 am to 01:30 pm TOTAL MARKS: 70

Instructions:

1. Answer each section in separate Answer Sheet.
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted along with its respective question number.
5. Use the last page of main supplementary for rough work.

Section - 1

Q:1 All Compulsory

(A) Write and explain the types of amplifier base on its operation. Also find the efficiency of push pull amplifier. 05

(B) Define: **1:** Harmonic Component. **2:** Valley Current for tunnel diode **3:** Negative Resistance. 05

(C) Write & Explain the principle of phase shift oscillator with its working. 05

OR

(C) List out the Op-Amp Parameters. And explain any two in detail. 05

Q:2 Answer the following Question.

(A) Make short note on Hybrid –pi Capacitances for Transistor in detail. 05

(B) Explain in brief UJT with its applications. 05

OR

(A) Explain the operation of monostable multivibrator. 05

(B) Design the binary Weighted Resistor Type DAC. 05

Q:3 Answer the following Question.

(A) What is Operational amplifier? Explain the Inverting and Non-inverting Amplifiers in detail. 10

OR

(A) Derive the formula for negative feedback amplifier gain in term of A_f, A & β. 05

(B) What do you understand by damped and undamped electrical oscillations? 05

Section - 2

Q:4 All Compulsory

(A) Write and Explain Difference between positive feedback and negative feedback. 05

(B) Quartz Crystal is commonly used in crystal Oscillations, why? 05

P.T.O.

(C) Describe in detail: Dual Slope Type A/D Converter. 05

OR

(C) Draw & Explain over load protection circuit and Short circuit. 05

Q:5 Answer the following Question

(A) Draw and Explain the working of Hartley Oscillator also calculate the frequency of oscillation for a colpitts' oscillator in which feedback network consists of two capacitor of 100 pF & 20pF with 100mH coil across these two capacitors. 10

OR

(A) Make a short note on Voltage controlled switching circuits. 05

(B) Find the Single-Stage CE Transistor Amplifier Response. 05

Q:6 Answer the following Question

(A) Explain the power calculation of Class A amplifier and find its efficiency. Calculate the input power, output power & η of Class A amplifier when Vcc = 20, Rb = 1KΩ, Rc = 20Ω, β = 25 and base current of 10mA peak. 10

OR

(A) Make a Short note on Hybrid –pi CE Transistor Model. 05

(B) Make a Short note on Regulated Power Supply. 05

-----All the Best --------

KADI SARVA VISHWAVIDYALAYA

B.E SEMESTER : 4th **EXAMINATION (October / 2015)**

SUBJECT CODE : **EC - 403** SUBJECT NAME :Advance electronics

DATE: 27/10/2015 TIME: 10:30 am to 01:30 pm TOTAL MARKS: 70

Instructions:

1. Answer each section in separate Answer Sheet.
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted along with its respective question number.
5. Use the last page of main supplementary for rough work.

Section - 1

Q:1 All Compulsory

(A) Classify the amplifiers based on position of operation point (Q - Point) and also explain the Distortion in amplifier. 05

(B) Write short note on mono stable multivibrator. 05

(C) Explain the advantages and disadvantages of negative feedback. 05

OR

(C) Explain construction and working of Tunnel diode. 05

Q:2 Answer the following Question.

(A) Draw 4-bit R-2R ladder type DAC and explain its working. 05

(B) Explain working of successive approximation ADC with block diagram. 05

OR

(A) Draw the hybrid π model for a transistor in CE configurations and explain it. Derive the equation for transconductance gain. 05

(B) Explain working principal of colpitt's oscillator. with necessary expression for frequency of Oscillations. 05

Q:3 Answer the following Question.

(A) Determine the voltage gain, input and output impedance with feedback for voltage series feedback having 05

$A = -100$, $Ri = 10\ K\Omega$, $Ro = 20\ K\Omega$ for feedback of

a) $\beta = -0.1$ and

b) $\beta = -0.5$

(B) Write short note on: Validity of Hybrid - PI model. 05

OR

(A) Calculate, if $L = 800$ mH, $C = 0.01$ pF, $R = 1000\ \Omega$ and $Cm = 20$ pF are the Various Value of an ac equivalent circuit of a piezoelectric crystal. Determine fs and fp of the crystal. 05

(B) List out the Op-Amp Parameters. And explain any two in detail. 05

Section - 2

Q:4 All Compulsory

(A) Define Oscillator. What are the requirement of positive feedback amplifier as an oscillator & also explain Barkhausen criterion of oscillations. 10

(B) Derive the expression of voltage gain for inverting and non inverting mode of an OP-AMP. 05

OR

(B) Design RC Phase shift oscillator for the Frequency of 10 KHz. 05

Q:5 Answer the following Question

(A) Write and Explain Difference between positive feedback and negative feedback 05

(B) Describe in detail: Voltage series regulator with the over load protection 05

OR

(A) Explain in detail Push-Pull Amplifier. 05

(B) Write down the limitation of RC and LC oscillators. Explain characteristic of crystal and base on that explain transistor crystal oscillator. 05

Q:6 Answer the following Question

(A) Define the following parameter : 05
[1] Slew rate , [2] Fan Out, [3] Propagation Delay, [4] Harmonics Distortion, [5] Valley Current for tunnel diode

(B) Explain the Switched mode power supply (SMPS) with necessary diagram. 05

OR

(A) Explain UJT as a relaxation Oscillator 05

(B) Draw and Explain Hartley oscillator using FET. Calculate the value of tank circuit capacitor of Hartley oscillator for 50 KHz with L1 and L2 are of 100μH. 05

-----All the Best --------