DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Semester Examination – Nov - 2019

SY

Branch: Electronics and Telecommunication **Sem.:- IV**
Subject:- Electrical Machines and Instruments (BTESC401) **Marks: 60**
Date:- 26/11/19 **Time:- 3 Hr.**

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

			Marks
Q.1			
	a)	Derive the e.m.f. equation of the d.c. machine. State clearly the meaning and units of the symbols used.	6
	b)	A 220 V dc shunt machine has an armature resistance of 0.5 ohm. If the full load armature current is 20A, find the induced emf when the machine acts as: 1. Generator 2. Motor	6
Q.2			
	a)	What are the different methods of speed control of 3-phase induction motor?	6
	b)	Explain the construction of synchronous generator.	6
Q.3			
	a)	Explain the working principle of permanent magnet stepper motor.	6
	b)	Explain the operation of a 2-phase variable reluctance motor.	6
Q.4			
	a)	Explain the principle, working and construction of LVDT. What is meant by residual voltage?	6
	b)	A platinum thermometer has a resistance of 100Ω at 25c. Find its resistance at 65c if the platinum has a resistance temperature coefficient of 0.00392/C.	6
Q.5			
	a)	Explain different methods for measurement of thickness.	6
	b)	Write a short note on: Digital tachometer.	6
Q.6			
	a)	Give classification of recorders.	6
	b)	Explain with neat diagram galvanometer type strip chart recorder.	6

Paper End

Dr. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE - 402 103

Winter Semester Examination- Nov. 2019

Class: B. Tech. EXTC (Second Year) **Sem: IV**
Sub: Analog Communication Engineering (BTEXC402) **Time: 3 Hrs.**
Date:28/11/2019 **Max. Marks: 60**

SY

Instructions to Candidates:

1) **Attempt any five questions.**
1) **Illustrate the answers with neat sketches, diagram etc. wherever necessary.**
2) **Necessary data is given in the respective questions. If such data is not given it means its knowledge is a part of examination.**
3) **If some part or parameter is noticed to be missing, appropriate data may be assumed and should be mentioned clearly.**

Q 1 A	Define communication, Draw and explain basic block diagram of communication system.	(6M)
B	Define modulation; Explain the need of modulation in detail.	(6M)
2 A	For an AM wave with a peak unmodulated carrier voltage V_c = =10Vp, a load resistance R_L = 10Ω, and modulation index = 1, determine a. Powers of the carrier and the upper and lower sidebands b. Total sideband power. c. Total power of the modulated wave d. Draw the power spectrum. Repeat steps (a) through (d) for a modulation index m = 0.5.	(8M)
B	Calculate the percentage power saving when the carrier and one of the sidebands are suppressed in an AM wave modulated to a depth of (a) 100 percent, and (b) 50 percent.	(4M)
3 A	Draw the block diagram for an Armstrong indirect FM transmitter and describe its operation.	(8M)
B	Compare narrowband and wideband FM.	(4M)
4 A	With the help of neat block diagram explain functioning of a super heterodyne receiver list out significance.	(6M)
B	Explain the performance characteristics of receiver.	(6M)
5 A	Explain the linear diode (envelope) detector with detail circuit diagram and characteristics.	(6M)
B	With neat circuit diagram and necessary equations, explain the phase difference discriminator ratio detector.	(6M)
6 A	An amplifier has a noise figure of 4 dB, a bandwidth of 500Hz and an input resistance of 500Ω. Calculate the input signal voltage needed to yield an output SNR = 1 when the amplifier is connected to a signal source of 50Ω at 290K.	(4M)
B	Define noise. Explain the classification of noise in detail.	(8M)

Paper End

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Winter Semester Examination(Supplementary) – Nov - 2019

Branch:- Electronics & Telecommunication **Sem.:- IV**

Subject with Subject Code:- Microprocessor (BTEXC403) **Marks:-60**

Date:-30/11/2019 **Time:-3 Hr.** SY

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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Q.1.

A Explain internal architecture of 8085 with neat diagram. **(8)**

B What is addressing mode? Explain addressing modes of 8085 with example. **(4)**

Q.2.

A Explain Arithmetic group of instructions in 8085 with examples? **(6)**

B Explain memory write cycle for 8085 with suitable waveform. **(6)**

Q.3.

A Explain types of interrupts. **(6)**

B How multiple interrupts are handled in microprocessor with **Programmable Interrupt Controller (PIC) 8259**? Explain with suitable interfacing diagram. **(6)**

Q.4.

A Explain pins function of following in detail **(6)**
i)ALE ii)HOLD

B Write assembly program for 8085 to add the 16-bit number in memory locations 2501H and 2502H to the 16-bit number in memory locations 2503H and 2504H. The most significant eight bits of the two numbers to be added are in memory locations 2502H and 4004H. Store the result in memory locations 2505H and 2506H with the most significant byte in memory location 2506H. **(6)**

Q.5.

A Explain Programmable Interval Timer with block diagram. **(6)**

B What is stack memory? Explain PUSH and POP operation using suitable diagram. **(6)**

Q.6.

A Explain detailed Architecture of 8086. **(8)**

B What are Assembler directive? Explain with example. **(4)**

**********All The Best**********

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD -402 103
Supplementary Winter Examination – December - 2019

Branch: Electronics and Telecommunication Engineering **Sem.:- IV**
Subject:- Signals and Systems (BTEXC404) **Marks: 60**
Date:- 02/12/2019 **Time:- 3 Hr.**

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Instructions to the Students

1. Each question carries 20 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

(Marks)

Q.1. a) Prove the following: **(06)**

1. Even signal × Even signal = Even signal
2. Odd signal × Odd signal = Even signal
3. Even signal × Odd signal = Odd signal

Q.1. b) Determine whether the following system is linear or not: **(06)**

1. $y(t) = n.\ x(t)$
2. $y(n) = x^2(n)$
3. $y(n) = 2\,x(n) - 3$

Q.2. a) (i) Determine and sketch convolution of the following two signals: **(06)**

$x(t) = 1, \quad -1 < t < 1$
$= 0, \quad$ otherwise

$h(t) = \delta(t+1) + 2\delta(t+2)$

(ii) compute convolution of the following signals: **(06)**

$$y(n) = u(n) * u(n)$$

Q.2. b) Write a note on **(06)**

1. causality for LTI system
2. stability for LTI system

Q.3. a) For $x(t)$ an even signal i.e. $x(t) = x(-t)$, prove that the trigonometric Fourier Series coefficients become, (06)

$$a_0 = \frac{2}{T}\int_0^{T/2} x(t)\,dt$$

$$a_n = \frac{4}{T}\int_0^{T/2} x(t)\cos(nw_0 t)\,dt$$

$$b_n = 0$$

Q.3. b) State and prove any five properties of Continuous time Fourier series. (06)

Q.4. a) Find the Fourier transform of the unit step function $u(t)$. (06)

Q.4. b) Find DTFT of the following sequence, (06)
$x(n) = a^n\,u(n)$ where $|a| < 1$.
Also find magnitude and phase of the DTFT.

Q.5. a) Determine the inverse Z-transform of the following function using power series expansion (long division) method. (06)

$$X(z) = 1/(1\text{-}0.5z^{-1}) \quad |z| > 0.5$$

Q.5. b) A causal discrete LTI system is described by the following equation, (06)

$$y(n) - (3/4)y(n\text{-}1) + (1/8)y(n\text{-}2) = x(n)$$

where $x(n)$ and $y(n)$ are the input and the output of the system respectively. Determine the system transfer function $H(z)$ and impulse response $h(n)$ of the system.

Q.6. a) A card is drawn at random form an ordinary deck of 52 playing cards. Find the probability of its being (a) an Ace (b) a six or a Heart (c) neither a Nine nor a Spade. (06)

Q.6. b) In a factory, four machines A1, A2, A3 and A4 produce 10%, 20%, 30% and 40% of the items, respectively. The percentage of defective items produced by them is 5%, 4%, 3% and 2%, respectively. An item selected at random is found to be defective. What is the probability that it was produced by the machine A2? (06)

Paper End

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Supplementary Winter Semester Examinations: Dec- 2019

Branch: Electronics and Telecommunication Engg. **Sem.:-IV**

Subject:-Numerical Methods and Computer Programming (BTBSC406)

Marks:60 **Date:04/12/2019** **Time:- 3 Hr.**

Instructions to the Students

1. Each question carries 20 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

SY

(Marks)

Q.1. Solve the following questions (Any 3)

a) **Define errors. How many different types of errors occur while doing numerical computations? How they can be avoided?** **(4)**

b) **Explain in short about error propagation & error estimation.** **(4)**

c) **Round off the number 865250 & 37.46235 correct up to four Significant figures and find absolute error, relative error and percentage error in each case.** **(4)**

d) **Find absolute error if the number X= 0.00599826 is**
   i) **Truncated to 4 decimal digits**
   ii) **Rounded off to 4 decimal digits.** **(4)**

Q.2. Solve the following questions (Any 2)

a) i) **Apply False-position method to find the smallest positive root of the equation correct to three decimal places.** $x - e^{-x}=0$ **(3)**

   ii) **Find a positive root of** $xe^x = 2$ **by the method of false position.** **(3)**

b) **Using Newton-Raphson method, find the real root of the equation** $3x = \cos x + 1$ **correct to four decimal places.** **(6)**

c) **Apply the Jacobi method to solve: Continue iterations until two successive approximations are identical when rounded to three significant digits.** **(6)**

$$5x1 - 2x2 + 3x3 = -1$$
$$-3x1 + 9x2 + x3 = 2$$
$$2x1 - x2 - 7x3 = 3$$

Q.3. Solve the following questions (Any 2)

a) The following table gives the scores secured by 100 students in the Numerical Analysis subject: **(6)**

Range of scores:	30-40	40-50	50-60	60-70	70-80
Number of students:	25	35	22	11	7

Use Newton's forward difference interpolation formula to find.
(i) the number of students who got scores more than 55.
(ii) the number of students who secured scores in the range between 36 and 45.

b) Find the cubic spline approximation for y= f(x) polynomial which takes the following values. Also $y_0'' = y_3'' = 0$ **(6)**

x	-1	0	1	2
y=f(x)	-1	1	3	35

c) Fit the curve of type $y = a + bx^2$ that fits the following data **(6)**

x	0	1	2	3
y	2	4	10	15

Q.4 Solve the following questions (Any 2)

a) Evaluate $\int_0^6 dx/(1+x^2)$ by using **(6)**
i) Simpson's 1/3 rd Rule
ii) Simpson's 3/8 th Rule
iii) Trapezoidal rule

b) Given that dy / dx = log10 (x + y) with the initial condition that y = 1 when x = 0. Find y for x = 0.2 and x = 0.5 using Euler's modified formula **(6)**

c)Given dy / dx = y – x , y(0) = 2. Find y(0.1) and y(0.2) correct to four decimal places (use both II and IV order methods). **(6)**

SY

Q.5 Solve the following questions (Any 2)

a) **Explain all operators in C++ with examples.** **(6)**

b) **Explain basic concept of object oriented programming. Also write benefits & applications of OOP.** **(6)**

c) **Explain the concept of Function prototyping and function overloading with the help of C++ example** **(6)**

Q.6 Solve the following questions (Any 2)

a) **Explain classes in C++? What does a class in C++ holds? Explain in brief derived classes , Virtual base classes, Abstract classes, Member classes** **(6)**

b) **What is inheritance? What are the different types of inheritance? Draw the block diagram of each type of inheritance? Explain any one type of inheritance in detail.** **(6)**

c) **Write and explain a program for overloading of unary operator to overload minus(-) operator.** **(6)**

Paper End

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2019

Course: B. Tech in **Sem: III**

Subject Name: Engineering Mathematics-III (BTBSC301) **Marks: 60**

Date: 10/12/2019 **Duration: 3 Hr.**

Instructionts to the Students:

1. *Solve **ANY FIVE** questions out of the following.*
2. *The level question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Attempt the following.**		12
A)	Find $L\{cosht \int_0^t e^u coshu\, du\}$.	**Analysis**	4
B)	If $f(t) = \begin{cases} t, & 0 < t < \pi \\ \pi - t, & \pi < t < 2\pi \end{cases}$ is a periodic function with period 2π. Find $L\{f(t)\}$.	**Analysis**	4
C)	Using Laplace transform evaluate $\int_0^\infty e^{-at} \frac{sin^2 t}{t}\, dt$	**Evaluation**	4
Q. 2	**Attempt any three of the following.**		12
A)	Using convolution theorem find $L^{-1}\left\{\frac{1}{s(s+1)(s+2)}\right\}$	**Application**	4
B)	Find $L^{-1}\{\bar{f}(s)\}$, where $\bar{f}(s) = \log\left(\frac{s^2+1}{s(s+1)}\right)$	**Analysis**	4
C)	Using Laplace transform solve $y'' + 2y' + 5y = e^{-t} \sin t\,;\ y(0) = 0,$ $y'(0) = 1$	**Application**	4
D)	Find $L^{-1}\left\{\frac{s^2+2s-4}{(s-5)(s^2+9)}\right\}$	**Analysis**	4
Q. 3	**Attempt any three of the following.**		12

A)	Express the function $f(x) = \begin{cases} \sin x, & 0 \le x \le \pi \\ 0, & x > \pi \end{cases}$ as a Fourier sine integral and hence evaluate that $\int_0^\infty \frac{\sin\lambda x \sin\lambda\pi}{1-\lambda^2}\, d\lambda$.	**Evaluation**	**4**
B)	Using Parseval's identity for cosine transform, evaluate $\int_0^\infty \frac{dx}{(x^2+a^2)(x^2+b^2)}$.	**Application**	**4**
C)	Find the Fourier sine transform of $f(x) = \begin{cases} x, & 0 \le x \le 1 \\ 2-x, & 1 \le x \le 2. \\ 0, & x > 2 \end{cases}$	**Analysis**	**4**
D)	If $F_S\{f(x)\} = \frac{e^{-as}}{s}$, then find $f(x)$. Hence obtain the inverse Fourier sine transform of $\frac{1}{s}$.	**Analysis**	**4**
Q. 4	**Attempt any three of the following.**		**12**
A)	Form the partial differential equation by eliminating arbitrary function f from $f(x^2+y^2+z^2, 3x+5y+7z) = 0$	**Synthesis**	**4**
B)	Solve $pz - qz = z^2 + (x+y)^2$	**Application**	**4**
C)	Determine the solution of one dimensional heat equation $\frac{\partial u}{\partial t} = c^2 \frac{\partial^2 u}{\partial x^2}$ where the boundary conditions are $u(0,t) = 0$, $u(l,t) = 0$ $(t > 0)$ and the initial condition $u(x,0) = x$; l being the length of the bar.	**Analysis**	**4**
D	Use the method of separation of variables to solve the equation $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$, given that $u(x,0) = 6e^{-3x}$	**Application**	**4**
Q. 5	**Attempt the following.**		**12**
A)	Determine the analytic function $f(z)$ in terms of z whose real part is $\frac{\sin 2x}{\cosh 2y - \cos 2x}$	**Analysis**	**4**
B)	Prove that $u = x^2 - y^2 - 2xy - 2x + 3y$ is harmonic. Find a function v such that $f(z) = u + iv$ is analytic.	**Analysis**	**4**
C)	Find the bilinear transformation which maps the points $z = 0, -1, -i$ onto the points $w = i, 0, \infty$. Also, find the image of the unit circle $\|z\| = 1$.	**Analysis**	**4**
Q. 6	**Attempt the following.**		**12**

A)	Use Cauchy's integral formula to evaluate $\oint_C \frac{\sin\pi z^2 + \cos\pi z^2}{(z-1)(z-2)}\, dz$, where C is the circle $\|z\| = 3$.	**Evaluation**	**4**
B)	Find the poles of function $\frac{z^2-2z}{(z+1)^2(z^2+4)}$. Also find the residue at each pole.	**Analysis**	**4**
C)	Evaluate $\oint_C \frac{e^z}{\cos\pi z}\, dz$, where C is the unit circle $\|z\| = 1$.	**Evaluation**	**4**
	***** Paper End *****		

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

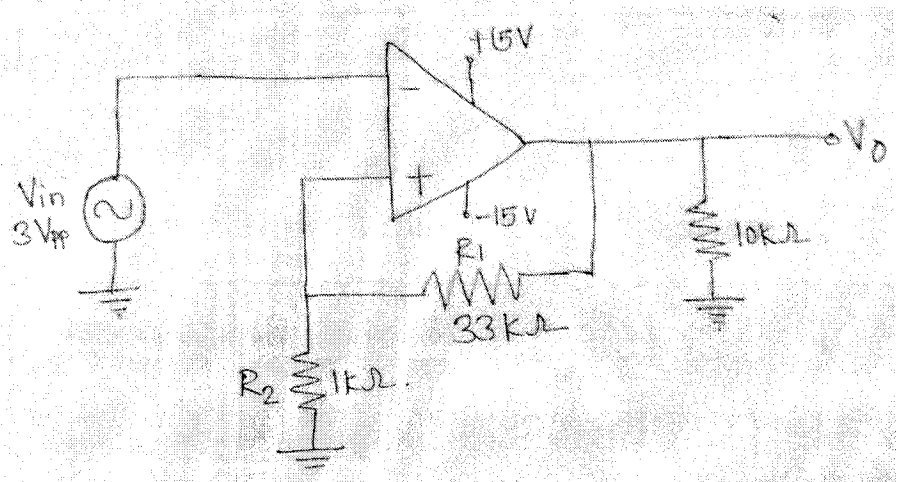
Winter Semester Examination – Dec. - 2019

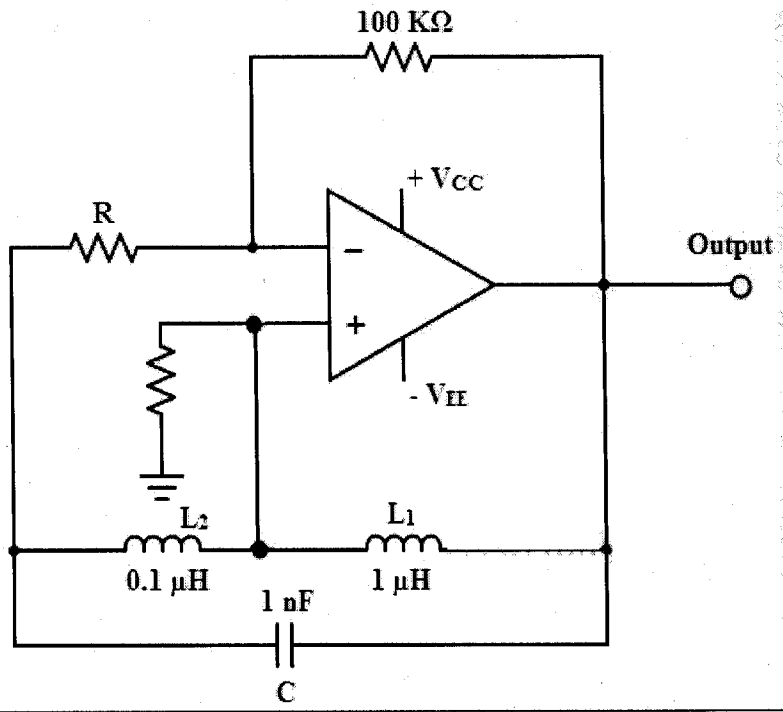
SY

Branch: Electronics and Telecommunication Engineering **Sem.:- III**
Subject:- Analog Circuits (BTEXC302) **Marks: 60**
Date:- 12/12/2019 **Time:- 3 Hr.**

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately Assume it and should mention it clearly

		(Marks)
Q.1.A)	Draw the block diagram of an op-amp and explain the necessity and implementation of each block.	6
B)	Derive the expressions for gain, input impedance, output impedance of the voltage series feedback configuration.	6
Q.2.A)	Draw and explain the circuit diagram of an instrumentation amplifier and derive the output equation.	6
B)	Draw and explain the working of a practical differentiator circuit including its derivation.	6
Q.3.A)	Draw and explain circuit of a square wave generator. Design a square wave generator for a frequency of oscillation of 1KHz. Assume Vsat=± 14V.	6
B)	For the inverting Schmitt trigger shown below. Calculate UTP, LTP, hysteresis with. Draw input and output waveform. 	6
Q.4.A)	Draw and explain the working of a 3bit -binary weighted resistor DAC.	6
B)	With suitable diagram explain the working of a successive approximation convertor.	6

Q.5.A)	Draw the circuit of a Wien Bridge oscillator using op-amp and derive an equation for frequency of oscillation.	6
B)	Derive the frequency expression of hartley oscillator is constructed with operational amplifier shown below and feedback LC network. By referring the given values determine the operating frequency and maximum acceptable value of resistance R for oscillations to start. 	6
Q.6.A)	Draw the circuit of 1st order low pass butterworth active filter and derive the expression for its gain	4
B)	Draw the circuit of 1st order bandpass butterworth active filter and derive the expression for its gain	4
C)	Design a first order low pass filter with high cut-off frequency of 1 kHz and pass band gain is 3	4

Paper End

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD -402 103
Winter Semester Examination – December - 2019

SY

Branch: Electronics and Telecommunication Engineering **Sem.:- III**

Subject :- Electronic Devices & Circuits (BTEXC303) **Marks: 60**

Date:- 14/12/2019 **Time:- 3 Hr.**

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately Assume it and should mention it clearly

		(Marks)
Q.1.A)	Draw and explain contraction of n channel JFET and Compare Common source, common drain, and common gate configuration of JFET.	6
B)	Explain the VI characteristics of JFET. What factors are responsible for the shape of the characteristics in a different region?	6
Q.2.A)	Explain n channel enhancement MOSFET and Datasheet for n channel EMOSFET specifies the following parameter, V_{GS}=10V, $I_{D(on)}$=500mA, if $V_{GS(th)}$ for MOSFET is 1 V, determine the drain current for V_{GS}=4V?	6
B)	Explain CMOS invertor with circuits. And draw & explain characteristics of CMOS invertor.	6
Q.3.A)	Compare class A, class B, class AB, class C and class D amplifier.	6
B)	Draw the circuits of voltage series feedback amplifier and derive the expressions for input impedance R_{if}.	6
Q.4.A)	With a neat diagram, explain hardly oscillator and derive an expression for the frequency of oscillation. Find the frequency of oscillation if L1=L2=10 mH and C=0.1 μF.	6
B)	With a neat diagram, explain the RC phase shift oscillator and derive an expression for the frequency of oscillation. And Calculate the value of C1 = C2 for the Wien bridge oscillator to operate at a frequency of 20 kHz. Assume R1 = R2 = 50 k and R3 = 3, R4 = 600?	6
Q.5.A)	Draw and explain internal block diagram of IC 555 and explain the working of Astable multivibrator	6
B)	Draw and explain a Monostable and bistable multivibrator.	6
Q.6.A)	Differentiate SMPS with linear regulated power supply	4
B)	Find the % load regulation of a power supply providing 100V unloaded and 95V at full load.	4
C)	Draw and explain the working principle of IC LM317	4

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Winter Semester Examination – December - 2019 SY

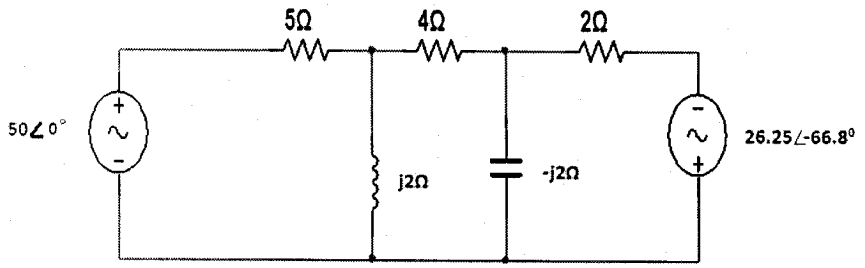
Branch: Electronics & Telecommunication Engineering **Sem.:- III**
Subject with Subject Code:- Network Analysis (BTEXC304) **Marks: 60**
Date:- 17/12/2019 **Time:- 3 Hr.**

Instructions to the Students

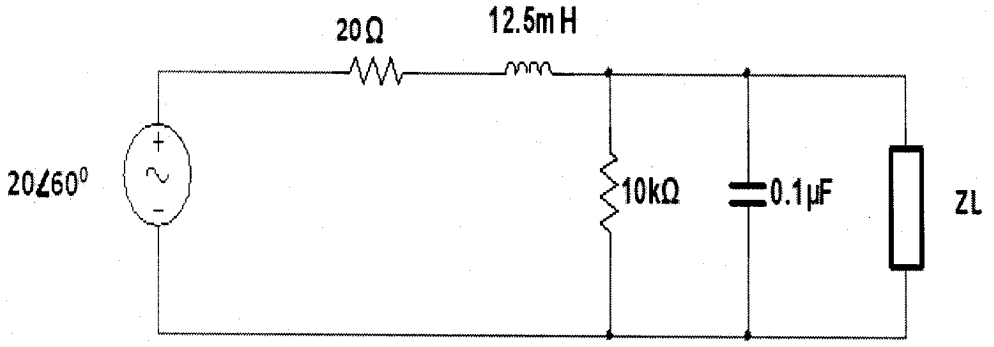
1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

(Marks)

Q.1. a) State Kirchoff's laws for electric circuit. Also Find the current flowing through 4 Ω resistor using source transformation and shifting in following circuit. (06)

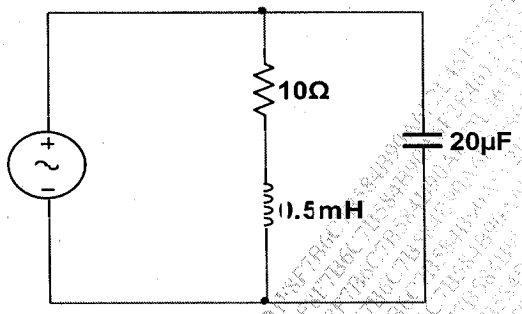


b) Find the value of load impedance 'Z_L' for which power transfer is maximum in following circuit for w =400 rad/s & also value of max power transferred to the load. (06)



Q.2. a) Define and derive an expression for bandwidth of series resonant circuit. (06)

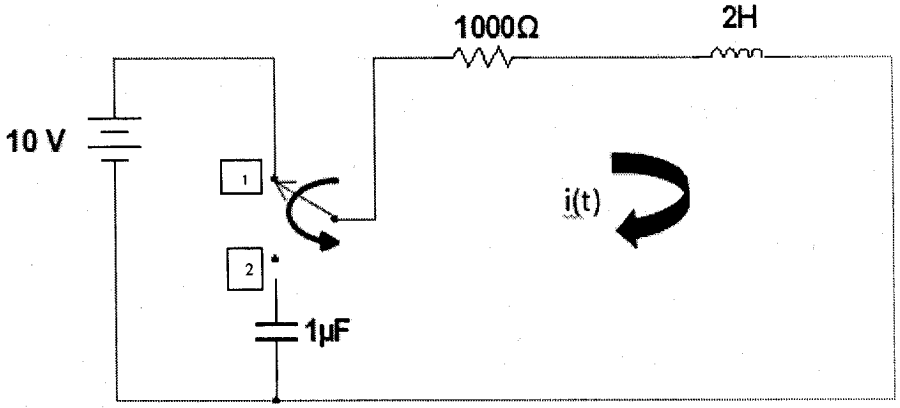
b) For the network shown below, (06)
where R_L=10 Ω, L= 0.5H, C= 20uF, determine its resonant frequency, minimum admittance, quality factor, bandwidth, upper and lower half power frequencies.



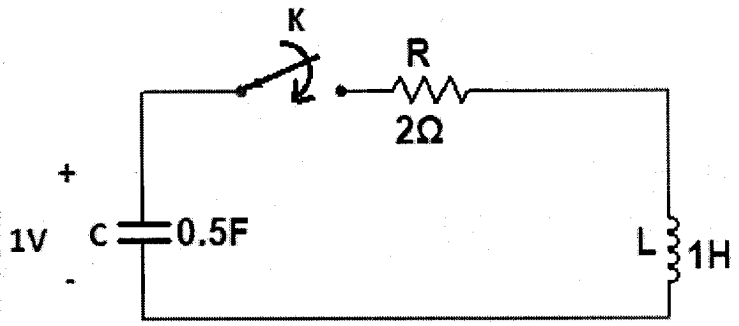
Q.3. a) For symmetrical T network, derive an expressions series and shunt arm impedances in terms of characteristic impedance and propagation constant. (06)

b) Design a constant –k LPF to be terminated in 600 Ω, having cut off frequency 2KHz. Find characteristic impedance & Phase constant at 1.5KHz. (06)

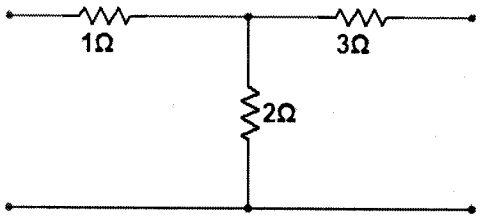
Q.4. a) In the circuit shown in figure below, the switch is changed from 1 to 2 at t=0, Determine initial condition of i, di/dt, d^2i/dt^2 at t = 0+ (06)



b) For series RLC circuit (as shown in figure below), the capacitor is initially charged to 1volt, find the current i(t), when switch k is closed at t= 0 Using Laplace transform. (06)



Q.5. a) For network given below, determine its h parameters and verify condition for reciprocity. (06)



b) Find Z parameters in terms of Y and h parameter for two port network. (06)

Q.6. a) Derive an expression for Zo for a transmission line terminated in Zo. (06)

b) A 50Ω lossless transmission line of length 1.37 λ which is terminating into load of (200 + j80) Ω. Using Smith Chart find the input impedance of line, reflection coefficient in amplitude and phase and standing wave ratio. (06)

Paper End

SX

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Winter Semester Examination – December - 2019

Branch: B. Tech. (E & TC Engineering/Electronics Engineering) **Sem.:- III**

Subject with Subject Code:- Digital Logic Design (BTEXC305) **Marks: 60**

Date:- 19/12/2019 **Time:- 3 Hr.**

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Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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Q. No. 1a) Design Four bit Binary to Gray Code Converter. **(06)**

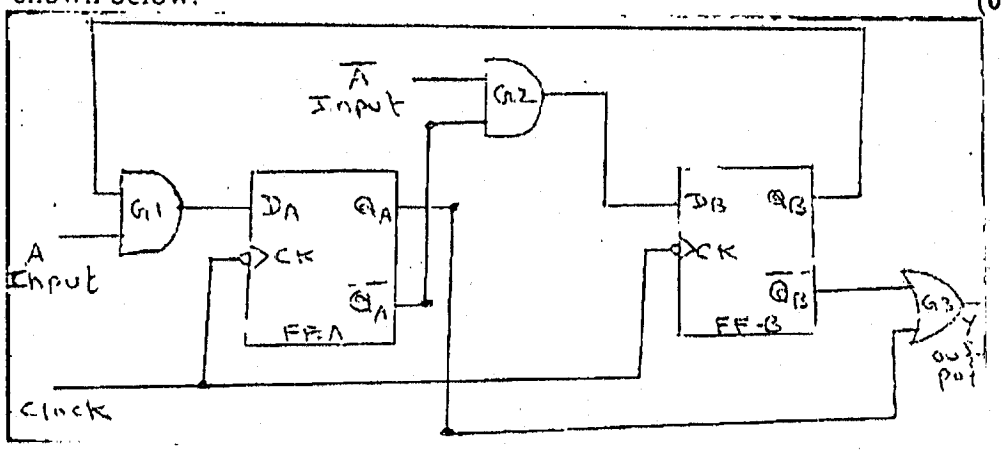
b) Implement the three-variable Boolean function:
$F(A, B, C) = \dot{A}.C+A.\dot{B}.C+A.B.\dot{C}$ using 8-to-1 multiplexer. **(06)**

Q. No. 2a) Convert T Flip-Flop to D Flip-Flop. **(06)**

b) Design a three bit synchronous Up/Down counter using JK Flip-Flop. **(06)**

Q. No. 3a) Design a sequence detector to detect the sequence .....110.....(Use Mealy Machine with JK FF). **(06)**

b) Derive the state table & state diagram for the sequential Moore circuit shown below. **(06)**



Q. No. 4a) Explain the various characteristics of Digital IC's. **(06)**

b) Draw the circuit diagram of two input TTL NAND gate with Totem pole output and explain its working. **(06)**

Q. No. 5a) Implement the following Boolean function using suitable PLA.
$F(A,B,C.D) = \sum m(3, 4, 5, 7, 10, 14, 15)$ **(06)**

b) Draw the interfacing diagram showing the interface of four memory

integrated circuits each of size 2K x 4 bits to get the desired memory size of 4K x 8 bits. **(06)**

Q. No. 6a) Write down VHDL code for full adder using Data flow model with necessary diagram. **(06)**

b) List the various advantages and features of VHDL. **(06)**

Paper End