

(Roll No. to be filled by candidate)

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B. TECH.
THIRD SEMESTER THEORY EXAMINATION, 2022-23
KVE-301
UNIVERSAL HUMAN VALUES

Time: 03 Hours

Note:

Max. Marks: 100

- Attempt all questions. All questions carry equal marks.
1. Attempt any **TWO** parts of the following: 2×10 CO
 - a. What are the basic aspirations of a Human Being? Critically examine the prevailing notions of happiness in the society and their consequences. CO1
 - b. Define self-exploration. What is the content of Self-exploration? CO1
 - c. “Value education is a crucial missing link in professional studies”. Elaborate on the statement. CO1

 2. Attempt any **TWO** parts of the following: 2×10 CO
 - a. “The domain of right understanding starts from understanding the human being.” Discuss the above statement. CO2
 - b. “Natural acceptance is innate and universal.” Explain the statement with any two examples. CO2
 - c. “The self (‘I’) is the basis of everything we do”. Differentiate between the needs of the body and that of the self. CO2

3. Attempt any **TWO** parts of the following: 2×10 CO
- a. Differentiate the term "intention" and "competence." CO3
 - b. Describe the various bases of differentiation in relationship. CO3
Discuss any two problems in the society that exists due to differentiation and suggest how value education can solve the problems.
 - c. What you mean by the statement "Understanding values in human-human relationship"? CO3
4. Attempt any **TWO** parts of the following: 2×10 CO
- a. What do you mean by co-existence and how are units in co-existence being in space? CO4
 - b. Draw the chart showing in detail, the different categories of units of nature in co-existence in space. CO4
 - c. What do you mean by recyclability and self-regulation in nature? How it is relevant in today's time. CO4
5. Attempt any **TWO** parts of the following: 2×10 CO
- a. Why is it important to study yourself? How does it help in your day to day life? CO5
 - b. How do we go into conflict when our activities are not guided by our natural acceptance? CO5
 - c. How does realization and understanding lead to definiteness of human conduct? CO5

Bundelkhand Institute of Engineering and Technology, Jhansi

**CLASS TEST – I
UNIVERSAL HUMAN VALUE- KVE (301)
B.Tech (EC,CE&ME) 2nd year**

Time: 1 hour

Total Marks: =10

Attempt all questions.

- Q1) What is value education? Define it's role and purpose?**
- Q2) What are the basic guidelines for values education?**
- Q3) Explain the process of self-exploration. What is it's purpose?**

Socet

BUNDELKHAND INSTITUTE OF ENGINEERING AND TECHNOLOGY, JHANSI,

(B.TECH. 2nd YEAR-CE,ME & EC) Human Values (KVE-301)

(Max.marks=10)

Q1) What is SSDD,SSSS and SVDD?

Q2) Explain Prosperity and wealth in human life ?

Q3) Why harmony is important? Briefly explain harmony three different level.?

B.Tech Electronics & Communication Engineering

Semester : IV

CT2 Examination 2022-2023 : May 2023

KOE 044 -Sensor and Instrumentation

Time : 1 hours

Max. Marks : 15

Note : Attempt ALL questions. Each question carries 3 marks.

1> Explain the role of virtual instrumentation in industry applications. (CO3, KL3)

2> How are smart sensors different than conventional sensors? (CO5, KL3)

3> Explain the application of smart sensors in any one application. (CO5, KL3)

4> Explain with diagram Delta Sigma ADC. (CO4, KL3) **OR**

4> Explain the principle of Binary Weighted DAC with diagram (CO4, KL3)

5> Explain with diagram the successive approximation ADC for conversion of 2.5 V with 8 bit ADC. Maximum voltage to be converted is 5 V. (CO4, KL3)

OR

5> Explain with diagram the R-2R ladder DAC with 4 bit DAC for 1000 input. (CO4, KL3)

B.Tech Electronics & Communication Engineering
Semester : IV
CT1 Examination 2022-2023 : March 2023
KOE 044 -Sensor and Instrumentation

Time : 1 hours

Max. Marks : 15

Note : Attempt ALL questions. Each question carries 3 marks.

- 1> Draw and explain the block diagram of Generalised Measurement System. (CO1)
- 2> Explain the terms : Accuracy, Precision, Resolution with examples. (CO1)
- 3> What is LVDT? Explain its Principle of operation with suitable diagram. (CO2)
- 4> Thermistor $\beta = 4500$ is given, whose resistance R at 37°C is 85Ω , Determine its resistance R at 15°C . Explain the terms Precision and Resolution as the static characteristics of instrument. (CO2)

OR

- 4> Nickel wire RTD resistance is 100Ω at 0°C , if diameter of wire is 0.003 mm find length of wire if Temperature coefficient of Nickel is $0.0068 \Omega/\Omega^\circ\text{C}$ and Resistivity of Nickel is $8.7 \times 10^{-6} \Omega \text{ cm}$, Find resistance at steam point. Explain the term Reproducibility as the static characteristic of instrument. (CO2)

273
15
288
293
37
310

- 5> Explain with diagram the Optical fiber Temperature sensor. (CO2)
OR

- 5> Explain with diagram the Ultrasonic flow measurement System (CO2)

mm
300

49630

(Roll No. to be filled by candidate)

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B. TECH.

THIRD SEMESTER THEORY EXAMINATION, 2022-23
KEC-301
ELECTRONICS DEVICES

Time: 03 Hours**Max. Marks: 100**

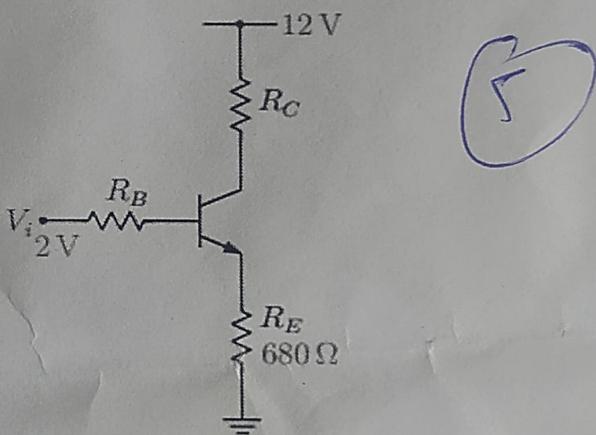
Note:

- Attempt all questions. All questions carry equal marks.
- Assume missing data suitably.

1. Attempt any **FOUR** parts of the following: **4×5 CO**
 - What is the importance of E-K diagram? Explain metals, CO1 semiconductors and insulators on the basis of band.
 - What are direct and indirect semiconductors? What is the CO1 relation of effective mass with curvature of E-K diagram? Explain it with the help of suitable diagram in brief.
 - What is carrier mobility? Draw a graph showing variation CO1 of carrier mobility in a semiconductor with increasing temperature.
 - What is the use of Hall Effect? What is Hall concept and CO1 how to find the type of semiconductor using hall effect?
 - e. Pure silicon has an electrical resistivity of $3000 \Omega\text{-m}$. If the CO1 free carrier density in it is $1.1 \times 10^6 \text{ m}^{-3}$ and the electron mobility is three times that of hole mobility, calculate the mobility values of electrons and holes.
 - f. What is Fermi level in semiconductor? Draw the band CO1 structure diagram showing Fermi level for n-type, p-type and intrinsic semiconductor.

2. Attempt any **TWO** parts of the following: 2×10 CO
- a. Draw the V-I characteristics of a PN junction and explain its working. A Si sample is doped with 10^{17} As atoms/cm³. What is the equilibrium hole concentration p_0 at 300 K? Where is E_F relative to E_i ? CO2 3
- b. Describe carrier scattering and mobility of the charge carriers. Draw the graph between total mobility and temperature and explain it in brief. Find the resistivity of intrinsic Si at 300K. ($\mu_n = 1350 \text{ cm}^2/\text{V-s}$, $\mu_p = 480 \text{ cm}^2/\text{V-s}$ for intrinsic Si and $n_i = 1.5 \times 10^{10}$) CO2
- c. Drive the Einstein relation which shows the relation between D_n and μ_n . CO2
3. Attempt any **TWO** parts of the following: 2×10 CO
- a. What is recombination in semiconductor and also explain type of recombination. Derive the total recombination rate. CO3
- b. What is diffusion current? Write the equations of current density for electrons and holes. Also drive continuity equation for diffusion and recombination. CO3
- c. A 0.46-mm-thick sample of GaAs is illuminated with monochromatic light of $h\nu = 2 \text{ eV}$. The absorption coefficient α is $5 \times 10^4 \text{ cm}^{-1}$. The power incident on the sample is 10 mW.
- (i) Find the total energy absorbed by the sample per second (J/s).
 - (ii) Find the rate of excess thermal energy given up by the electrons to the lattice before recombination (J/s).
 - (iii) Find the number of photons per second given off from recombination events, assuming perfect quantum efficiency.

4. Attempt any **TWO** parts of the following: 2×10 CO
- Draw the circuit diagram of CE BJT and draw the input and output characteristics. What is the importance Ebers-Moll model?
 - What is Schottky junction? What is the use of this junction? CO4 Explain it in detail with the help of energy band diagram.
 - What is tunnel breakdown? Explain it by using energy band diagram. In the circuit shown, assume that the BJT, with $\beta = 120$, is operating in the active region. (i) What value of R_B will result in a collector current of 0.8 mA? (ii) What value of R_C is required to obtain $V_{CE} = 6V$? (iii) With R_C set to the value obtained in (ii), what is the smallest value of R_B which will cause the BJT to enter saturation?



5. Attempt any **TWO** parts of the following: 2×10 CO
- Explain the working of n channel enhancement type MOSFET and draw its characteristics.
 - Explain the concept of Solar cell and photodiode in brief? CO5
 - Explain the working of photodiode.
 - Sketch the energy band diagram of an ideal MOS capacitor CO5 at equilibrium. Explain with energy band diagram with modes of operation of a MOS capacitor.

Note: Attempt all questions.

1. What is recombination in semiconductor and also explain type of recombination. Derive the total rate of recombination rate. [4]
2. What is breakdown in PN junction? Explain Zener and Avalanche breakdown using energy band diagram. [3]
3. What is Schottky diode? Also explain the concept of Solar cell and photodiode in brief. [3]

$$m = \frac{1}{n} \quad |$$

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B. TECH.**THIRD SEMESTER THEORY EXAMINATION, 2022-23****KAS-302****MATHEMATICS-IV****Time: 03 Hours****Max. Marks: 100**

Note: Attempt all questions. All questions carry equal marks.

1. Attempt any **FOUR** parts of the following: **4×5**

a. Solve the following differential equation CO1
 $y^2 p - xyq = x(z - 2y)$

b. Solve the differential equation CO1
 $x^2 \frac{\partial z}{\partial x} + y^2 \frac{\partial z}{\partial y} = (x + y)z$

c. Solve the differential equation CO1
 $(p^2 + q^2)y = qz$

d. Solve the differential equation CO1
 $\frac{\partial^3 z}{\partial x^3} - 3 \frac{\partial^3 z}{\partial x^2 \partial y} + 4 \frac{\partial^3 z}{\partial y^3} = e^{x+2y}$

e. Find the differential equation of all spheres of fixed radius having their centres in xy -plane. CO1

2. Attempt any **TWO** parts of the following: **2×10**

a. Using the method of separation of variables, solve CO2
 $\frac{\partial u}{\partial x} = 2 \frac{\partial u}{\partial t} + u$

where $(x, 0) = 6e^{-3x}$.

b. Find the solution of wave equation CO2
 $\frac{\partial^2 y}{\partial t^2} = c^2 \frac{\partial^2 y}{\partial x^2}$

such that $y = p_0 \cos pt$, (p_0 is a constant) when

$x = l$ and $y = 0$ when $x = 0$

- c. The ends A and B of a rod 20cm long have the CO2 temperatures at 30°C and 80°C until steady state prevails. The temperatures of the ends are changed to 40°C and 60°C respectively. Find the temperature distribution in the rod at any point x and at time t . x1+

3. Attempt any **FOUR** parts of the following: 4×5

- a. Find the relation between μ_r & μ_r' CO3
- b. Find the movement generating function of the discrete Poisson distribution given by CO3
- $$f(x) = \frac{e^{-m} m^x}{x!} \quad \text{(3)}$$
- c. Find Karl Pearson's coefficient of skewness for the following data: CO3

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. Of students	08	12	20	30	15	10	5

- d. Fit a straight line to the following data by least square method CO3

x	0	1	2	3	4
y	1.00	1.80	3.30	4.50	6.30

- e. In a partially destroyed laboratory record of an analysis of a correlation data, the following results only are legible: CO3

Variance of $x = 9$

Regression equations: $8x - 10y + 66 = 0$

and $40x - 18y = 214$

Calculate \bar{x} and \bar{y} and r .

4. Attempt any **TWO** parts of the following: 2×10

- a. An urn contains 10 white and 3 black balls, while another urn contains 3 white and 5 black balls. Two balls are drawn from the first urn and put into the CO4

~~5-15~~
second urn and then a ball is drawn from the later.

What is the probability that it is a white ball?

- b. (i) During war, 1 ship out of 9 was sunk on an average in making a certain voyage. What was the probability that exactly 3 out of a convoy of 6 ships would arrive safely?
 (ii) If on an average one ship in every ten is wrecked, find the probability that out of 5 ships expected to arrive, 4 at least will arrive safely?
 c. Data was collected over a period of 10 years, showing number of deaths from horse kicks in each of the 200 army corps. The distribution of deaths was as follows:

No. of deaths:	0	1	2	3	4	total
Frequency:	109	65	22	3	1	200

Fit a Poisson distribution to the above data.

~~870~~
5 Attempt any **TWO** parts of the following: 2×10

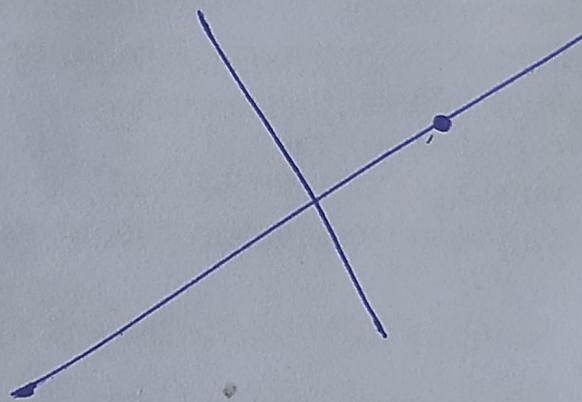
- a. A random sample of size 16 has 53 as mean. The sum of squares of the deviation from mean is 135. Can this sample be regarded as taken from the population having 56 as mean? Obtain 95% and 99% confidence limits of the mean of the population.
 b. The following table gives the number of aircraft accidents that occurs during various day of week. Find whether the accidents are uniformly distributed over the week
CO5 CO5

Days	Sun.	Mon	Tues	Wed	Thurs	Fri.	Sat.
No.of accidents	14	16	8	12	11	9	14

Given: the value of Chi square significant at 5, 6, 7, d.f. are respectively 11.07, 12.59, 14.07 at the 5% level of significance

- c. In a blade manufacturing factory, 1000 blades are examined daily. Draw the np - chart for the following table and examine whether the process is under control?
CO5

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No. of defective blade	9	10	12	8	7	15	10	12	10	8	7	13	14	15	16



$m+1$
 $(m+1)$
 $\cancel{-1 - 3 + q}$
 $m^2 + m^3 - 3m^2 + qm^2 - qm^1$
 $\cancel{+m^2 + m^1}$
 $\cancel{-3m^2 + qm^2}$
 $\cancel{+q}$
 $\cancel{m^2 - qm^1}$
 $\cancel{-qm^1 + qm^0}$
 $\cancel{qm^0 + qm^0}$
 $\cancel{qm^0 + qm^0}$

$m+1$
 $m^2 + m^3 - 3m^2 + qm^2 - qm^1$
 $\cancel{+m^2 + m^1}$
 $\cancel{-3m^2 + qm^2}$
 $\cancel{+q}$
 $\cancel{m^2 - qm^1}$
 $\cancel{-qm^1 + qm^0}$
 $\cancel{qm^0 + qm^0}$
 $\cancel{qm^0 + qm^0}$

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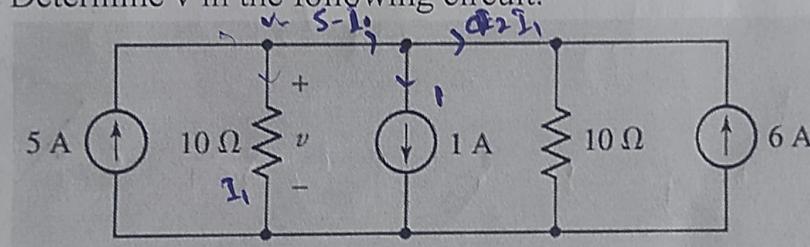
B. TECH.**THIRD SEMESTER THEORY EXAMINATION, 2022-23****KEC303****NETWORK ANALYSIS AND SYNTHESIS****Time: 03 Hours****Max. Marks: 100**

Note:

- Attempt all questions. All questions carry equal marks.

1. Attempt any **TWO** parts of the following: 2×10

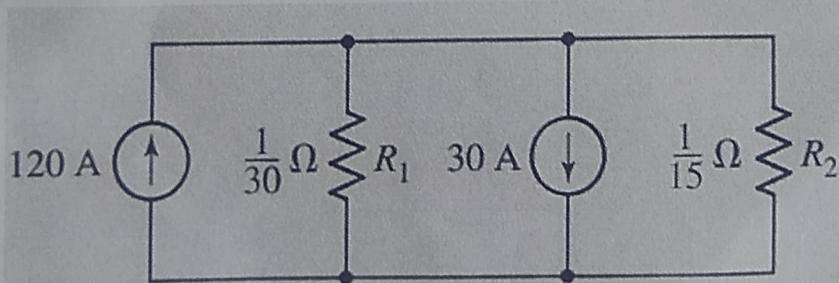
- a. Determine v in the following circuit.



CO

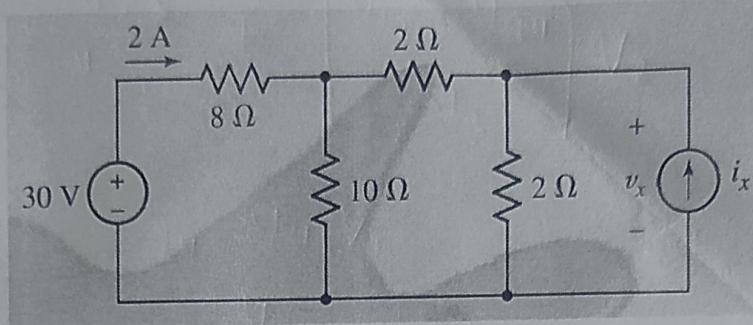
CO1

- b. Find the voltage, current, and power associated with CO1 each element in the circuit in the following circuit


 $\frac{1}{30} + \frac{1}{30}$
 $\frac{1}{30} - \frac{1}{30}$
 $\frac{1}{15}$

c. Determine v_x in the following circuit

CO1



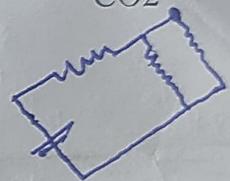
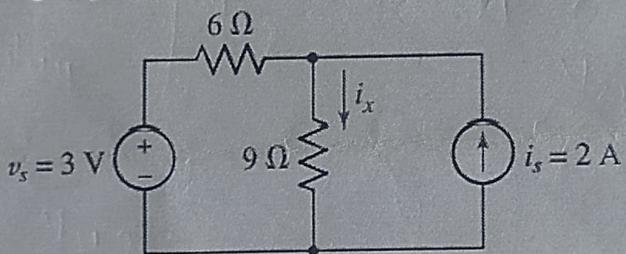
2. Attempt any **TWO** parts of the following:
- State and prove Thevenin's theorem.
 - Using superposition theorem determine i_x

2×10

CO

CO2

CO2



- c. State and prove Reciprocity theorem.

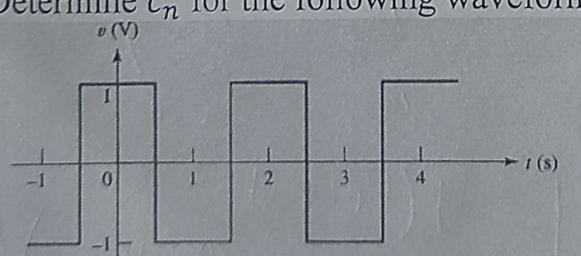
CO2

3. Attempt any **TWO** parts of the following:
- Determine c_n for the following waveform.

2×10

CO

CO3



- b) Write the properties of Fourier Transform.

CO3

- c. What is meant by balanced and unbalanced load?

CO3

$$\frac{2\pi}{\omega} \rightarrow$$

4. Attempt any **TWO** parts of the following: 2×10 CO

a. Derive Laplace transform of the convolution integral. CO4

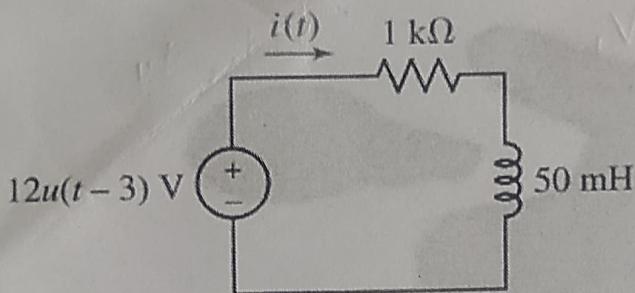
 b. Synthesize the Foster I and II form of realization of the R-C driving point function CO4

$$Z(s) = 2 + \frac{4s + 10}{s^2 + 4s + 3}$$

✓

~~$\frac{s^2 + 2}{s^2 + 4s + 3}$~~

c. Find $i(t)$ for $t = \infty$ and $100\mu s$ CO4



$$(s+3)(s+1)$$

5. Attempt any **TWO** parts of the following: 2×10 CO

 a. Two, two port networks are connected in parallel derive the necessary equations to find the overall Y-parameters of the combined network. CO5

b. Determine pole and zero of the following s-domain functions CO5

$$(a) \frac{s}{s + 12.5}; (b) \frac{s(s + 1)}{(s + 5)(s + 3)}$$

c. Determine the complex frequencies present in the function CO5

$$(2e^{-100t} + e^{-200t}) \sin 2000t$$

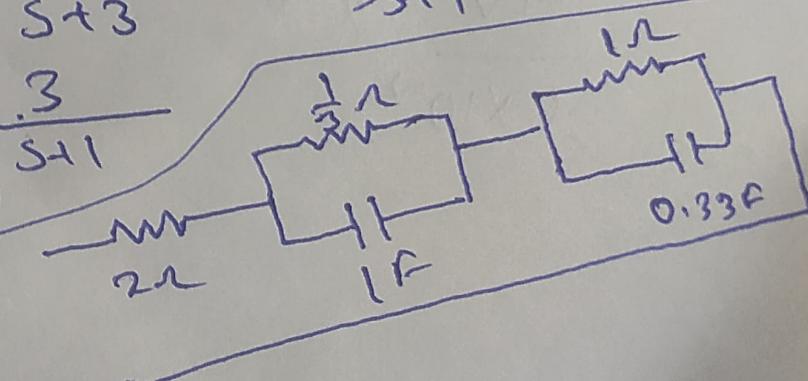
Foster I

$$Z(s) = 2 + \frac{1}{s+3} + \frac{3}{s+1}$$

$$Z_1 = 2 \quad Z_3 = \frac{3}{s+1}$$

$$Z_2 = \frac{1}{s+3}$$

$$Z(s) \Rightarrow$$



sin $\frac{1}{2}t + \frac{\pi}{2}$
 $\frac{1}{2}t + \frac{\pi}{2}$
 $\frac{1}{2}t + \frac{\pi}{2}$

Class Test-II
Network Analysis & Synthesis KEC-303

Time-1 Hrs

MM-10

Note: Attempt all questions.

- a) Determine the Laplace transform of the single half sinusoidal wave.(3 marks) CO4

- b) An impedance function is given by $Z(s) = \frac{(s+1)(s+3)}{s(s+2)}$ Find the (4marks) CO5

- (iii) Foster I (ii) Cauer II form

OR

Drive and explain the reciprocity and symmetry condition in terms of Z parameters.

- c) Drive and explain Initial and final value theorem.(3 marks) CO4

$\frac{1}{s} + \frac{s-2}{s^2}$ LAPLACE
 $\frac{1}{s} s^2 + s + 1$
 $s + \frac{5}{2}$

INSTRUCTION:

Roll No. []

Q. No.	Attempt all the questions	Marks	CO
1	Find the value of a) $64 \gg 2$ b) $256 \ll 3$ c) 32^64 d) <code>print(chr(ord('b')+1))</code> e) Is Tuple mutable?	01	1
2	Attempt all parts of the following: a) Differentiate between Membership and Identity operator. b) Differentiate between Nested if-else and elif ladder with suitable example.	2.5	2
3	Attempt any two parts of the following a) Write a program to Print Fibonacci series upto n terms b) Write a program to check whether your no. is prime or not c) Write a program to print following pattern 5 4 5 3 4 5 2 3 4 5 1 2 3 4 5	2.5	2
		2.5	2

Second Year B. Tech. 2nd CT Examination
Analog Circuits

Note: Attempt all questions.
Subject Code: KEC-402 Time: 1 Hrs.

M. Marks: 10

- What is the principle of an oscillator? What is Barkhausen criterion? Draw the RC Phase shift oscillator using Op-amp and derive its frequency of oscillation. [3]

$$f_b = \frac{1}{2\pi R C \sqrt{2N}}$$

- What is LC Oscillator? What are the conditions for Colpitt, Hartley and Clapp oscillators? In Colpitt oscillator (using Op-amp) $C_1 = 10 \text{ nF}$, $C_2 = 2 \text{nF}$ and $L = 20 \text{ mH}$. Find the frequency of oscillation, β , R_1 and R_F ? [3]

$$28 \cdot 12 \times 10^3 = b = \frac{1}{2\pi \sqrt{LC_{eq}}} \Rightarrow C_{eq} = 20 \frac{10 \times 2}{12} \quad \beta = \frac{C_L}{C_2}$$

- Draw the High frequency model of BJT and explain in brief. Explain the class A, Class B and Class AB operation. [4]

Time : 01 Hour

MM:15

Note : Attempt all Questions. Each question Equal Marks.

Q.No.1 : perform the following

(CO1)

(i) $(1011011.011)_2 = (?)_{10}$

(ii) $(1762.2)_8 = (?)_6$

(iii) $(55.55)_{10} = (?)_2$

Q.No.2 : What are compliments. Give the comparison between 1's and 2's compliments. How many zeros (CO1) are used in 1's compliment and 2's compliment. Explain. In Binary numbers, which compliment is used for logical operations and which compliment is used for arithmetical operations and why, explain.

Q.No.3 : Explain duality Theorem. Write (i) DeMorgan's law & (ii) Absorption law both in dual versions (CO1) and prove it.

Q.No.4 : Reduce the following Boolean function using K-map

(CO1)

(i) $F = BC + AC' + ABC + BCD$

(ii) $F = W(X'Y + X'Y' + XYZ') + X'Z'(Y+W)$ and $d = WX(Y'Z + Y'Z') + WYZ$, where d is don't care function.

Q.No.5 : Design a circuit which can perform the following operations on a four bit data A and B

(CO2)

- (i) ADD (ii) SUBTRACT (iii) INCREMENT A and (iv) DECREMENT A

(Roll No. to be filled by candidate)

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B. TECH.
THIRD SEMESTER THEORY EXAMINATION, 2022-23
KEC-302
DIGITAL SYSTEM DESIGN

Time: 03 Hours**Max. Marks: 100**

Note:

- Attempt all questions. All questions carry equal marks.
1. Attempt any **FOUR** parts of the following: $4 \times 5 = 20$ CO1
- Convert the following.
 - $(451.25)_8 = (?)_{10}$
 - $(977.75)_{10} = (?)_{16}$
 - Represent the decimal number 4705 (i) in 2,4,2,1 code, (ii) in BCD and (iii) as a binary number.
 - Prove the following theorems/laws and their dual version (i) absorption theorem (ii) Distributive law.
 - Compute M-N and N-M using 1's compliment and 2's compliment methods. Where, M=110111 and N=11101.
 - Implement Boolean function of Ex-OR with the help of (i) CO1 using NAND Gates only and (ii) using NOR Gates only.
 - Simplify using Karnaugh map the following Boolean Function

$$F(w,x,y,z) = \sum(2,3,6,11,12,15)$$

$$d(w,x,y,z) = \sum(1,2,9)$$

2. Attempt any **TWO** parts of the following: $2 \times 10 = 20$ CO2
- Design and explain the logic and circuit of 4 bit magnitude comparator.
 - Implement the following Boolean function with the help of 4x1 multiplexer CO2

$$F(x,y,z) = \sum(1,2,6,7)$$

- (ii) Draw and explain the circuit of Quadruple 2-to-1 line multiplexer.
- c. Design and explain a circuit which can perform the CO2 following operations on four bit binary numbers A and B : ADD A+B, SUBTRACT A-B, INCREMENT A and DECREMENT A.
3. Attempt any **TWO** parts of the following: $2 \times 10 = 20$ CO3
- Draw and explain the circuit of JK Flip Flop. write its truth CO3 Table and its characteristics and excitation table and equation. What is the disadvantage of JK Flip Flop and how it is rectified.
 - Design a synchronous counter using JK Flip Flop which can CO3 count the following cycle. Also draw the bush diagram.
-
-
- c. Explain ASM Chart. Describe the ASM chart and control CO3 logic of Binary Multiplier.
4. Attempt any **TWO** parts of the following: $2 \times 10 = 20$ CO4
- Explain the following terms used in Digital logic families: CO4 Fan In, Fan Out, Noise Margin, Power Dissipation and Propogation Delay.
 - Describe logic family. Define and Compare different logic CO4 families.
 - Give the concept of programmable logic devices and CO4 describe the logic implementation of PLD
5. Attempt any **TWO** parts of the following: $2 \times 10 = 20$ CO5
- Draw and explain the circuit of Digital to analog converters. CO5
 - Draw and explain the circuit of Analog to Digital CO5 Converters.
 - Explain Switched capacitor circuits, its basic concepts and CO5 practical configurations.

$$A B \oplus \overline{A} C$$

$$B C + A C$$

B.I.E.T Jhs
Bundelkhand Institute of Engineering and technology, Jhansi
Department of Electronics and Communication (ECE)
B.Tech. 4th Semester (EC), Class Test -II- April 2023
Subject: Signal System Subject code KEC403

Time: 1 Hr.

Maximum marks: 10

Note: Attempt any 5 questions. All questions carry 2 marks. Assume suitable data wherever necessary

Q.1 Prove that Fourier Transform of Periodic signals consists of a series of equally spaced impulses CO2 (2)

Q.2 Compare the wave symmetries for Fourier series analysis and list its advantages. CO2 (2)

Q.3 Determine Laplace transform of the signal $x(t) = e^{-at}u(t)$ also determine its ROC CO3 (2)

Q.4 Determine Z transform and ROC of following signals
 (a) $x(n) = \{4,3,2,1,2,3,4\}$ (b) $x(n) = u(-n)$ CO4 (2)

Q.5 Using Long division method, determine the inverse of Z transform of CO4 (2)

$$X(z) = \frac{1 + 2z^{-1}}{1 - 2z^{-1} + z^{-2}}$$

(a) if $x(n)$ is causal (b) if $x(n)$ is anticausal

Q. 6 Determine the Nyquist sampling rate for the signal CO5 (2)

$$x(t) = \frac{\sin(500\pi t)}{\pi t} \times \frac{\sin(700)\pi t}{\pi t}$$



Bundelkhand Institute of Engineering and Technology, Jhansi

Class Test-2, 2023

(Bachelor of Technology)

Branch: Electronics and Communication Engineering
Subject: Communication Engineering
Max. Marks: 10

Sem: IVth
Sub. Code: KEC 401
Time: 1 Hour

Note: Attempt all questions. Each questions carry equal marks. Assume suitable data wherever required and mention it clearly.

1. The carrier $c(t) = 100 \cos(2\pi f_c t)$ is frequency modulated by the signal $m(t) = 5 \cos 2000\pi t$, where $f_c = 10^8$ Hz. The peak frequency deviation is 20kHz. (a) Determine the amplitude and frequency of all signal components that have a power level of at least 10 % of the power of the unmodulated carrier component. (b) from Carson's rule, determine the approximate bandwidth of the FM signal. Use the table 3.1 for Bessel's function coefficient. [CO2]

OR

Discuss the demodulation of FM signal using Phase Locked Loop (PLL) with required equations. [CO2]

2. An angle modulated signal has the form $s(t) = 100 \cos[2\pi f_c t + 4 \sin 2\pi f_m t]$ where $f_c = 10$ MHz and $f_m = 1000$ Hz. (a) Assuming that this is an FM signal, determine the modulation index and the transmitted signal bandwidth. (b) Assuming that this is an PM signal, determine the modulation index and the transmitted signal bandwidth. [CO2]

3. What is Slope overload and Granular noise? Discuss how these problems can be alleviated? [CO4]

4. A Television signal has a bandwidth of 4.5 MHz. This signal sampled, quantized and binary encoded to obtain a PCM signal. (a) Determine the sampling rate if the signal is to be sampled at a rate 20% higher than the Nyquist rate. (b) If the samples are quantized into 1024 levels, how many binary pulses will be required to encode these samples? (c) Determine the binary pulse rate (bit rate) of the binary coded signal, and the minimum bandwidth required to transmit this signal? [CO4]

TABLE 3.1 TABLE OF BESSEL FUNCTION VALUES

n	$\beta = 0.1$	$\beta = 0.2$	$\beta = 0.5$	$\beta = 1$	$\beta = 2$	$\beta = 5$
0	0.997	0.990	0.938	0.765	0.224	-0.178
1	0.050	0.100	0.242	<u>0.440</u>	<u>0.577</u>	-0.328
2	0.001	0.005	0.031	<u>0.115</u>	0.353	0.047
3				0.020	<u>0.129</u>	0.365
4				0.002	<u>0.034</u>	<u>0.391</u>
5					0.007	0.261
6					0.001	<u>0.131</u>
7						0.053
8						0.018
9						0.006
10						0.001
11						
12						
13						
14						
15						
16						

Bundelkhand Institute of Engineering & Technology, Jhansi

Department of Computer Science & Engineering

Class Test-2, (2022-23)

B.Tech 3rd Semester (ME+EC)

Subject Code: KNC-301

Time: 1 Hours

Subject Name: Computer System Security

Max. Marks: 10

Question		Marks	CO
Attempt any 4 questions:			
<input checked="" type="checkbox"/>	What are the various web server threats?	2.5	3
<input checked="" type="checkbox"/>	Explain working of Browser isolation.	2.5	3
<input checked="" type="checkbox"/>	Define access control and types of access control.	2.5	3
<input checked="" type="checkbox"/>	List the basic terminology used in cryptography.	2.5	3
e	Describe UNIX-Windows access control with all its permissions.	2.5	4

Bundelkhand Institute of Engineering and Technology, Jhansi
B.tech 2nd Year (ME, EC, CS, IT) 2022-2023
Computer System Security (KNC-301T)

Time: 1hour

Total Marks: 10

Roll No.

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Note:

- 1) Attempt any 4 questions.
- 2) All questions carry equal marks

Ques. Attempt any five of the following questions	Marks: 4*2.5	Course Outcome
a. Differentiate Active attacks and Passive Attacks.		CO1
b. Describe Intrusion Detection System with its types.		CO2
c. How do we solve Confinement Problems (levels)?		CO2
d. What do you understand by Rootkits? Explain with its types.		CO2
e. Define Control Hijacking and Integer Overflow attacks.		CO1

BIET 2023

Technical Communication

Class TEST 1

4th semester KAS 401

Attempt only four question: each question carry same marks : Total marks 10

Ques1 Write the two definition of technical communication and make the chart of flow of communication
2.5 marks (CO1)

Que2.difference between general communication and technical communication 2.5 marks(CO1)

Que3. what is presentation and the tips before the presentation 2.5 marks (CO2)

Que 4.write about the audience analysis and retention of audience analysis 2.5 marks(CO2)

Ques5.how you can handle the stage fear. P 2.5 markS (CO2)