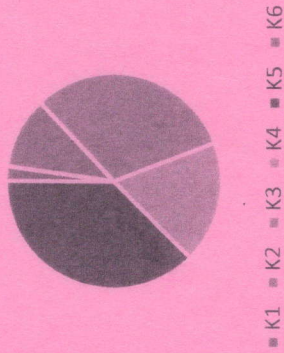


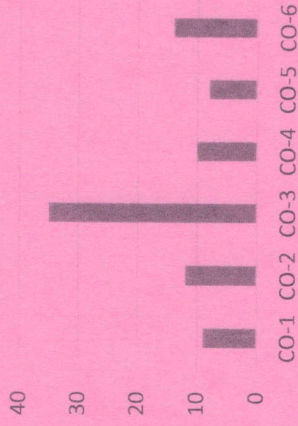
CO1	Identify the tests on H. V. equipment and on insulating materials, as per the standards
CO2	Understand the basic physics related to various breakdown processes in solid, liquid and gaseous insulating materials.
CO3	Utilize the concept of generation and measurement of D. C., A.C., & Impulse voltages.
CO4	Analyze the causes for rise of over-voltages in a power system, and protection against these over voltages.
CO5	Evaluate the system parameters for over voltages due to lightning
CO6	Design of insulation levels of various parts of power system.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



ARKA JAIN
University
Jharkhand



[07-05-2025]

END SEM EXAMINATION
School of Engineering & IT

Branch	Electrical and Electronics Engineering	Program	B. Tech
Subject Name	Program Elective - II - High Voltage Engineering	Session	Even, 2024-2025
Semester	VI	Year	May, 2025
Time: 3 Hour Max. Marks : 70	- Start writing from 2nd page onwards; don't Write on the 1st Page Backside - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Three out of Five of Section C - Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Paper(s).		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q. N	QUESTIONS	Marks	COs	KL
i	Write down the properties of a gaseous dielectric for high voltage applications	2	CO1	K2
ii	Define Lightning phenomenon.	2	CO5	K1
iii	Explain the terms (a) withstand voltage, (b) flashover voltage,	2	CO6	K2
iv	Define the front and tail times of impulse wave.	2	CO3	K2
v	What are the different types of liquid insulating materials?	2	CO2	K4
vi	What are drawbacks of single stage circuit for the generation of very high impulse voltage?	2	CO3	K3
vii	What are commercial liquid dielectrics and how are they different from pure liquid dielectrics?	2	CO2	K2
viii	What is meant by "Penning effect"?	2	CO4	K2
ix	Why high voltage's is necessary testing for purpose?	2	CO1	K2

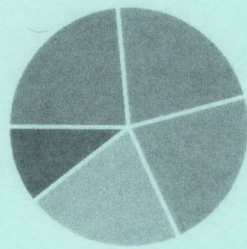
x	Explain the porosity test on insulators	2	CO6	K3
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Define the front and tail times of an impulse wave. What are the tolerances allowed as per the specifications?	05	CO3	K3
3	State and explain Paschen's law.	05	CO2	K4
4	A ten-stage impulse generator has 0.250 μ F condensers. The wave front and wave tail resistances are 75 ohms and 2600 respectively. If the load capacitance is 2.5 nF, determine the wave front and wave tail times of the impulse wave.	05	CO3	K5
5	In an experiment in a certain gas it was found that the steady state current is 5.5×10^{-8} A at 8 kV at a distance of 0.4 cm between the plane electrodes. Keeping the field constant and reducing the distance to 0.1 cm results in a current of 5.5×10^{-9} A. Calculate Townsend's primary ionization coefficient α .	05	CO3	K5
6	A Cockcroft-Walton type voltage multiplier has eight stages with capacitances, all equal to 0.05 pF. The supply transformer secondary voltage is 125 kV at a frequency of 150 Hz. If the load current to be supplied is 5 mA, find (a) the percentage ripple, (b) the regulation, and (c) the optimum number of stages for minimum regulation or voltage drop.	05	CO1	K3
7	Explain the streamer theory of breakdown in gases	05	CO1	K3
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the cascade connection of transformers for producing very high a.c. voltages.	10	CO3	K3
9	Derive the expression of Townsend's first ionization coefficient	10	CO2	K4
10	The following observations were made in an experiment for determination of dielectric strength of transformer oil. Determine the power law equation. Gap spacing 4 6 8 10	10	CO2	K5

	Breakdown Voltage (kV)	88	135	165	212			
11	A 100 kVA, 400 V/250 kV testing transformer has 8% leakage reactance and 2% resistance on 100 kVA base. A cable has to be tested at 500 kV using the above transformer as a resonant transformer at 50 Hz. If the charging current of the cable at 500 kV is 0.4 A, find the series inductance required. Assume 2% resistance for the inductor to be used and the connecting leads. Neglect dielectric loss of the cable. What will be the input voltage to the transformer?					10	CO3	K5
12	What are the different power frequency tests done on insulators? Explain any one in details.					10	CO6	K1

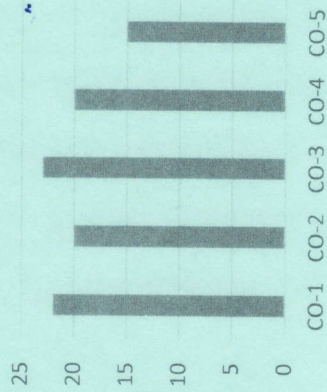
CO1	Represent signals mathematically in continuous and discrete-time, and in the frequency domain.
CO2	Understand the Discrete-Fourier Transform (DFT) and the FFT algorithms.
CO3	Apply digital signal processing for the analysis of real-life signals.
CO4	Analyze discrete-time systems using z-transform.
CO5	Estimate the response parameters for digital filters.
CO6	Design digital filters for various applications.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



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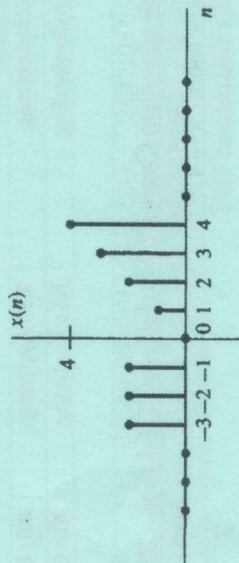
[09-05-2025]

END SEM EXAMINATION
School of Engineering & IT

Program	Electrical and Electronics Engineering	Branch	B. Tech
Subject Name	Program Elective – II - Digital Signal Processing	Session	Even, 2024-2025
Semester	VI	Year	May, 2025
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>.		
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q. N1	QUESTIONS	Marks	COs	KL
i	State Parseval's relation of DFT	2	CO1	K1
ii	Find the Z transform of {1,0,2,0,3}	2	CO2	K1
iii	What are the advantages of DSP?	2	CO2	K1
iv	Discuss the term quantization and quantization error?	2	CO3	K1
v	Consider the analog signal $x_a(t) = 3 \cos 50\pi t + 10 \sin 300\pi t - \cos 100\pi t$ What is the Nyquist rate for this signal?	2	CO3	K1
vi	Define the energy and power signals.	2	CO3	K2
vii	Enlist any two applications of FFT algorithm.	2	CO2	K2
viii	Define the term ROC of Z- transform. List the properties of Z-transform.	2	CO3	K1
ix	Analyze the system described by the equation $y(n) = nx(n)$ is linear or not.	2	CO2	K3
x	Discuss the term quantization and quantization error.	2	CO2	K2

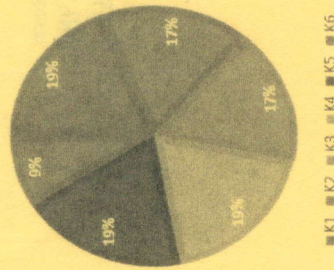
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	State and prove the circular frequency shifting property of DFT.	05	CO2	K3
3	Draw the Block diagram of Digital Signal Processing system. Explain in brief each elements of the system.	05	CO2	K3
4	Illustrate whether the following systems are Causal or not. (i) $y(n)=x(-n)$ (ii) $y(n)=x(n-1)+K x(n-2)$	05	CO4	K2
5	Show the graphical representation of the signals $x(-n)$ and $x(-n+2)$, where $x(n)$ is the signal illustrated in Fig. 1	05	CO4	K3
 Fig. 1				
6	Write Advantages of Digital over Analog Signal Processing.	05	CO5	K2
7	List the methods to find inverse Z transform. Evaluate the Z-transform of the sequence $x(n)=\{2,1,-1,0,3\}$	05	CO3	K2
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Determine the Z transform of the following finite duration signals. (i) $x(n) = \{1,2,5,4,0,1\}$ (ii) $x(n) = \delta(n-k)$	10	CO1	K4
9	Compare bilinear transformation and Impulse invariant method of IIR filter design.	10	CO3	K5
10	Calculate DFT for the sequence $x(n)=\{1,1,0,0\}$.	10	CO1	K3

11	Define the term ROC of Z- transform? List the properties of Z-transform.	10	CO5	K1
12	Compare the RISC and CISC processors.	10	CO4	K4

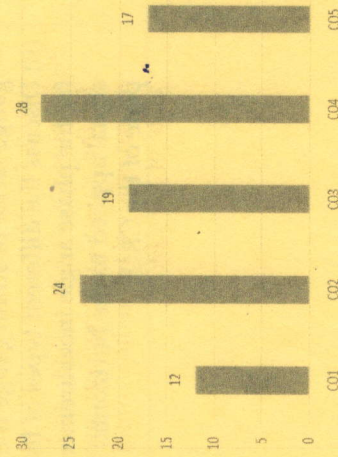
CO1	To know the basic of sensor and transducer.
CO2	To know the different types of sensors used in Electric Vehicle.
CO3	To understand the working principle of different types of sensors used in Electric Vehicle.
CO4	Familiarization with the Challenges and Solutions in Implementing sensing technology in Electric Vehicle.
CO5	To know the role of sensors in battery management system.

GRAPHICAL REPRESENTATION

BLOOM'S LEVEL WISE MARKS DISTRIBUTION



Course Outcome Wise Marks Distribution



JGI	ARKA JAIN University Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY	[12-05-2025] END SEM EXAMINATION School of Engineering & IT
Program	Electrical and Electronics Engineering	Branch	B. Tech
Subject Name	Measurements and Instrumentation	Session	Even, 2024-2025
Semester	VI	Year	May, 2025
• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of Mobile Phone or any kind of <u>Written Material</u>, <u>Arguments with the Invigilator</u> or <u>Discussion with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Paper(s)</u>. Time: 3 Hour Max. Marks : 70			
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x) – 20 Marks

Q. N	QUESTIONS	Marks	COs	KL	PO
i	What is voltage multiplier?	2	CO4	K2	PO1
ii	Classified the types of errors in moving iron instrument measurements.	2	CO5	K1	PO1
iii	What is energy meter constant?	2	CO1	K1	PO1
iv	Define the sensitivity	2	CO4	K4	PO1
v	Enlist the types of static error.	2	CO4	K3	PO2
vi	Enlist the name of the following: (a) zero order instrument (b) First order Instrument	2	CO2	K5	PO1
vii	What is breaking torque in induction type energy meter?	2	CO2	K5	PO2
viii	Enlist the name of any two methods for the measurement of low resistance	2	CO4	K4	PO2
ix	Define the transducer.	2	CO3	K6	PO2
x	Draw the circuit diagram of Anderson bridge.	2	CO3	K6	PO2

Section B (Answer any FOUR out of SIX) – 20 Marks

(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Explain the normal or Gaussian curve of error for infinite numbers of reading and highlight the following parameters (i) precision index (ii) probable error (iii) average deviation	5	CO1	K5	PO1
3	Plot the response of the first order instrument and write its mathematical expression with indicating its electrical circuit diagram	5	CO1	K1	PO1
4	An energy meter having meter constant of 1200 revolution per kWh. Makes 20 revolutions in 30 seconds for a constant load. Estimate the value of load in KW.	5	CO3	K4	PO2
5	The current flowing in a resistor of $1\ \Omega$ is measured to be 25 A. But it was discovered that ammeter reading was low by 1 % and resistance was marked high by 0.5 %. Find the true power as percentage of original power.	5	CO4	K6	PO1
6	Draw the circuit diagram of De Sauty bridge and explain its working principle.	5	CO4	K2	PO1
7	Enlist the name of the following: (i) Indicating Instrument (ii) Integrating Instrument (iii) Recording Instrument	5	CO5	K3	PO2

Section C (Answer any THREE out of FIVE) – 30 Marks

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Design a equivalent circuit of the capacitor for estimating its frequency error at low and medium frequency.	10	CO2	K5	PO1
9	Draw the phasor diagram of the three phase connected load. Comments on power measurement using two wattmeter methods on the following power factor (i) 1 (ii) 0 (iii) 0.86 (iv) 0.5	10	CO2	K2	PO2

10	A voltmeter has a sensitivity of $1050\ \Omega/V$ reads 210 V on its 320 V scale. When connected across an unknown resistor in series with a millimetre. When mill ammeter reads 12 mA. Determine the (i) Apparent resistance of the unknown resistor (ii) Actual resistance of the unknown resistor (iii) Error due to the loading effect of the voltmeter.	10	CO3	K1	PO2
11	Derive the mathematical expression for the change in stored energy during the normal operation of the Moving Iron Instrument.	10	CO5	K3	PO1
12	(i) Derive the mathematical expression of the gauge factor of strain gauge transducer. (ii) Discuss the different types of lissajous pattern for the phase angle measurement between the signal applied to the horizontal and vertical plate of the CRO.	10	CO4	K4	PO1

					[14-05-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Electrical and Electronics Engineering		Branch	B. Tech		
Subject Name	Intellectual Property Rights (IPR)		Session	Even, 2024-2025		
Semester	VI		Year	May, 2025		
Time: 3 Hour Max. Marks : 70	- Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> - Answer all Questions of Section A (Compulsory) - Answer Any <u>Four</u> out of Six of Section B - Answer Any <u>Three</u> out of Five of Section C - Possession of <u>Mobile Phone</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussion with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>.					
	Knowledge Level (KL)		K1 : Remembering K2 : Understanding		K3 : Applying K4 : Analysing	
					K5 : Evaluating K6 : Creating	

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)						
Q.N	QUESTIONS		Marks	COs	KL	
1						
i	Define Intellectual Property Rights (IPR).		2	CO1	K1	
ii	When was the WIPO Convention established?		2	CO1	K2	
iii	List the essential elements of patentability.		2	CO1	K1	
iv	What is the role of the Patent Office?		2	CO2	K2	
v	Identify the duration of copyright protection.		2	CO2	K1	
vi	Name two related rights associated with copyrights.		2	CO1	K2	
vii	Define Trademark.		2	CO3	K1	
viii	List different kinds of trademarks, such as brand names, logos, and symbols.		2	CO4	K2	
ix	Identify the key provisions of India's National IP Policy, 2016.		2	CO4	K1	
x	List the steps involved in registering a Geographical Indication (GI).		2	CO5	K2	

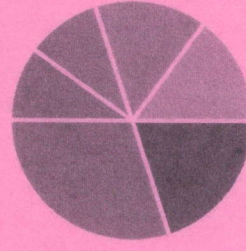
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Describe the differences between Patent and Copyright.	05	CO3	K3
3	Explain the concept of Novelty in the context of patents.	05	CO4	K2
4	Describe the registration procedure for obtaining a copyright.	05	CO5	K3
5	Demonstrate how a trademark holder can protect their rights against misuse.	05	CO2	K1
6	Illustrate how government initiatives support start-ups in managing their intellectual property.	05	CO4	K3
7	Illustrate how Copyright laws protect authors and artists.	05	CO3	K4
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Develop strategies for improving awareness and enforcement of IPR in rural areas.	10	CO5	K6
9	Describe the role of the Patent Office and Appellate Board in resolving disputes.	10	CO5	K3
10	Differentiate between original literary works and cinematograph films under copyright.	10	CO6	K2
11	Develop a strategy for monitoring and protecting trademarks in the digital marketplace.	10	CO6	K6
12	Create a business plan highlighting career opportunities in intellectual property and the required skills to succeed in the field.	10	CO4	K6

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

CO1	Identify activities, constitute IP infringements and the remedies available to the IP owner, and describe the precautionary steps to be taken to prevent infringement of proprietary rights in products and technology development.
CO2	Understand the knowledge on patent and copyright for their innovative research works.
CO3	Apply information in patent documents provide useful insight on novelty of their idea from state-of-the-art search. This provide further way for developing their idea or innovations.
CO4	Apply the activities and constitute IP infringements and the remedies available to the IP owner and describe the precautionary steps to be taken to prevent infringement of proprietary rights in products and technology development.
CO5	Anticipate the critical analysis arguments relating to the development and reform of intellectual property right institutions and their likely impact on creativity and innovation.
CO6	Formulate the processes of Intellectual Property Management (IPM) and various approaches for IPM and conducting IP and IPM auditing.

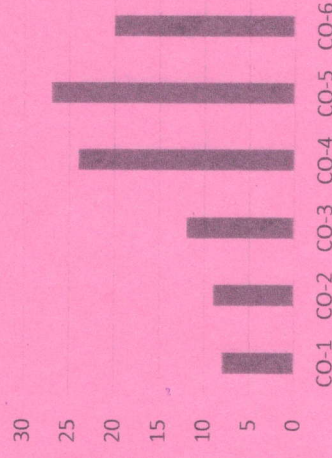
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

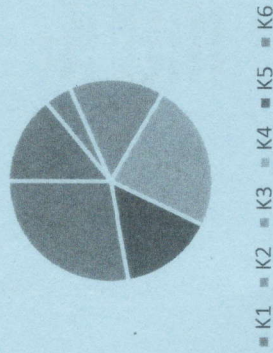
Course Outcome wise Marks Distribution



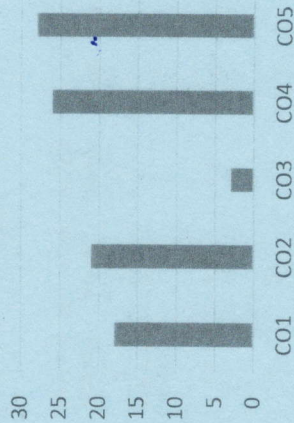
CO1	Recognize the basics of power system economics.
CO2	Understand the monitoring and control of a power system.
CO3	Apply the methods to control the voltage, frequency and power flow.
CO4	Analyze the stability constraints in a synchronous grid.
CO5	Estimate the steady state parameters of power system using various numerical methods.

GRAPHICAL REPRESENTATION

Bloom's Level wise Marks Distribution



Course Outcome Wise Marks Distribution



 ARKA JAIN University Jharkhand		 NAAC GRADE A ACCREDITED UNIVERSITY		[16-05-2025] END SEM EXAMINATION School of Engineering & IT	
Program		Electrical and Electronics Engineering		Branch	B. Tech
Subject Name		Power System-II		Session	Even, 2024-2025
Semester		VI		Year	May, 2025*
Time: 3 Hour Max. Marks : 70		• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of Mobile Phone or any kind of <u>Written Material</u>, Arguments with the <u>Invigilator</u> or <u>Discussion</u> with <u>Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>.			
		Knowledge Level (KL)			
		K1 : Remembering		K3 : Applying	K5 : Evaluating
		K2 : Understanding		K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x) – 20 Marks					
Q.N	QUESTIONS	Marks	COs	KL	PO
i	Define Power system components?	2	CO1	K1	PO2
ii	What will be the reactive power and bus voltage when the generator bus is treated as load bus?	2	CO1	K2	PO1
iii	What are the operating constraints imposed in the load flow studies?	2	CO2	K3	PO3
iv	What is the difference between Z_{BUS} and Y_{BUS} ?	2	CO2	K5	PO4
v	Why voltage instability is also called load instability?	2	CO3	K1	PO3
vi	What do you mean by load shedding?	2	CO3	K2	PO2
vii	What do you mean by power system stability?	2	CO4	K1	PO4
viii	What do you mean by Unit commitment?	2	CO4	K2	PO4
ix	What do you mean by incremental production cost?	2	CO5	K4	PO5
x	Define Phasor Measurement Unit (PMU)	2	CO5	K6	PO6

Section B (Answer any FOUR out of SIX) – 20 Marks					
(Each question 5 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	What is a Jacobian matrix? How are the elements of the Jacobian matrix computed?	5	CO3	K3	PO1
3	Why equal area criterion concept is used for stability?	5	CO3	K1	PO1
4	Compare the accuracy and efficiency of the Forward Euler and Runge-Kutta methods for solving the swing equation.	5	CO5	K4	PO4
5	The inertia constant for a 50 Hz, 100 MVA alternator is 5 MJ/MVA. How much kinetic energy is stored in the rotor at synchronous speed? If the input of the alternator is suddenly increased by 20 MVA. What would be the acceleration?	5	CO5	K5	PO2
6	Explain the role of Q-V loop in the power system.	5	CO5	K6	PO5
7	Two alternators feeding a load bus with the following incremental characteristics: $IC_1 = 3 + 0.018P_1$ and $IC_2 = 2 + 0.08P_2$	5	CO4	K4	PO6
Section C (Answer any THREE out of FIVE) – 30 Marks					
(Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Draw a detailed flow chart describing the procedure for load flow analysis using the Newton-Raphson method	10	CO3	K3	PO1

9	Consider the three-bus system of Figure. Each of the three lines has a series impedance of $0.02 + j0.08$ pu and a total shunt admittance of $j0.02$ pu. The specified quantities at the buses are tabulated below	10	CO2	K4	PO4																									
		<table> <tr> <th>Bus</th> <th>Real load demand P_D</th> <th>Reactive load demand Q_D</th> <th>Real power generation P_G</th> <th>Reactive power generation Q_G</th> <th>Voltage specification</th> </tr> <tr> <td>1</td> <td>2.0</td> <td>1.0</td> <td>Unspecified</td> <td>Unspecified $V_1=1.04 + j0$ (slack bus)</td> <td></td> </tr> <tr> <td>2</td> <td>0.0</td> <td>0.0</td> <td>0.5</td> <td>1.0</td> <td>Unspecified (PQ bus)</td> </tr> <tr> <td>3</td> <td>1.5</td> <td>0.6</td> <td>0.0</td> <td>$Q_{G3} = ?$</td> <td>$V_3 = 1.04$ (PV bus)</td> </tr> </table>	Bus	Real load demand P_D	Reactive load demand Q_D	Real power generation P_G	Reactive power generation Q_G	Voltage specification	1	2.0	1.0	Unspecified	Unspecified $V_1=1.04 + j0$ (slack bus)		2	0.0	0.0	0.5	1.0	Unspecified (PQ bus)	3	1.5	0.6	0.0	$Q_{G3} = ?$	$V_3 = 1.04$ (PV bus)	10	CO4	K2	PO4
Bus	Real load demand P_D	Reactive load demand Q_D	Real power generation P_G	Reactive power generation Q_G	Voltage specification																									
1	2.0	1.0	Unspecified	Unspecified $V_1=1.04 + j0$ (slack bus)																										
2	0.0	0.0	0.5	1.0	Unspecified (PQ bus)																									
3	1.5	0.6	0.0	$Q_{G3} = ?$	$V_3 = 1.04$ (PV bus)																									
10	Explain briefly the swing equation	10	CO5	K3	PO5																									
11	Describe briefly various compensations carried out in power systems.	10	CO4	K6	PO6																									
12	Incremental fuel costs in Rs./M.W.h for a plant consisting of two units are $IC_1 = 40 + 0.2P_1$ and $IC_2 = 30 + 0.25P_2$. Find the saving in fuel cost in Rs./h for the optimal scheduling of a total load of 130 MW as compared to equal distribution of the same load between the two units.	10	CO4	K6	PO6																									