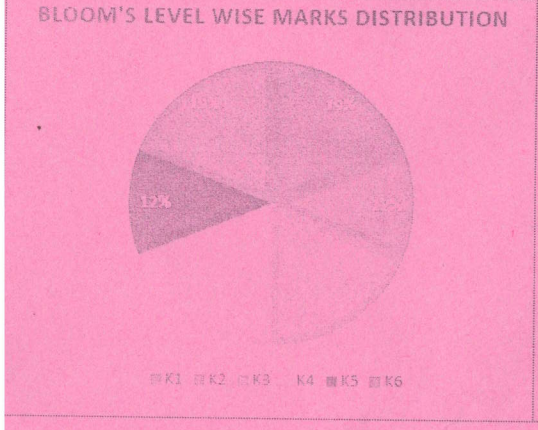
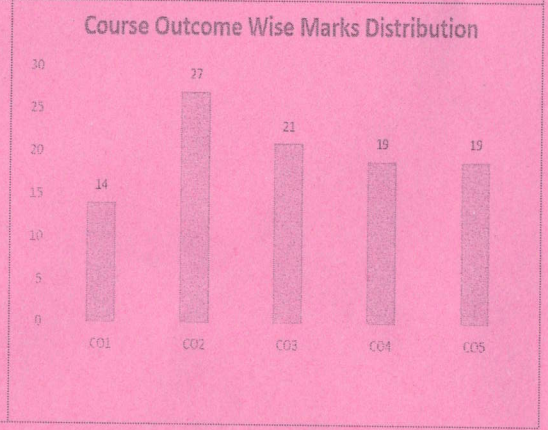
CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	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.

GRAPHICAL REPRESENTATION





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ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	Electrical and Electronics Engineering	Program	B-tech
Subject Name	Digital Signal Processing	Semester	6th
		Year	2023/ Even

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 Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.

Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

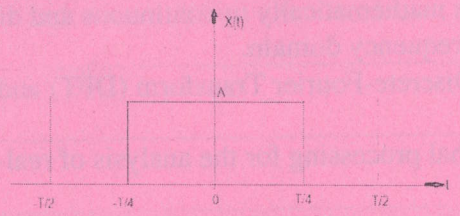
Section A (Each question Carry 02 Marks from Q1-i to Q1-xx) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	What is Nyquist rate?	2	CO5	K1	PO1
ii	Define the term aliasing.	2	CO5	K1	PO1
iii	What is the use of Fourier Transformation?	2	CO3	K2	PO1
iv	Give the expression for Fourier transform and inverse Fourier transform.	2	CO4	K3	PO1
v	Explain with an expression the term twiddle factor.	2	CO4	K3	PO2
vi	Explain the usefulness of the Z-transform.	2	CO3	K5	PO1
vii	What is a LTI system?	2	CO2	K4	PO2
viii	Explain the condition of stability for a signal.	2	CO1	K4	PO2
ix	What are even signal?	2	CO1	K6	PO2
x	Give an example of static and dynamic system.	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	Define mathematically the following signals and plot the same: i. Sinc Function ii. Unit Impulse Signal iii. Unit Step Signal	5	CO1	K6	PO1
3	Define casual and non-casual signals with suitable examples.	5	CO2	K1	PO1
4	A discrete-time signal is given by, X(n)= {1, 2, 2, 1, 4} ↑ Sketch the following signals: i. X(n-1).δ(n-2) ii. X(n).u(n-3)	5	CO3	K3	PO1
5	Find the convolution of the signal x(n) = (3, 1, 2, 4) where impulse response of the signal is h(n) = (1, 3, 2, 1) using any method.	5	CO1	K4	PO1
6	What is sampling? How aliasing of a signal be avoided?	5	CO5	K5	PO1
7	Find the 4-point DFT of the sequence x(n) = cos nπ/4.	5	CO4	K5	PO1

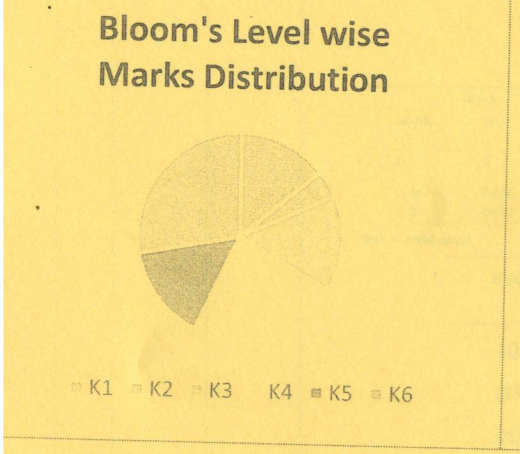
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

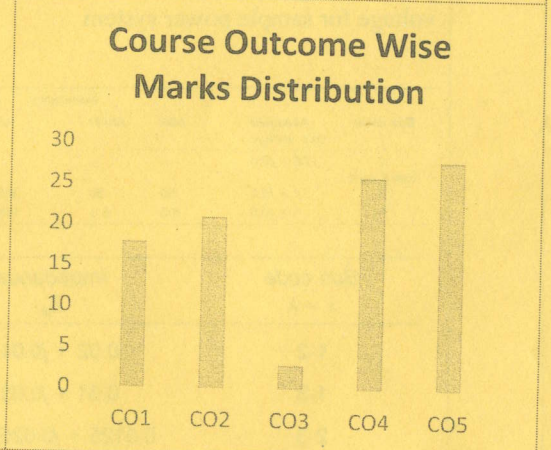
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Given x(n)= {1, 2, 3, 4, 4, 3, 2, 1}, find X(k) using DIT FFT algorithm.	10	CO5	K2	PO1
9	Find the Fourier transform of a rectangle.	10	CO3	K6	PO1
10	Give the expression for Z Transform and discuss its properties.	10	CO2	K1	PO1
11	Obtain the Fourier series representation	10	CO2	K4	PO1
					
12	Discuss the properties of DFT giving mathematical expression.	10	CO4	K3	PO1

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

Course Outcomes	CO1	Formulate load flow & short circuit calculations
	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	Recognize the basics of power system economics.

GRAFICAL REPRESENTATION





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ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	**Electrical & Electronics Engineering**	**Program**	**B-Tech**
Subject Name	**Power System-II**	**Semester**	**6th**
		Year	**2023/ Even**

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 Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.

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 Q1-xx) – 20 Marks

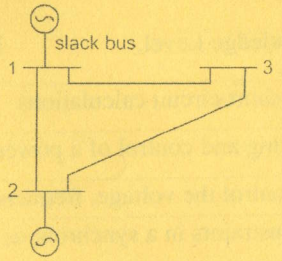
Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	What is bus?	2	CO1	K1	PO2
ii	What do you mean by load flow study	2	CO1	K3	PO1
iii	Why do we go for iterative methods to solve load flow problems?	2	CO2	K3	PO3
iv	What is swing bus?	2	CO2	K5	PO4
v	What do you mean by stability of power system	2	CO3	K1	PO3
vi	What is power system stabilizer?	2	CO3	K2	PO2
vii	What do you mean by voltage stability?	2	CO4	K1	PO4
viii	Define PMU	2	CO4	K2	PO4
ix	What do you mean by SCADA	2	CO5	K4	PO6
x	What is wide area measurement system (WAMS)	2	CO5	K6	PO6

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	K L	PO
1	The impedance between various buses in a systems are Each bus to reference – j2.0 ohm Bus-1 to bus-2 – j0.8 ohm Bus-1 to bus-3 – j0.5 ohm Bus 2 to bus-3 – j1.0 ohm Find the bus admittance matrix	5	CO3	K3	PO1
2	Explain briefly about equal area criteria for stability	5	CO3	K1	PO1
3	What do mean by synchronous compensators? Enlist the types of Static var compensator (SVC)	5	CO5	K4	PO4
4	What do you mean by excitation system? Enlist the types of excitation system.	5	CO5	K5	PO2
5	A 4-pole. 50 Hz, 11 Kv turbo generator is rated 75 MW and 0.86 power factor lagging. The machine rotor has a moment of inertia of 9000 Kg-m2. Find the inertia constant in MJ/Mva and M constant or momentum in MJs/elec degree	5	CO6	K1	PO5
6	Write short notes on remote thermal unit (RTU)	5	CO4	K6	PO6

Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	K L	PO
7	The single line diagram of a three bus power system. Data for this are given in tables (i) Using the Gauss-Sidel method, determine the phasor values of the voltage at bus 2 and 3. (Perform only two iterations) (ii) Find the slack bus real and reactive power after second iteration.	10	CO3	K3	PO1



Scheduled generation and loads and assumed bus voltage for sample power system

Bus code *i*	Assumed bus voltage	Generation MW	Generation MVAr	Load MW	Load MVAr
1 (slack bus)	1.05 + *j*0.0	–	–	0	0
2	1 + *j*0.0	50	30	305.6	140.2
3	1 + *j*0.0	0.0	0.0	138.6	45.2

Base MVA = 100

Bus code *i* – *k*	Impedance Z_{ik}
1-2	0.02 + *j*0.04
1-3	0.01 + *j*0.03
2-3	0.0125 + *j*0.025

Line Impedances

8	Describe briefly the computational procedure of Gauss- Seidel method of load flow using flow chart.	10	CO2	K4	PO4
9	State and explain briefly about swing equation for a synchronous machine	10	CO5	K2	PO4
10	Explain briefly about load frequency control with neat block diagram.	10	CO6	K3	PO5
11	Explain briefly about SCADA and its component	10	CO4	K6	PO6

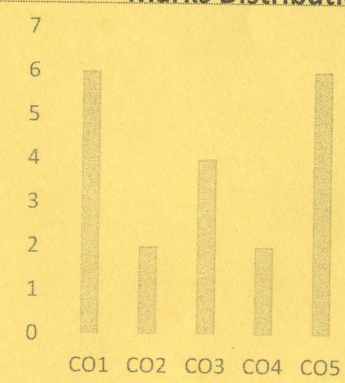
O- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Identify activities, constitute IP infringements and the remedies available to the IP owner, and describe the precautious 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 precautious 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.
	CO^	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

Course Outcome Wise Marks Distribution



JGI ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	Electrical & Electronics Engineering	Program	B-tech
Subject Name	Intellectual Property Rights (IPR)	Semester	6th
		Year	2023/ Even

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 Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.

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 Q1-x) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	What is copyright infringement?	2	CO1	K1	PO8
ii	Why patent is important?	2	CO5	K4	PO8
iii	What is the purpose of Industrial Design?	2	CO1	K2	PO1
iv	What do you mean by a patent?	2	CO2	K2	PO8
v	Mention two points regarding Indian Copyrights Act in India.	2	CO1	K1	PO1
vi	Define Intellectual Property.	2	CO1	K1	PO8
vii	Differentiate between a trading name and a business name.	2	CO5	K4	PO8
viii	What is the purpose of trademarks?	2	CO1	K2	PO1
ix	What do you mean by a patent?	2	CO2	K2	PO8
x	Write any two provisions of the Paris Convention.	2	CO6	K1	PO5

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Discuss the importance of Intellectual Property Rights.	5	CO1	K4	PO8
3	Explain in detail the determination of trade secrete status.	5	CO3	K5	PO5
4.	Describe the common law rights under the 1976 copyright law.	5	CO6	K2	PO5
5	Write a short note on the Paris Convention of 1883.	5	CO1	K1	PO5
6	What do you understand by copyright infringement?	5	CO2	K2	PO8
. 7	Mention the branches of Patent Offices in India.	5	CO1	K1	PO8

Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Discuss the importance of Trademarks.	5	CO1	K4	PO8
9	Describe the common law rights under the 1976 copyright law.	5	CO3	K5	PO5
10	Mention the provisions of the TRIP Agreement.	5	CO1	K2	PO5
11	Write a short note on the Patent Co-operation Treaty,1970.	5	CO6	K1	PO5
12	Discuss the importance of Trademarks.	5	CO1	K4	PO8

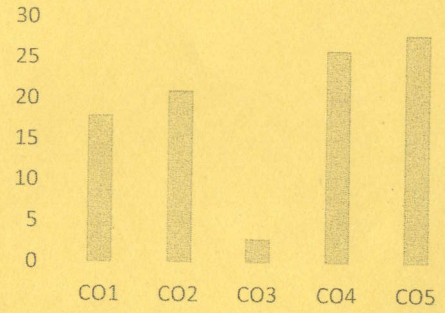
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Design of riveted and welded connections.
	CO2	Design of built up sections.
	CO3	Ability to analyze and design of simple bolted and welded connections
	CO4	Ability to design steel framing system and connections of a building in a team setting.
	CO5	Familiarity with structural steel fabrication process and construction through field trip and or speaker presentation.

GRAFICAL REPRESENTATION

Bloom's Level wise Marks Distribution

Course Outcome Wise Marks Distribution



8/5/23

JGI ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	Civil Engineering	Program	B-tech
Subject Name	Design of Steel Structure	Semester	6th
		Year	2023/ Even

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 Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.**

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 Q1-x) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Define Factor of safety is the ratio	2	CO1	K1	PO2
ii	Define Modulus of elasticity.	2	CO1	K2	PO2
iii	Write the assumption of rivet joint.	2	CO1	K2	PO3
iv	Explain the Failure of bolted joints.	2	CO1	K1	PO2
v	Describe the different types of cross-sections of steel.	2	CO1	K1	PO2
vi	Draw the neat sketch of double cover butt joint.	2	CO2	K2	PO4
vii	Write the failure of riveted joint.	2	CO1	K1	PO2
viii	The strength of a riveted lap joint is equal to its	2	CO2	K1	PO2
ix	Define Diagonal filler weld.	2	CO1	K1	PO3
x	Define Shear modulus of elasticity Bulk modulus of elasticity.	2	CO1	K2	PO5

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Write any Six features of structural steel.	5	CO2	K2	PO2
3	Write the difference between riveted joint and welded joint.	5	CO1	K2	PO12
4	What is efficiency of riveted joint.	5	CO3	K2	PO4
5	Write the advantages and disadvantages of welded joint.	5	CO1	K2	PO5
6	Design a riveted joint to connect two plates 14 mm thick. Power driven rivets may be used for making the connection. Assume fy = 250 N/mm2	5	CO3	K4	PO3
7	Compute the value of rivet, 22mm in diameter, used to connect two connect two plates 12mm thick in the following cases: (a) power driven rivets (b) hand driven rivets.	5	CO1	K4	PO2

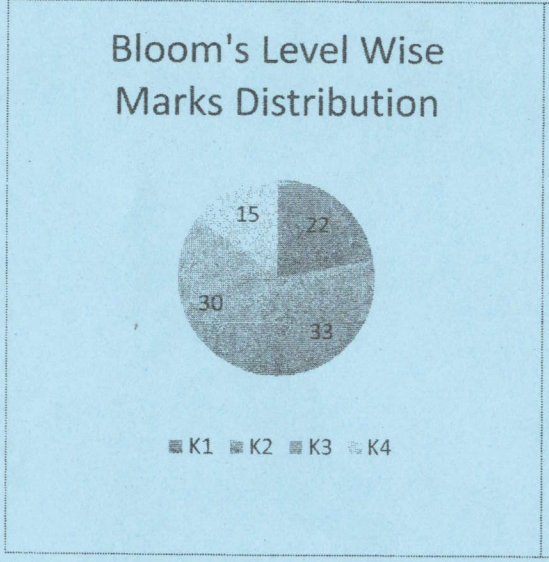
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

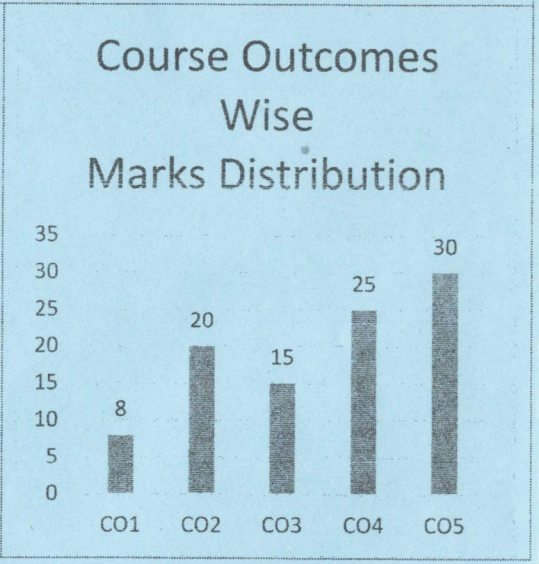
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Design a tension member to carry an axial factored load of 500kN. Use a double angle rolled steel section connected (at site) to each side of a gusset plate of 10mm thick using 20mm diameter power driven rivets.	10	CO1	K5	PO4
9	Determine the safe load and the efficiency of a double cover butt joint. The main plates are 14mm thick connected by 18mm diameter rivets at a pitch of 100mm. Design the cover plates also.	10	CO2	K5	PO2
10	Determine the tensile strength of a roof truss diagonal 100 × 75 × 10 mm (fy=250N/mm2) connected to the gusset plate by- 20mm dia power driven rivets in one row along the length of the member. The short leg of the angle is outstanding.	10	CO3	K5	PO3
11	3.Design a lap joint between the two plates of width 150 mm, if the thickness of one plate is 12 mm and the other is 10mm. The joint has to transfer a working load of 100KN. The plates are of Fe410 grade. Use bearing type bolts.	10	CO1	K5	PO12
12	Determine the safe load and the efficiency of a double cover butt joint. The main plates are 14mm thick connected by 18mm diameter rivets at a pitch of 100mm. Design the cover plates also.	10	CO3	K5	PO6

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

Course Outcomes	CO1	Understanding the working of various electrical bridges.
	CO2	Understanding the construction and working of various measuring instruments.
	CO3	Apply the energy conversion techniques.
	CO4	Analyze the different types of errors in measurement, calibration process and standards.
	CO5	Interpret the methods for measurement of non-electrical quantities like temperature, Pressure, Force, Torque, Density, Liquid level, Viscosity, Flow, Displacement etc.
	CO6	Improve the existing technology in the field of measurements in terms of accuracy, cost, and durability and user friendliness.

GRAFICAL REPRESENTATION





JGi ARKAJAIN University Jharkhand			**END TERM EXAMINATION** School of Engineering & IT
Branch	**Electrical and Electronics Engineering**	**Program**	**B.Tech**
Subject Name	**Measurements and Instrumentation**	**Semester**	**6th**
		Year	**2023/ Even**
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 Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
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 Q1-xx) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	What are the advantages of digital instruments over analog instruments?	2	CO2	K1	PO2
ii	How the range of PMMC voltmeter and ammeter can be raised?	2	CO2	K2	PO1
iii	State the advantages of using the bridge circuits for the measurement.	2	CO1	K1	PO3
iv	What is an Indicating instrument? Types of forces an indicating instrument uses.	2	CO2	K1	PO2
v	What are the advantages of LCD over LED?	2	CO1	K1	PO4
vi	Define limiting errors and instrumental errors.	2	CO1	K2	PO2
vii	What are absolute instruments?	2	CO2	K1	PO5
viii	Give the advantages of moving iron meters.	2	CO1	K1	PO6
ix	Define static error.	2	CO2	K1	PO12

x	What is the significance of calibration?	2	CO1	K1	PO11

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
1	Explain Potential Transformer with full description.	5	CO2	K5	PO3
2	Write and explain the classification of measuring instruments	5	CO2	K4	PO2
3	Write a short note on Errors in instrument.	5	CO3	K4	PO12
4	Explain the working of three phase Induction Type Energy Meter.	5	CO3	K4	PO1
5	What are the different testing conducted on a single phase energy meter?	5	CO4	K4	PO2
6	What is the difference between Current Transformer and Potential Transformer.	5	CO3	K4	PO1

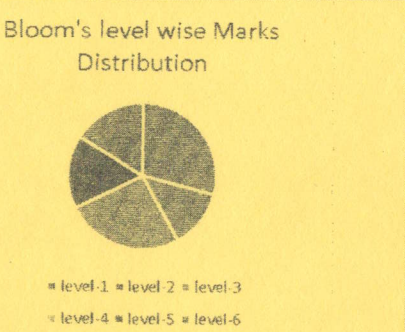
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

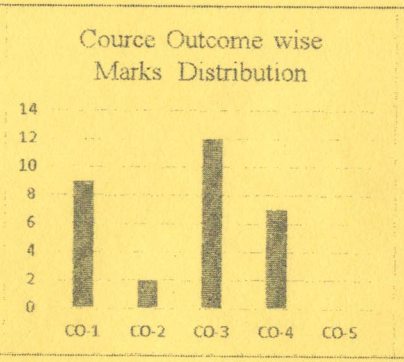
Q. No.	QUESTIONS	Marks	COs	KL	PO
1	A basic d' Arsonval meter movement with an internal resistance Rm =100W and a full scale current of Im =1mA is to be converted in to a multi range d.c. voltmeter with ranges of 0-10V, 0-50V, 0-250V, 0-500V. Find the values of various resistances using the potential divider arrangement.	10	CO5	K3	PO2
2	Describe the circuit of Wheatstone bridge used for measurement of low resistance.	10	CO5	K5	PO1
3	Explain in detail DC Ammeter and DC Voltmeter	10	CO4	K6	PO2
4	Describe LVDT. Mention some advantages and disadvantages of LVDT. Write the applications of LVDT.	10	CO4	K2	PO1 PO12
5	With neat figure explain the working principle of a digital CRO. What are its advantages of analog CRO.	10	CO5	K3	PO2 PO3

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

Course Outcomes	CO1	Build an understanding of the fundamental concepts of computer networking.
	CO2	Familiarize the student with the basic taxonomy and terminology of the computer networking area.
	CO3	Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
	CO4	Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

GRAPHICAL REPRESENTATION





ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	Computer Science & Engineering	Program	B.Tech
Subject Name	Computer Network	Semester	6th
		Year	2023/Even

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**
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- **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means**and will **Result** in the **Cancellation of the Papers**.

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 Q1-x) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	What is the difference between logical address and physical address?	2	CO1	K1	PO2
ii	What is the difference between switch and hub?	2	CO1	K2	PO3
iii	What is the significance of www in internet?	2	CO4	K3	PO1
iv	Name some services provided by the application layer in the Internet model	2	CO3	K2	PO4
v	Define LAN and MAN with examples.	2	CO2	K3	PO3
vi	What are transmission media in computer network? Name the transmission media used in computer networks.	2	CO4	K3	PO2
vii	What is IP? Explain subnet mask.	2	CO2	K2	PO3
viii	Name the factors that affect the performance of the network?	2	CO4	K2	PO3
ix	Define Simplex, Half Duplex and Full-Duplex	2	CO3	K1	PO1
x	Differentiate static routing and dynamic routing	2	CO4	K2	PO4

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	What is the difference between TCP and UDP?	5	CO2	K3	PO3
3	What is HTTP? Describe different types of HTTP?	5	CO4	K2	PO2
4	Define SMTP? Describe how it works?	5	CO3	K2	PO3
5	Differentiate between Physical Address and Logical Address	5	CO4	K2	PO2
6	What is the difference between ipv4 and ipv6?	5	CO3	K3	PO1
7	What is CSMA/CD? Describe how it works?	5	CO2	K2	PO4

Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

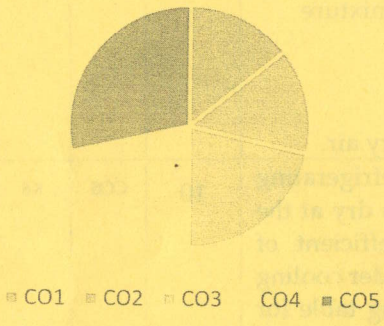
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Explain the different topologies of the network	10	CO1	K3	PO3
9	What do you mean by Transmission media? Describe different types of transmission media with advantages and disadvantages of each?	10	CO4	K2	PO2
10	Explain about ALOHA and CDMA	10	CO1	K2	PO3
11	What are the general principles of congestion control? Explain	10	CO4	K3	PO3
12	Define multiplexing? Describe different types of multiplexing briefly?	10	CO1	K1	PO1

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

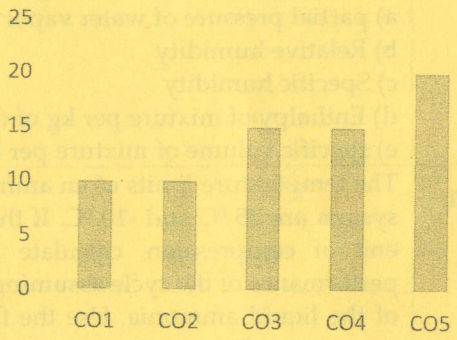
Course Outcomes	CO1	Understand the basic principles of refrigeration and air conditioning.
	CO2	Analyse air refrigeration systems, vapor compression refrigeration systems, vapor absorption refrigeration systems, and steam jet refrigeration systems.
	CO3	Study the psychometric properties of air and utilize the principles of psychometric in the design of air conditioning equipment.
	CO4	Calculate refrigerating and cooling load for air conditioning systems used for various applications
	CO5	Operate and analyze the refrigeration and air conditioning systems

GRAFICAL REPRESENTATION

Bloom's Level Wise Mark Distribution



Course Outcome Wise Marks Distribution



JGI ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	Mechanical Engineering	Program	B-tech
Subject Name	Refrigeration and Air-Conditioning	Semester	6th
		Year	2023/ Even

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
- Steam Table can be allowed
- Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.

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 Q1-xx) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Define refrigeration.	2	CO1	K1	PO2
ii	Define One ton of refrigeration (TR)	2	CO1	K1	PO1
iii	Give applications of refrigeration and air conditioning.	2	CO3	K3	PO1
iv	What do you mean by sensible heat factor?	2	CO3	K2	PO2
v	What is the Necessity of refrigeration?	2	CO5	K2	PO1
vi	Name the different refrigerants generally used.	2	CO1	K1	PO1
vii	What do you understand by the term psychrometry?	2	CO2	K2	PO1
viii	What do you mean by COP?	2	CO4	K2	PO2
ix	Define relative humidity.	2	CO1	K1	PO1
x	What do you understand by the term psychrometry?	2	CO5	K2	PO2

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Describe the working of Vortex tube with a neat sketch.	5	CO2	K2	PO2
3	Explain the Advantages of vapour absorption refrigeration system over vapour compression refrigeration system.	5	CO3	K4	PO2
4	Write a brief note on Human comfort and briefly explain factors governing effective temperature.	5	CO5	K2	PO1
5	Explain the effect of subcooling and superheating on saturated vapour compression cycle with necessary diagram.	5	CO4	K2	PO7
6	Give names of following refrigerants: a) R-12 b) R-134a c) R-717 d) R-600	5	CO3	K5	PO2
7	With help of psychrometric chart, Explain the following processes: a) Sensible heating b) Sensible cooling	5	CO3	K2	PO2

Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	A food storage requires a refrigeration capacity of 12 TR and works between the evaporative temperature of -8 ^{0}C and condensing temperature of 30 ^{0}C. The refrigerant R-12 is sub cooled by 5 ^{0}C before entering expansion device and vapour is superheated to 2 ^{0}C before leaving to evaporator coil. (1) Draw p-h diagram for the process and find out (2) C.O.P. (3) power required in kW/TR.	10	CO2	K5	PO3

Saturation Temperature	Saturation Pressure	Enthalpy (kJ/kg)		Entropy (kJ/kg K)	
(c^o)	(bar)	Liquid	Vapor	Liquid	Vapour
-8	2.354	28.72	184.07	0.1149	0.7007
30	7.451	64.59	199.62	0.24	0.6853

Take specific heat of liquid R-12 as 1.235 kJ/kg K and vapour R-12 as 0.733 kJ/kg K.

9	A dense air refrigerator operating on Bell-Coleman cycle works between 3 bar and 15 bar. The temperature of air after the evaporator and after cooler is 5 ^{0}C and 20 ^{0}C respectively. The evaporator extracts 2000 kg/min of heat from the space to be cooled. Calculate (1) amount of air required in the cycle per minute, (2) power required to run the system, (3) COP and (4) mass flow rate of water per minute in cooler if rise in temperature of water is 20 ^{o}C. Assume isentropic compression and expansion, for air, C_p=1.005 kJ/kg K, γ=1.4 and for water C_p=4.18 kJ/kg K.	10	CO2	K4	PO3
10	The pressure and temperature of mixture of dry air and water vapor are 736mm of Hg and 21^{o}C. The dew point temperature of the mixture is 15^{o}C. Determine the following using steam table: a) partial pressure of water vapor in the mixture b) Relative humidity c) Specific humidity d) Enthalpy of mixture per kg of dry air e) specific volume of mixture per kg of dry air.	10	CO4	K6	PO3
11	The temperature limits of an ammonia refrigerating system are 25 ^{0}C and -10 ^{0}C. If the gas is dry at the end of compression, calculate the coefficient of performance of the cycle assuming no under cooling of the liquid ammonia. Use the following table for properties of ammonia.	10	CO5	K6	PO3

Temperature ° C	Liquid Heat (Kj / kg)	Latent Heat (Kj / kg)	Liquid Entropy (Kj / kg K)
25	298.9	1166.94	1.1242
-10	135.37	1297.68	0.5443

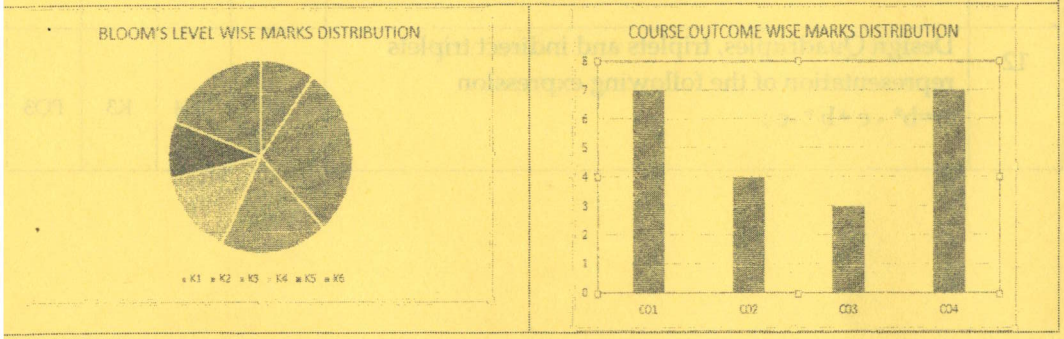
12	A Vapour compression refrigerator works between the pressure limits of 60 bar and 25 bar. The working fluid is just dry at the end of compression and there is no under cooling of the liquid before the expansion valve. Determine (i) C.O.P of the cycle (ii) Capacity of the refrigerator if the fluid flow is at the rate of 5 kg/min.	10	CO5	K5	PO3

Pressure (Bar)	Temperature ° C	Enthalpy (kj kg)		Entropy (Kj kg K)	
		Liquid	Vapour	Liquid	Vapour
60	295	151.96	293.29	0.554	1.0332
25	261	56.32	322.58	0.226	1.2464

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

Course Outcomes	CO1	• For a given grammar specification develops the lexical analyzer.
	CO2	• For a given parser specification design top-down and bottom-up parsers.
	CO3	• Develop syntax directed translation schemes
	CO4	• Develop algorithms to generate code for a target machine

GRAFICAL REPRESENTATION



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ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	Computer Science & Engineering	Program	B.Tech
Subject Name	Compiler Design	Semester	6th
		Year	2023/Even

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 Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Meansand will Result in the Cancellation of the Papers.

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 Q1-xx) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Explain the task of compiler?	2	CO1	K1	PO2
ii	Write regular expression for floating point numbers.	2	CO1	K3	PO1
iii	Define tokens, pattern and lexemes.	2	CO1	K2	PO2
iv	Define Annotated Parse tree.	2	CO3	K6	PO1
v	What do you mean by Ambiguous grammar?	2	CO2	K2	PO2
vi	Analyse the role of Symbol Table.	2	CO3	K4	PO3
vii	Explain Bottom Up parsing.	2	CO4	K2	PO4
viii	Analyse the role of Lexical analyzer.	2	CO1	K4	PO2
ix	Differences between Deterministic and Non deterministic Finite Automata.	2	CO1	K2	PO3
x	What are the needs of Code optimizer?	2	CO4	K2	PO4

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Construct NFA equivalent to regular expression r= (a + b)* ab.	5	CO1	K6	PO4
3	Compute FIRST and FOLLOW functions for the Non terminals of the given grammar S-> aBDh B-> cC C-> bC/ε D->EF E->g/ε F->f/ε	5	CO2	K3	PO3
4	Check whether the given grammar is Ambiguous or not. E→E+E / E*E / (E)/ id	5	CO2	K4	PO2
5	Prove that the following grammar is LL(1) grammar. S→aBDh B→cC C→bc/ ε D→EF E→g/ε F→f/ε	5	CO3	K5	PO1
6	Explain Quadruples, triplets and indirect triplets representation.	5	CO4	K2	PO2
7	Explain the term Loop optimization?	5	CO4	K1	PO2

Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

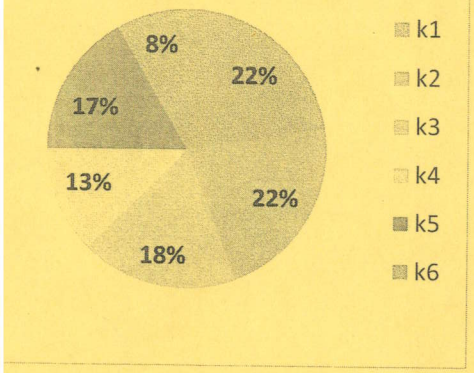
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	What are the different phases of a compiler? Draw diagram and explain.	10	CO1	K5	PO4
9	Design SLR Parsing Table for the following grammar E-->T+E /T T→id	10	CO2	K6	PO2
10	What is Three address code? Give example. Write the following expression in three address format a+ a * (b-c) +(b-c) * d	10	CO4	K3	PO3
11	Design Directed Acyclic Graph (DAG)for the following a+a*(b-c)+(b-c)*d What is the requirement of DAG.	10	CO4	K6	PO1
12	Design Quadruples, triplets and indirect triplets representation of the following expression A=b* - c +b * -c ;	10	CO4	K3	PO3

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

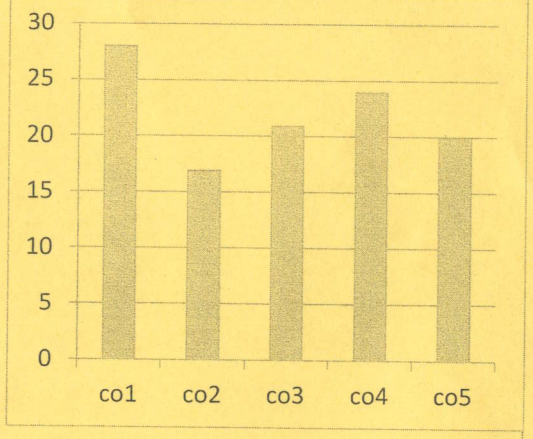
Course Outcomes	CO1	Remembering the basic theories of machining and selection of machine tool.
	CO2	Understanding the principles behind working of each machine tools
	CO3	Applying the knowledge of kinematics in the constructional and operational features of shaper, planner, milling, and drilling, sawing and broaching machines.
	CO4	Analysing the basic functions of different machine tools.
	CO5	Evaluating different formulas used in analysis of machining operations.

GRAPHICAL REPRESENTATION

Bloom's Level wise Marks Distribution



Course Outcome Wise Marks Distribution



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ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	Mechanical Engineering	Program	B-tech
Subject Name	Manufacturing Process II	Semester	6th
		Year	2023/ Even

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 Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.

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 Q1-x) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	What is hot hardness?	2	CO1	K1	PO1
ii	Mention the types of chips formation in metal cutting.	2	CO2	K2	PO2
iii	What is tapping?	2	CO3	K1	PO3
iv	On what mechanism Shaper machine is working.	2	CO3	K2	PO3
v	Why cutting fluids are used during machining?	2	CO1	K1	PO1
vi	What is spot facing?	2	CO3	K1	PO1
vii	What are the different types of abrasive uses in grinding wheel?	2	CO4	K1	PO2
viii	Write the tool life equation.	2	CO1	K4	PO1
ix	What is crater wear?	2	CO1	K2	PO3
x	What is milling?	2	CO4	K1	PO1

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	What are the factors for tool failure? Show the tool wear region in metal cutting in sketch.	5	CO1	K1	PO1
3	During orthogonal cutting a bar of 90 mm diameter is reduced to 87.6 mm. If the mean length of the cut chip is 88.2 mm and rake angle 15, calculate: (i) Cutting ratio, (ii) Shear angle	5	CO5	K5	PO2
4	What are the methods of Taper turning on lathe machine tool? Calculate the angle at which compound rest would be swivelled for cutting taper on a work piece have length of 180 mm and outside diameter 90 mm. The smallest diameter on the tapered end of the rod should be 60 mm and the required length of the tapered portion is 100 mm.	5	CO5	K5	PO5
5	Write the ASA tool signature of single point cutting tool with sketch.	5	CO1	K2	PO1
6	Describe the grinding process like cylindrical grinding and internal grinding.	5	CO3	K2	PO5
7	Write the differences between turret lathe and a centre lathe.	5	CO2	K4	PO5

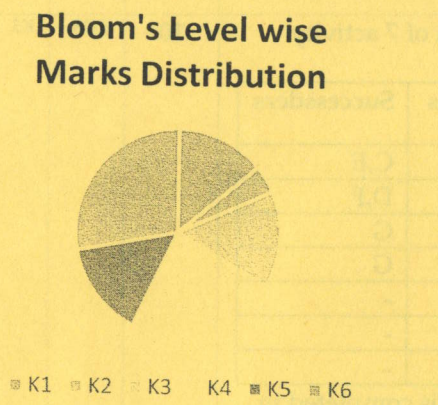
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

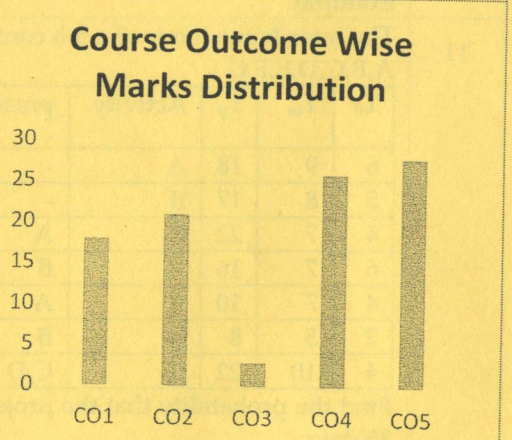
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	What is broaching? What are the different types of broaching machine? Write the advantage and limitations of broaching.	10	CO1	K4	PO1
9	Describe the milling operation. Calculate the time required to mill a slot of 350 mm x 30 mm in a work piece of 350 mm length with a side and face milling cutter of 120 mm diameter, 30 mm wide and having 20 teeth. The depth of cut is 6 mm, the feed per tooth is 0.1 mm and cutting speed is 34 m/min. Assume overall travel distance of 5 mm.	10	CO5	K5	PO3
10	What is drilling? Describe the various types of drilling machines with sketch.	10	CO3	K3	PO5
11	Describe gear hobbing and gear shaping process. What are the various gear finishing operations?	10	CO4	K6	PO5
12	What is CNC? What are the functions and advantages of CNC?	10	CO4	K1	PO5

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

Course Outcomes	CO1	Graduates will demonstrate knowledge of statistical methods and queuing theory and its applications science and construction engineering.
	CO2	Graduates will demonstrate an ability to identify, formulate, plan and schedule construction engineering projects
	CO3	Graduate will demonstrate an ability to understand and structure the construction engineering activities and its management
	CO4	Graduates will demonstrate an ability to design required man, material, equipment, cost and time as per needs and specifications
	CO5	Design required man, material, equipment, cost and time as per needs and specifications.

GRAFICAL REPRESENTATION





JGI ARKAJAIN University Jharkhand			**END TERM EXAMINATION** **School of Engineering & IT**
Branch	**Civil Engineering**	**Program**	**Btech.**
Subject Name	Construction Engineering and management.	**Semester**	**6th**
		Year	**2023/ Even**
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 Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
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 Q1-xx) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Explain Event and Type of Event.	2	CO1	K1	PO3
ii	What are the different type of Network?	2	CO2	K1	PO2
iii	Who developed Bar chart?	2	CO1	K1	PO5
iv	Write the advantage of bar chart	2	CO2	K1	PO2
v	Define Activity and Network analysis.	2	CO1	K1	PO2
vi	Write the five Network Rules.	2	CO3	K1	PO5
vii	Define project management	2	CO1	K1	PO6
viii	Define dual event.	2	CO4	K1	PO2
ix	Write the elements of project management.	2	CO1	K1	PO2
x	Explain Event and Type of Event.	2	CO4	K1	PO2

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

<table>
<tr><th>Q. No.</th><th>QUESTIONS</th><th>Marks</th><th>COs</th><th>K L</th><th>PO</th></tr>
<tr><td>2</td><td>State Network rules.</td><td>5</td><td>CO1</td><td>K3</td><td>PO4</td></tr>
<tr><td>3</td><td>Write a short note on Event and its types.</td><td>5</td><td>CO1</td><td>K1</td><td>PO2</td></tr>
<tr><td>4</td><td>State the limitation of Bar chart.</td><td>5</td><td>CO1</td><td>K4</td><td>PO2</td></tr>
<tr><td>5</td><td>The activity details for a small project are given in the table
<table>
<tr><th>Activity</th><th>Duration (days)</th><th>Depends on</th></tr>
<tr><td>A</td><td>6</td><td>-</td></tr>
<tr><td>B</td><td>10</td><td>A</td></tr>
<tr><td>C</td><td>14</td><td>A</td></tr>
<tr><td>D</td><td>8</td><td>B</td></tr>
<tr><td>E</td><td>12</td><td>C</td></tr>
<tr><td>F</td><td>8</td><td>C</td></tr>
<tr><td>G</td><td>16</td><td>D,E</td></tr>
<tr><td>H</td><td>8</td><td>F,G</td></tr>
<tr><td>K</td><td>2</td><td>B</td></tr>
<tr><td>L</td><td>5</td><td>G,K</td></tr>
</table>
Calculate The total time (in days) For project completion.</td><td>5</td><td>CO1</td><td>K5</td><td>PO3</td></tr>
<tr><td>6</td><td>The optimistic time(o), Most likely time (m) and Pessimistic Time (p) (in days) of the activity in the critical path are given below formate o-m-p
E⟶F⟶G⟶H⟶I
8-10-14 6-8-11 5-7-10 7-12-18
The expected completion time (in days) of the project.</td><td>5</td><td>CO1</td><td>K5</td><td>PO6</td></tr>
<tr><td>7</td><td>Define Activity and Network analysis in detail</td><td>5</td><td>CO1</td><td>K4</td><td>PO2</td></tr>
</table>

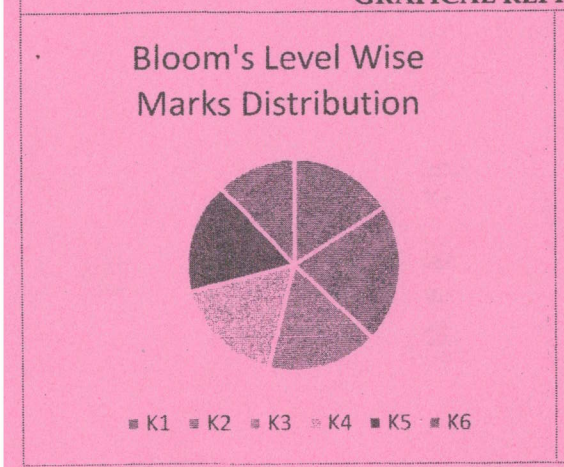
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

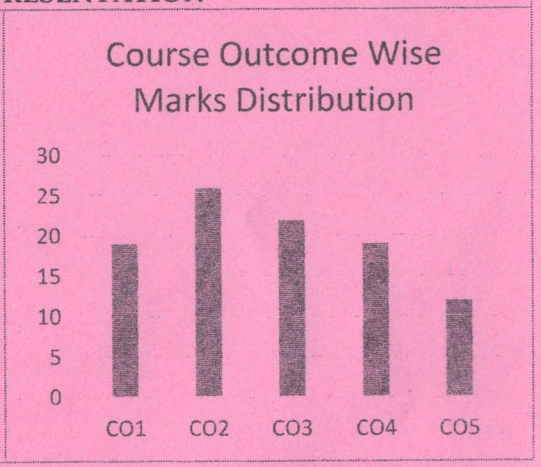
<table>
<tr><th>Q. No.</th><th>QUESTIONS</th><th>Marks</th><th>COs</th><th>K L</th><th>PO</th></tr>
<tr><td>8</td><td>Draw a Network diagram for 9 activities:
i) A and B start at same point
ii) D follows A
iii) E follows A but precedes I
iv) C follows D but Precedes F
v) C follows B but precedes H
vi)G follows F but precedes H
vii) H and I terminate at same point.</td><td>10</td><td>CO2</td><td>K5</td><td>PO2</td></tr>
<tr><td>9</td><td>Explain briefly difference between CPM and PERT.</td><td>10</td><td>CO1</td><td>K4</td><td>PO5</td></tr>
<tr><td>10</td><td>Define and explain Float also explain its type with example.</td><td>10</td><td>CO3</td><td>K5</td><td>PO2</td></tr>
<tr><td>11</td><td>The interdependency of a job consist of 7 activity A,B,C,D,E,F,G
<table>
<tr><th>T_0</th><th>T_m</th><th>T_p</th><th>Activity</th><th>presides</th><th>Successders</th></tr>
<tr><td>6</td><td>9</td><td>18</td><td>A</td><td>-</td><td>C,E</td></tr>
<tr><td>5</td><td>8</td><td>17</td><td>B</td><td>-</td><td>D,F</td></tr>
<tr><td>4</td><td>7</td><td>22</td><td>C</td><td>A</td><td>G</td></tr>
<tr><td>6</td><td>7</td><td>16</td><td>D</td><td>B</td><td>G</td></tr>
<tr><td>4</td><td>7</td><td>10</td><td>E</td><td>A</td><td>-</td></tr>
<tr><td>2</td><td>5</td><td>8</td><td>F</td><td>B</td><td>-</td></tr>
<tr><td>4</td><td>10</td><td>22</td><td>G</td><td>C,D</td><td>-</td></tr>
</table>
Find the probability that the project is completed in 35 days.</td><td>10</td><td>CO5</td><td>K5</td><td>PO8</td></tr>
<tr><td>12</td><td>Define the following i) Early start time, ii) Early iii) Finished time, iv) Latest start time v) Latest finished time.</td><td>10</td><td>CO4</td><td>K5</td><td>PO4</td></tr>
</table>

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

Course Outcomes	CO1	Develop reusable component for Graphical User Interface applications
	CO2	Apply the concepts of server side technologies for dynamic web applications
	CO3	Implement the web based applications using effective data base access with rich client interaction
	CO4	Implement web based applications using features of HTML and XML
	CO5	Develop reusable component for Graphical User Interface applications

GRAFICAL REPRESENTATION





13/5/23

ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	Computer Science & Engineering	Program	B.Tech
Subject Name	Advance Java Programming	Semester	6th
		Year	2023/ Even

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 Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.

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 Q1-xx) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Show the comparison between get and post method?	2	CO2	K1	PO2
ii	What is a Request Dispatcher?	2	CO4	K2	PO2
iii	With reference to AWT, what is API?	2	CO5	K2	PO1
iv	How is an applet different from an application?	2	CO1	K4	PO1
v	What is inet address?	2	CO1	K1	PO4
vi	What is the port number for the following services: ftp, smtp, http, POP3?	2	CO2	K3	PO1
vii	Discuss about proxy server.	2	CO2	K2	PO3
viii	Write an applet code to show the string "Welcome to Arka Jain University".	2	CO3	K1	PO9
ix	What is a Socket?	2	CO4	K4	PO2
x	Create a Jframe having a specific boundary and visibility set to true.	2	CO2	K1	PO1

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2a.	What are Datagrams?	2	CO2	K2	PO4
2b.	Explain any two Datagram Packet constructors.	3	CO1	K4	PO4
3a.	Draw a neat diagram of netbeans IDE representing important components.	3	CO4	K1	PO3
3b.	What is an IDE?	2	CO1	K2	PO3
4.	Discuss about factory methods.	5	CO2	K5	PO4
5a.	Write short notes on any two: Frame, Container, Buttons, Event Handlers.	3	CO2	K2	PO1
5b.	Draw the AWT hierarchy.	2	CO1	K1	PO4
6.	Differentiate between textbox and text field in java. Design a layout and write the source code to concatenate two Strings.	5	CO2	K5	PO4
7.	What is a framework? Explain about Hibernate.	5	CO2	K1	PO1

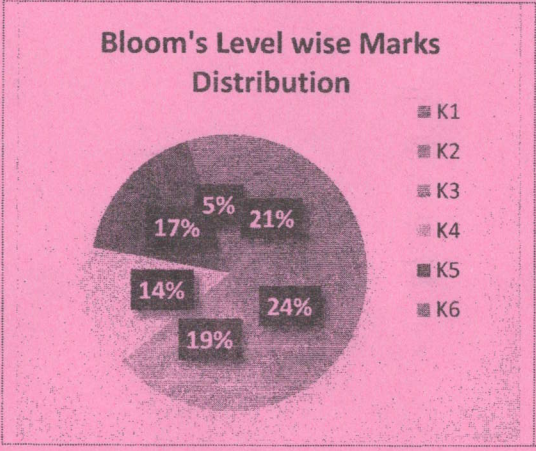
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

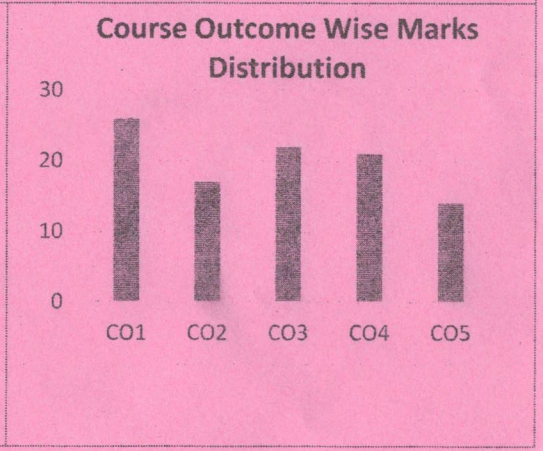
Q. No.	QUESTIONS	Marks	COs	KL	PO
8a.	Write an applet code to show a text along with background color.	4	CO3	K3	PO3
8b.	Explain Hibernate Architecture.	6	CO1	K2	PO1
9a.	With reference to a form, discuss about form validation in java.	4	CO4	K4	PO2
9b.	Describe the life cycle of an Applet with proper diagram.	6	CO4	K6	PO4
10a.	What is an event? Write an event driven program.	4	CO2	K2	PO3
10b.	Discuss any 5 difference between AWT and Swing.	6	CO4	K5	PO4
11.	Explain Grid Layout, and Border Layout. Design a layout to show 2 Text boxes, 2 Labels, and 4 Buttons(Add, Sub, Pro, Div). Also write the code to perform these arithmetic operations.	10	CO4	K6	PO9
12.	Draw and explain the Servlet Life cycle.	10	CO 5	K3	PO 2

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

Course Outcomes	CO1	Remembering the theories about various types of sensors and transducers.
	CO2	Understanding the various mechanical, electrical and pneumatic actuation systems.
	CO3	Evaluating the basic mathematical building blocks for mechanical, electrical, thermal and fluid actuation system and its interfacing of input/output requirements.
	CO4	Applying Knowledge of mechatronics in proper selection of sensor and transducer for specific purpose.
	CO5	Creating curiosity to learn new development in the field of mechatronics.

GRAFICAL REPRESENTATION





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JGI ARKAJAIN University Jharkhand			**END TERM EXAMINATION** School of Engineering & IT	
Branch	**Mechanical Engineering**		**Program**	**B-tech**
Subject Name	**Mechatronics System**		**Semester**	**6th**
			Year	**2023/ Even**
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 Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.**			
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 Q1-xx) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Enlist main components of a humanoid robot.	2	CO1	K1	PO2
ii	What are advantages and limitations of mechatronic system?	2	CO4	K2	PO4
iii	Define sensitivity and threshold.	2	CO1	K1	PO5
iv	How does a capacitive transducer works?	2	CO1	K3	PO2
v	Suggest two sensors to measure acceleration.	2	CO3	K4	PO4
vi	What is piezoelectric transducers?	2	CO4	K1	PO5
vii	A PT-100 RTD whose resistance at 0 °C is 100Ω. If the resistance-temperature coefficient of Platinum 4.05 x 10^{-3}/°C. Find its resistance at 110 °C.	2	CO4	K5	PO2
viii	Enlist any four mechanical actuators.	2	CO2	K2	PO4
ix	Write difference between PLC and Hard wired control.	2	CO5	K4	PO5
x	Write difference between hydraulic and pneumatic systems.	2	CO5	K3	PO4

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Enlist any five static characteristics of sensors and explain them.	5	CO1	K1	PO2
3	Write difference between mechatronic design approach and conventional design approach.	5	CO3	K2	PO4
4	Draw a block diagram for Measurement system and explain each components.	5	CO1	K3	PO5
5	Draw and explain hydraulic circuit for shaper machine.	5	CO2	K2	PO2
6	How does thermocouple can be used to measure temperature. Write different laws of thermocouple.	5	CO3	K6	PO4
7	Explain construction and working of any one flow devices which gives electrical signal as output.	5	CO4	K5	PO5

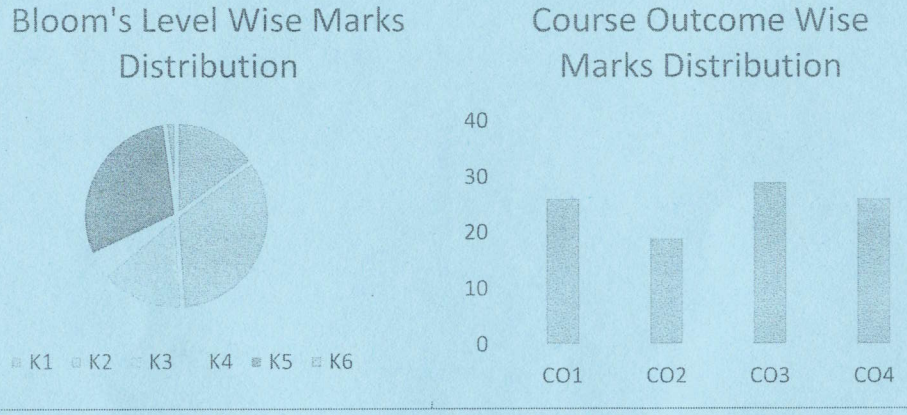
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Explain construction and working of any two configuration of beam type strain gauge load cell.	10	CO3	K1	PO2
9	What are main building blocks for any electrical system? Develop a mathematical model for total voltage supplied (V) in terms of capacitor potential difference (Vc) in R-L-C series circuit.	10	CO2	K4	PO4
10	Explain Working of bourdon tube pressure gauge with schematic diagram. A bourdon tube pressure gauge requires 10 bar to produce 3 Vernier division changes in the scale. Determine its static resolution.	10	CO3	K5	PO5
11	Explain construction and working of Direction control valve, pressure control valve and non-return valve.	10	CO4	K3	PO4
12	Explain humanoid robot as mechatronics system. Enlist its components and explain its working.	10	CO5	K2	PO3

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

Course Outcomes	CO1	Conduct a cyber -security risk assessment
	CO2	Measure the performance and troubleshoot cyber security systems.
	CO3	Implement cyber security solutions.
	CO4	Students able to use cyber security, information assurance, and cyber/computer forensics software/tools.

GRAFICAL REPRESENTATION



JGI ARKAJAIN University Jharkhand			**END TERM EXAMINATION** **School of Engineering & IT**
Branch	Computer Science & Engineering	Program	B.Tech
Subject Name	Cyber Laws and Ethics	Semester	6th
		Year	2023/Even
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 Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
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 Q1-x) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Describe the term on information security.	2	CO1	K1	PO2
ii	Illustrate the motives behind the cybercrimes.	2	CO1	K2	PO3
iii	Analyze the difference between E-mail spoofing and E-mail bombing.	2	CO2	K4	PO4
iv	Define cyber security.	2	CO1	K1	PO2
v	Sketch the primary precaution steps after security attack?	2	CO3	K6	PO1
vi	Define intellectual property rights.	2	CO4	K1	PO3
vii	Define e-commerce in cyber platform.	2	CO2	K1	PO2
viii	Analyze the difference between the computer forensics and cyber forensics.	2	CO4	K4	PO2
ix	Define copyright law.	2	CO3	K1	PO1
x	List out the two approaches of ethics in cyber law.	2	CO4	K2	PO4

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	What are the major cybercrimes that are done frequently in digital world?	5	CO1	K2	PO2
3	Demonstrate about Encryption techniques.	5	CO3	K3	PO1
4	What are the types of cyber-attacks possible on mobile phones?	5	CO1	K1	PO3
5	Write a note on cyber law and describes its advantages and disadvantages.	5	CO4	K2	PO2
6	Describe the detailed the phases of cyber forensics.	5	CO4	K2	PO4
7	Describe the state the current young generation aware about the cyber technology.	5	CO2	K2	PO1

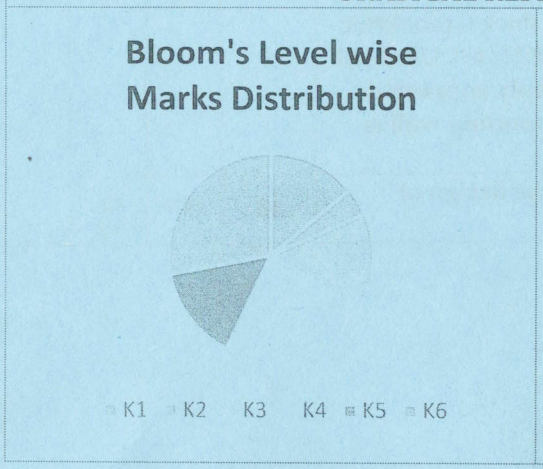
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

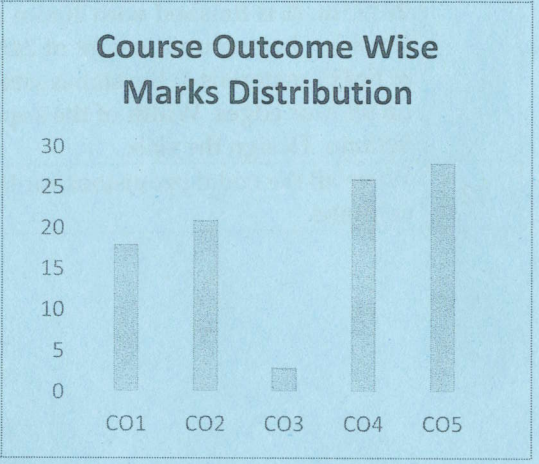
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Elaborate phishing and explain the methods & counter measures of phishing.	10	CO4	K5	PO1
9	Examine in detail about the mode and methods of committing cyber-crimes.	10	CO2	K5	PO2
10	Explain difference between rights and responsibility in cyber world.	10	CO3	K3	PO3
11	How freedom of speech and expression performs in social media platforms?	10	CO1	K2	PO1
12	Evaluate in details the public key functioning and protection provided by it under the electronic signature.	10	CO3	K5	PO4

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

Course Outcomes	CO1	Understand design principles reinforced concrete sections.
	CO2	Apply the provisions of IS 456:2000
	CO3	Analyse reinforced concrete beam & column & shear sections
	CO4	Select the most appropriate or economic section under a given condition of load & supports
	CO5	Design reinforced concrete sections

GRAFICAL REPRESENTATION





2215

JGI ARKAJAIN University Jharkhand			**END TERM EXAMINATION** School of Engineering & IT	
Branch	Civil Engineering		Program	B-tech
Subject Name	Design of Concrete Structures.-I		Semester	6th
			Year	2023/ Even
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 • IS 456:2000 & SP-16 Codebook is allowed. • Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.			
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating	
	K2 : Understanding	K4 : Analysing	K6 : Creating	

Section A (Each question Carry 01 Marks from Q1-i to Q1-xx) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Calculate the Bending Moment of a Simply supported Beam of Span 8m carrying a UDL of 12KN/m.	2	CO1	K1, K3	
ii	Define Characteristic Strength & Characteristic Load.	2	CO1	K1	
iii	Define Under-Reinforced Section.	2	CO1	K1	
iv	What is the maximum Percentage of Ast in Beam?	2	CO1	K1	
v	Define One way & Two slabs.	2	CO1	K1	
vi	Define Bond Stress.	2	CO1	K1	
vii	What is the Span/Effective depth ratio of Cantilever beam, Simply supported beam, Continuous beam?	2	CO1	K1	
viii	Calculate the effective depth of a simply supported beam of Span 15 m.	2	CO1	K1, K3	

ix	What is Maximum Spacing of Main bars & Distribution bars in One way Slab?	2	CO1	K1	
x	Define Moment of Resistance.	2	CO1	K1	

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	What are the Assumptions Taken for the analysis of Singly Reinforced Beam?	5	CO1	K1, K2	
3	Explain & Draw the Type of Sections in a Singly Reinforced Beam.	5	CO1	K1, K2	
4	Draw the stress & strain diagram for a rectangular section & label it also.	5	CO1	K1, K2	
5	An RCC beam 250mmX400mm (effective) is carrying a uniformly distributed load of 16KN/m. the beam is reinforced with 4 bars of 22 mm dia. The effective span of the beam is 4m. Design the shear reinforcement. Use M20 & plain Mild steel bars.	5	CO5, CO2	K4, K5	
6	A singly reinforced RCC beam 250mm wide & 400mm deep(effective) is reinforced with 4 bars of 16mm diameter. Find out the depth of neutral axis, limiting depth of neutral axis, specify the type of beam & calculate Moment of Resistance. Use M20 & Fe415.	5	CO5, CO2	K4, K5	
7	Write the Design Steps for Designing of Beam for Flexure.	5	CO1	K1, K2	

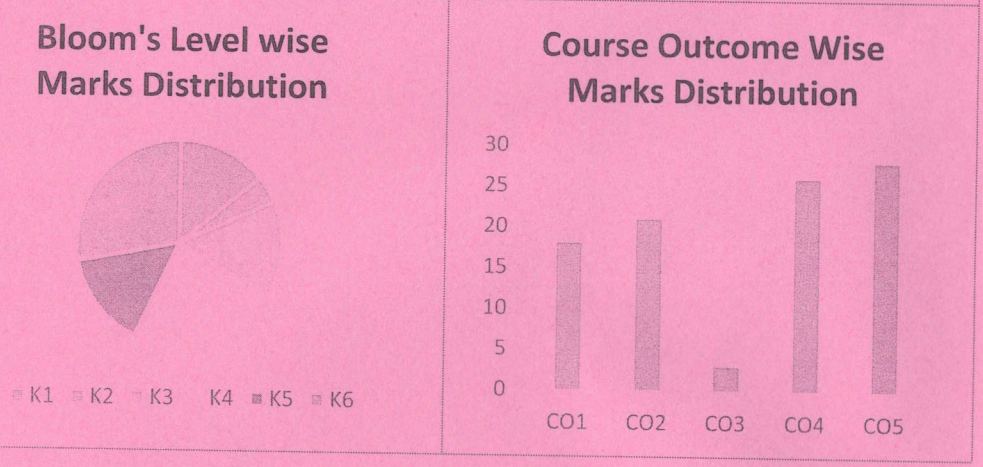
Section C (Answer any Three out of five) – 30 Marks-
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Design a Singly reinforced beam of effective span 6m to support a total design of 12 KN/m excluding self weight using Limit state method width is limited to 250 mm. Load factor for live load & dead load is 1.5. Use M20 & Fe415 . Design the beam for flexure & shear.	10	CO5, CO2	K4, K5	
9	A simply supported roof slab of clear size 7mX3m subjected to a live load of 4KN/m. Use M25 concrete & Fe415 steel. The slab rests on 230mm thick walls all around. Design the slab	10	CO5, CO2	K4, K5	
10	Write about: i) Effective length of the span in different types of beams ii) Permissible deflection iii) Deflection control Criteria iv) Slenderness limit to ensure lateral stability	10	CO2	K1, K2	
11	Design a RCC slab for a room measuring 4mX5m inside dimension. The slab carries a live load of 2KN/m. & is finished with 20mm thick Granolithic finishing having unit weight of 24KN/m^3. Use M20 & Fe415 materials & the slab is simply supported on all four edges. Width of the supporting wall is 300mm. Design the slab.	10	CO5, CO2	K4, K5	
12	Write all the codal provisions for the design of columns.	10	CO2	K1, K2	

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

Course Outcomes	CO1	To Identify alternative uses for limited resources and obtain appropriate data
	CO2	To introduce and expand upon key economic concepts and to place them in a real world context facilitating practical insights
	CO3	To establish a framework of basic economic theory which can be extended and applied at later stages of the degree program?
	CO4	To develop an appreciation of the importance of economic forces in shaping the contemporary world.
	CO5	To employ critical thinking skills to analyze financial data as well as the effects of different financial accounting methods on the financial statement.

GRAFICAL REPRESENTATION



1915

ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	**Civil Engineering**	**Program**	**B.Tech**
Subject Name	Engineering Economics, Estimation & Costing	**Semester**	**6th**
		Year	**2023/ Even**

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 Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.**

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 Q1-xx) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Write the essential data required for preparing estimates.	2	CO1	K1	PO4
ii	Explain cubical content method and unit rate method.	2	CO2	K1	PO2
iii	Explain DPC and its measurement why it is provided.	2	CO1	K1	PO5
iv	Explain Scrap value and Salvage value.	2	CO3	K1	PO2
v	Define and Explain Estimation and Purpose of estimates.	2	CO4	K1	PO6
vi	Write the sufficient data required for the Estimation.	2	CO1	K1	PO2
vii	Explain costing and purpose of costing.	2	CO3	K1	PO7
viii	Explain the different type of estimates.	2	CO1	K3	PO2
ix	Write and explain different type of approximate Estimates.	2	CO5	K1	PO2
x	Write the needs of estimation in civil Engineering.	2	CO1	K1	PO2

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	State and explain Detailed estimate and its type Explain each type.	5	CO1	K3	PO6
3	Define and explain the following Plinth area, Carpet area, Floor area, Setback area, Circulation area.	5	CO5	K4	PO6
4	What do you understand by centre line method explain briefly.	5	CO1	K1	PO7
5	Explain long wall and short wall methods for estimation.	5	CO4	K2	PO2
6	What is the difference between cost estimation and cost control?	5	CO1	K4	PO4
7	What are the factors that influence the cost of a project?	5	CO4	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	Prepare an approx. estimate of building project with total plinth area of building of 80 sqm. And from following data. Plinth area rate per rupess 40000 per sqm. Cost of water supply @7 1/2% of cost of building. Cost of sanitary and electrical installations @7 1/2% of cost of building. Cost of architechtureal features @ 1% of building cost. Cost of road and lawns @5% of building cost. Cost of P.S. and contingencies @4% of building cost. Determine the total cost pf building	10	CO5	K5	PO5
9	Prepare an approx. estimate of building with total plinth area of building as 5000sqm.Using following data i) Plinth area rate Rs 5000/m^2 ii)Cost of Water supply @ 8% of cost of building Electrification =8% of building iii) Cost of architecture features=@1% cost of building iv) Cost of contingency @ 3% of cost of building v)Supervision charge @8% of total cost.	10	CO4	K5, K6	PO4
10	Explain the complete estimates also explain the contingency cost and Expenditure sanction.	10	CO3	K4	PO4
11	How can you ensure that your cost estimates are accurate and reliable? Also explain supplementary estimates.	10	CO2	K3	PO6
12	i) For 12mm thick cement plastering 1 : 6 on 500sqm new brick work ,Calculate the quantity of cement required. ii) Calculate the cost (Rs) of 100mm thick brick lining of septic tank of size 5mx5mx1.5m if the rate of lining of 200per square metre.	10	CO5	K5	PO3