



ARKA JAIN
University
Jharkhand



END SEM EXAMINATION
School of Engineering & IT

Branch	Electrical and Electronics Engineering		Program	B.Tech
Subject Name	Microprocessor		Semester	V
			Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> 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 <u>Mobile Phones</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers.</u> 			
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating	
	K2 : Understanding	K4 : Analysing	K6 : Creating	

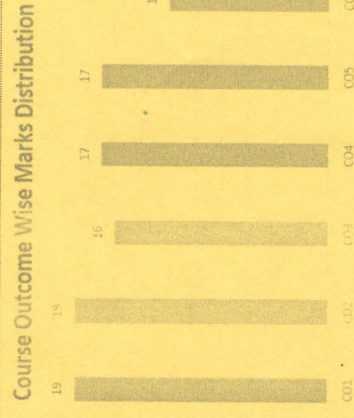
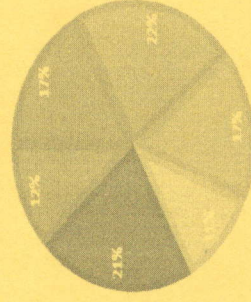
Section A (Each question Carry 02 Marks from Q1-i to Q1-x) - 20 Marks

Q. N1	QUESTIONS	Marks	Cos	KL	PO
i	Briefly explain the significance of the flag register in the 8085 microprocessor.	2	CO1	K2	PO1
ii	What is the function of the stack pointer in the 8085 microprocessor?	2	CO2	K1	PO2
iii	State the purpose of the HLT instruction in the 8085 microprocessor.	2	CO2	K3	PO2
iv	Define the term "Direct Addressing Mode" with an example.	2	CO1	K5	PO2
V	Briefly explain the fetch-execute cycle of the 8085 microprocessor.	2	CO3	K5	PO1
vi	What is the significance of the Carry flag in arithmetic operations?	2	CO3	K6	PO1
vii	Explain the concept of subroutine call and return instructions in the 8085 microprocessor.	2	CO5	K4	PO1
viii	How many byte size instruction is MOV instruction of the 8085 microprocessor and how much T-States it require?	2	CO4	K4	PO1
ix	Write the code for delay operation in 8085 microprocessor?	2	CO6	K5	PO2

CO1	Learn configuring and using different peripherals in a digital system like I/O, A/D, D/A, timer etc.
CO2	Understand the working of a microprocessor/microcontroller.
CO3	Compile and debug a Program.
CO4	Generate an executable file and use it.
CO5	Evaluating logic of particular dedicated task.
CO6	Develop systems using different microprocessor/ microcontrollers

GRAPHICAL REPRESENTATION

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Q. No.	QUESTIONS	Marks	Cos	KL	PO
2	Write the assembly code for multiplying two 8-bit numbers using the 8085 microprocessor.	5	CO1	K3	PO1
3	Describe the assembly code for dividing two numbers using the 8085 microprocessor.	5	CO3	K2	PO2
4	Discuss the implementation of subroutine procedures in the 8085 microprocessor, highlighting the use of CALL and RET instructions.	5	CO5	K5	PO2
5	Discuss the implementation of a delay code to obtain a 1-second delay using the 8085 microprocessor.	5	CO2	K4	PO2
6	Discuss the role of the flag register in the 8085 microprocessor, explaining its various flags and their significance.	5	CO3	K1	PO1
7	Present a timing diagram for the ADD M instruction in the 8085 microprocessor.	5	CO4	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	Explain the architecture of the 8085 microprocessor, highlighting its major components and their functions.	10	CO2	K1	PO1
9	Discuss the procedure for adding an 8-bit number to a 16-bit sum using the 8085 microprocessor.	10	CO1	K3	PO1
10	Explain the concept of stack operation in the 8085 microprocessor, including push and pop operations.	10	CO4	K6	PO2
11	Provide a timing diagram for the SHLD 5000H instruction in the 8085 microprocessor and explain briefly.	10	CO6	K2	PO2
12	Discuss the procedure to handle interrupt in 8085 microprocessor.	10	CO5	K5	PO2

How many bytes does a CMP instruction occupy in the memory of an 8085 microprocessor also calculate the T-States it require?

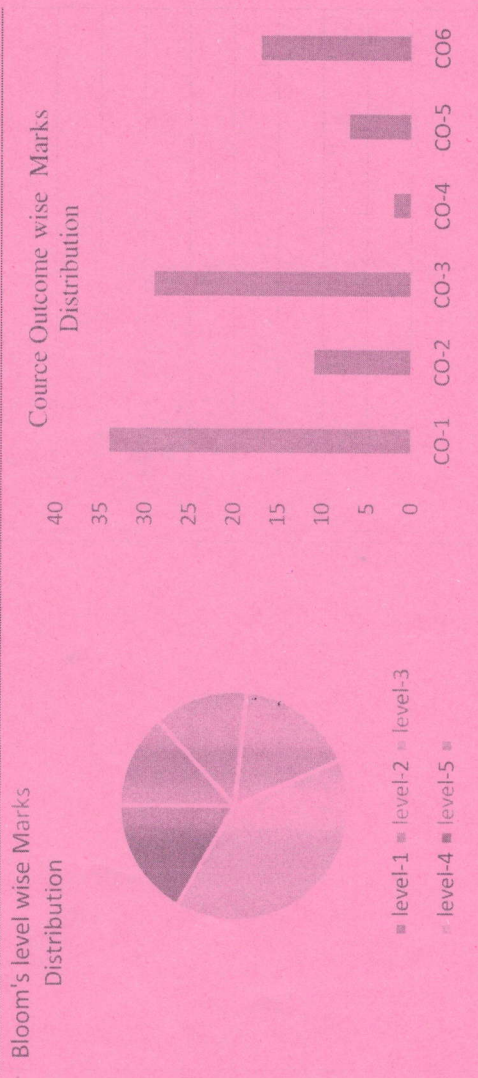
Section B (Answer any FOUR out of SIX) – 20 Marks


(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	Cos	KL	PO
2	Write the assembly code for multiplying two 8-bit numbers using the 8085 microprocessor.	5	CO1	K3	PO1
3	Describe the assembly code for dividing two numbers using the 8085 microprocessor.	5	CO3	K2	PO2
4	Discuss the implementation of subroutine procedures in the 8085 microprocessor, highlighting the use of CALL and RET instructions.	5	CO5	K5	PO2
5	Discuss the implementation of a delay code to obtain a 1-second delay using the 8085 microprocessor.	5	CO2	K4	PO2
6	Discuss the role of the flag register in the 8085 microprocessor, explaining its various flags and their significance.	5	CO3	K1	PO1
7	Present a timing diagram for the ADD M instruction in the 8085 microprocessor.	5	CO4	K2	PO1

CO- Course Outcomes,	KL- Knowledge Level,	PO – Program Outcome
CO1	List the constructional parts and performance characteristics of electrical machines.	
CO2	Understand the various factors that influence the design: electrical, magnetic and thermal loading of electrical machines	
CO3	Apply the principles of electrical machine design and carry out a basic design of an AC machine	
CO4	Discover software tools to do design calculations.	
CO5	Interpret the information required for the fabrication of the alternator with an estimate of various performance indices	
CO6	Generate a detailed design of an induction machine and provide the information required for the fabrication of the same along with an estimate of various performance indices.	

GRAPHICAL REPRESENTATION





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NAAC GRADE A
ACCREDITED UNIVERSITY

END SEM EXAMINATION
School of Engineering & IT

Branch	Electrical and Electronics Engineering		
Subject Name	Electrical Machine Design		
	Program	B.Tech	
	Semester	V	
	Year	Nov/Dec ²⁰²⁴	

Time: 3 Hour
Max. Marks : 50

- 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 come 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	QUESTIONS	Marks	COs	KL	PO
i	How the design problems of electrical machines can be classified?	2	CO1	K1	PO3
ii	Why alternators are rated in KVA?	2	CO3	K2	PO2
iii	List some limitation of the design	2	CO2	K1	PO3
iv	What are the major considerations to evolve a good design of electrical machine?	2	CO2	K1	PO2
v	Define total magnetic loading and total electric loading	2	CO1	K2	PO3
vi	Non Salient pole machines are suitable for high speed operations, why?	2	CO5	K4	PO1
vii	What do you meant by stacking factor (iron space factor)?	2	CO2	K3	PO2
viii	How the tertiary winding is connected?	2	CO3	K4	PO1
ix	What are the advantages of cage rotor over slip ring induction motor?	2	CO6	K2	PO3
x	What software tools do you use for electrical design?	2	CO4	K1	PO2

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 5 Marks)				
Q. No.	QUESTIONS	Marks	COs	PO
2	Write down the difference between core and shell type transformer.	5	CO1	PO1
3	Explain the property and classification of insulating materials based on thermal consideration	5	CO1	PO2
4	What is total gap contraction factor and derive its expression?	5	CO2	PO1
5	Derive the output equation of Synchronous motor	5	CO3	PO2
6	Derive the Output equation of single- phase transformer	5	CO6	PO3
7	Find the main dimensions of a 100 MVA, 11 kV, 50 Hz, 1500rpm, 3 phase water wheel generator. The average gap density is 0.63 Wb/m ² and ampere per metre are 40,000 The peripheral speed should not exceed 65 m/s at normal running speed in order to limit the run-away peripheral speed.	5	CO5	PO4

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

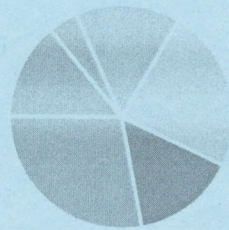
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Explain the property and classification of conducting material	10	CO1	K2	PO2
9	Derive the expression of the width of window for the optimum output of transformer	10	CO3	K4	PO3
10	Determine the main dimensions, turns per phase, number of slot, conductor cross section and slot area of a 250 h.p, 3 phase, 50 Hz, 400 V. 1410 r.p.m. slip ring induction motor. assume $B_{av} = 0.5 \text{ Wb/m}^2$, $a_c = 30000 \text{ A/m}$, efficiency = 0.9 and power factor = 0.9, winding factor = 0.955, current density = 3.5 A/mm ² . the slot space factor is 0.4 and the ratio of core length to pole pitch is 1.2 the machine is delta connected.	10	CO6	K4	PO2
11	Derive the output equation of three phase induction motor	10	CO3	K5	PO4
12	Calculate approximate overall dimensions for a 200 kVA, 6600/440 V. 50 Hz, 3phase core type transformer. The following data may be assumed:	10	CO1	K5	PO2

emf per turn 10V; maximum flux density = 1.3 Wb/m². current density = 2.5 A/mm², window space factor = 0.3, overall height = overall width, stacking factor = 0.909. Use a 3 stepped core. For a three stepped core. Width of largest stamping = 0.9 d, and Net iron area = 0.6d², where d is the diameter of circumscribing circle

CO1	Identify the various method of transmission and distribution of electrical power.
CO2	Understand the process of transmission and distribution of electrical power, also term like insulator, sag, corona, voltage regulation in transmission line.
CO3	Apply different method of distribution system to obtain performance characteristics.
CO4	Evaluate the voltage drop, efficiency and voltage regulation of transmission line.
CO5	Design transmission and distribution line in context with voltage drop, efficiency, voltage regulation, sag, corona etc.

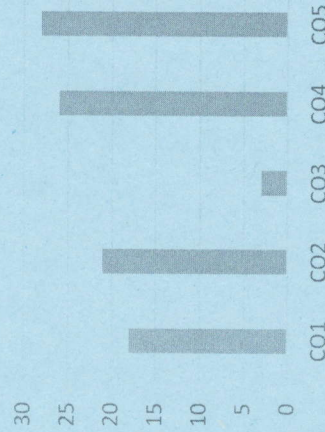
GRAPHICAL REPRESENTATION

Bloom's Level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome Wise Marks Distribution



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END SEM EXAMINATION
School of Engineering & IT

Branch	Electrical and Electronics Engineering	Program	B-Tech
Subject Name	Power System-I	Semester	V
Time: 3 Hour	Start writing from 2nd page onwards; don't Write on the 1st Page Backside		
Max. Marks : 70	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 <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers</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 Q1-x) – 20 Marks

Q. N	QUESTIONS	Marks	COs	KL	PO
i	Enlist the types of transmission line?	2	CO1	K1	PO2
ii	Define string efficiency and Enlist the method used to improve string efficiency	2	CO1	K3	PO1
iii	What do mean by sag and enlist the types of sag in overhead line?	2	CO2	K3	PO3
iv	The reactance of the generator designed 'X' is given as 0.25 P.U. based on the generator's name plate rating of 18 kV, 500 M.V.A. The base for calculation is 20 kV, 100 M.V.A. Find 'X' on the new base.	2	CO2	K5	PO4
v	What are different methods of voltage control using compensation techniques	2	CO3	K1	PO3
vi	What is the need for base values	2	CO3	K2	PO2
vii	What are the important advantages of series compensation?	2	CO4	K1	PO4
viii	What do you mean by skin effect?	2	CO4	K2	PO4
ix	What are the advantages of regulating transformer	2	CO5	K4	PO5
x	Define voltage regulation in terms of transmission line voltage	2	CO5	K6	PO6

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

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Explain briefly about different types of insulators and their properties used in power system	5	CO3	K3	PO1
3	A 5 k.V.A, 400/200V, 50 Hz, 1-phase transformer has the primary and secondary leakage reactance each of 2.5 ohm. Determine the total reactance in P.U.	5	CO3	K1	PO1
4	Write down the difference between EHVAC and HVDC transmission line system	5	CO5	K4	PO4
5	Differentiate between off load tap setting and on load tap setting with respect to tap changing transformer.	5	CO5	K5	PO2
6	Explain briefly the methods used to improve string efficiency in transmission line	5	CO6	K1	PO5
7	A 2-wire d.c. street mains AB, 600 m long is fed from both ends at 220 V. Loads of 20 A, 40 A, 50 A and 30 A are tapped at distances of 100 m, 250 m, 400 m and 500 m from the end A respectively. If the area of the cross-section of distributor conductor is 1cm ² , find the minimum consumer voltage.	5	CO4	K6	PO6

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

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Explain briefly about advantage of High voltage Transmission.	10	CO3	K3	PO1
9	Explain briefly about construction of underground cable with neat sketch	10	CO2	K4	PO4
10	Describe briefly the performance of single phase short transmission line with vector diagram	10	CO5	K2	PO4
11	A 100-km long, 3-phase, 50-Hz transmission line has following line constants: Resistance/phase/km = 0.1 Ω, Reactance/phase/km = 0.5 Ω Susceptance/phase/km = 10 × 10 ⁻⁶ S If the line supplies load of 20 MW at 0.9 p.f. lagging at 66 kV at the receiving end, calculate by nominal π method: (i) sending end power factor (ii) regulation	10	CO6	K3	PO5

(iii) transmission efficiency

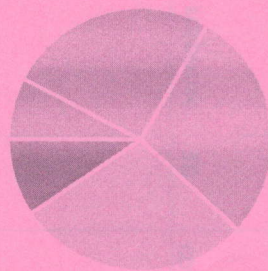
12	A transmission line has a span of 275 m between level supports. The conductor has an effective diameter of 1.96 cm and weighs 0.865 kg/m. Its ultimate strength is 8060 kg. If the conductor has an ice coating of radial thickness of 1.27 cm and is subjected to a wind pressure of 3.9 gm/cm ² of projected area, calculate sag for a safety factor of 2. The weight of 1 c.c. of ice is 0.91 gm.	10	CO4	K6	PO6
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CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

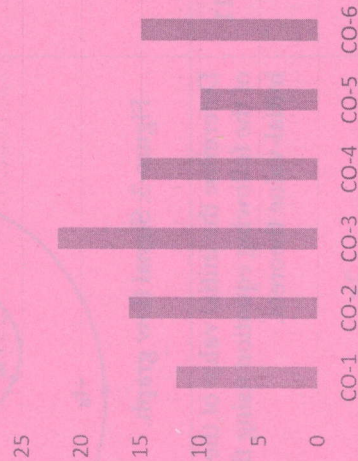
CO1	Learn the features of different types of compensators & to design compensators using time- domain and frequency domain specifications.
CO2	Understand the modelling of linear-time-invariant systems using transfer function and state-space representations.
CO3	Apply the concept of stability and its assessment for linear-time invariant systems.
CO4	Analyse the system response and stability of systems represented in state space form and to design compensators for systems modelled in state space form.
CO5	Obtain models of dynamic systems in transfer function and state space forms.
CO6	Model and to analyse the response of discretized systems.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



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Branch	Electrical and Electronics Engineering	Program	B.Tech
Subject Name	Control Systems	Semester	V
		Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> 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 <u>Mobile Phone</u> or any kind of <u>Written Material, Arguments with the Invigilator</u> or <u>Discussion with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the 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. N1	QUESTIONS	Marks	COs	KL
i	Define the transfer function.	2	CO1	KL1
ii	Write any two differences between open loop and closed loop control system.	2	CO1	KL2
iii	What do you mean by non-touching loop?	2	CO1	KL1
iv	Write the Laplace transform of unit and ramp input signal.	2	CO2	KL2
v	How we define the type of the system?	2	CO1	KL1
vi	Draw a peak overshoot.	2	CO1	KL1
vii	Write the Mason's gain formula.	2	CO1	KL2
viii	Write the analogous electrical elements in force voltage analogy for the elements of mechanical translational system.	2	CO2	KL2
ix	What are the effects of PI controller?	2	CO2	KL2
x	Define gain margin and Phase margin.	2	CO3	KL2

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Distinguish the function of different components used in the closed loop system shown in Figure-1.	5	CO5	KL2
	<p style="text-align: center;">Figure-1</p>			
3	State and Explain the initial and final value theorem in time and frequency domain both.	5	CO6	KL3
4	Explain the Laplace Transform of the basic Input Signals: a) Unit Step Input b) Ramp input c) forward path d) non-touching loop	5	CO5	KL3
5	Draw a signal flow graph and indicates the following terms on the graph: a) input and output node b) gain c) forward path d) non-touching loop	5	CO6	KL4
6	Develop the steady-state error model of the system shown in Figure-2	5	CO5	KL4
	<p style="text-align: center;">Figure-2: A simple closed-loop control system with negative feedback.</p>			
7	Write the Comparison between Block Diagram method and Signal Flow Graph Method.	5	CO4	KL2

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Sketching the time response characteristics of second order control system and formulate its mathematical model for rise time and peak time.	10	CO6	KL3
9	Explain the procedure for constructing root locus.	10	CO4	KL3
10	Find the transfer function of SFG shown in Figure-3 using Mason's gain formula.	10	CO3	KL4
	<p style="text-align: center;">Figure-3: Signal flow graph.</p>			
11	Determine the initial value of the time-domain response of the following equation using the initial-value theorem. $Y(s) = \frac{2s}{(s+1)^2(s+2)}$	10	CO2	KL4
12	With the help of Routh's stability criterion find the stability of the following systems represented by the characteristic equations: (a) $s^4 + 8s^3 + 18s^2 + 16s + 5 = 0$. (b) $s^6 + 2s^5 + 8s^4 + 12s^3 + 20s^2 + 16s + 16 = 0$.	10	CO3	KL5



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END SEM EXAMINATION
School of Engineering & IT

Branch	EEE/ME	Program	B.Tech
Subject Name	Professional Practice Law & Ethics	Semester	V
		Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> 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 come 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
1			K1 K2
i	Explain the term ethics.	2	CO1 K2
ii	Explain the function of IRC.	2	CO1 K1
iii	What is professional bodies?	2	CO1 K1
iv	What is code of ethics?	2	CO1 K2
v	Explain any two duties of an architect.	2	CO2 K2
vi	What are the 6 basic ethical principles?	2	CO2 K4
vii	Name any four types of professional ethics.	2	CO2 K2
viii	What is professional responsibility?	2	CO3 K4
ix	Who is called whistle blower?	2	CO5 K4
x	What is red flag conditions?	2	CO5 K1

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Compare between gift & bribery.	5	CO2	K1
3	Discuss on different types of contract.	5	CO2	K3
4	Explain whistle blowing process with an example.	5	CO5	K2
5	Compare between void contract and voidable contract.	5	CO1	K1
6	Discuss the problems arise in joint venture.	5	CO5	K3
7	Explain arbitration with example.	5	CO3	K4

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Discuss the objectives of IRC.	10	CO1	K3
9	Explain industrial disputes act, 1947 and it's various objectives.	10	CO3	K4
10	Give a case study on Carhill vs. Carbollic Smoke Ball Co.	10	CO2	K1
11	Explain the process of obtaining patent.	10	CO3	K4
12	Analyse the concept of conflict of interest in engineering projects. Propose a set of guidelines and procedures for managing conflicts of interest in a multinational engineering company.	10	CO5	K5

CO- Course Outcomes,

KL- Knowledge Level,

PO – Program Outcome

Course Outcome	CO1	CO2	CO3	CO4	CO5	CO6
	Understand what constitutes professional practice, introduction of various stakeholders and their respective roles; understanding the fundamental ethics governing the profession.	Compare into contracts and contracts management in engineering, dispute resolution mechanisms; laws governing engagement of labor.	Apply the understanding of Intellectual Property Rights, Patents.	Distinguish various constitutional laws & ethics.	Justify the types of roles they are expected to play in the society as practitioners of the engineering profession.	Build good ideas of the legal and practical aspects of their profession.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution

