



ARKA JAIN University
Jharkhand



[20-11-2025]

END SEM EXAMINATION
School of Engineering & IT

Program	Electrical and Electronics Engineering	Branch	Diploma
Subject Name	Microprocessor & Microcontroller	Session	Odd, 2025-26
Semester	V	Year	Nov, 2025 *
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 or 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

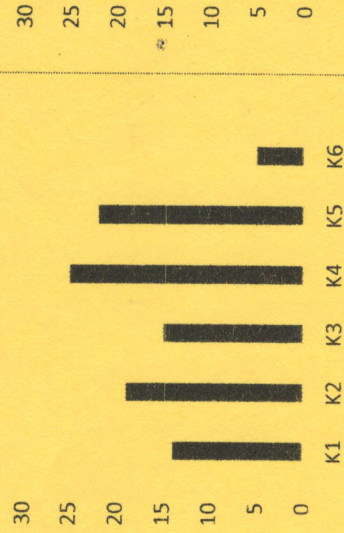
Section A (Each question carries 02 Marks from Q1-i to x - 20 Marks)

Q.N	QUESTIONS	Marks	COs	KL
1				
i	Please provide a list of all the maskable and non-maskable interrupts found in the 8085 microprocessor.	2	CO1	K1
ii	Could you explain what a subroutine is in programming?	2	CO1	K1
iii	How does a microprocessor differ from a microcontroller?	2	CO5	K2
iv	Please define the terms RISC and CISC.	2	CO1	K1
v	What does pipelining mean in computer architecture?	2	CO1	K1
vi	Can you describe what USART is?	2	CO1	K1
vii	What is meant by BSR mode?	2	CO1	K1
viii	What does PSW stand for?	2	CO1	K1
ix	List the different addressing modes used in the 8051 microcontroller.	2	CO5	K2
x	Is the ARM processor better than Intel processors?	2	CO1	K5

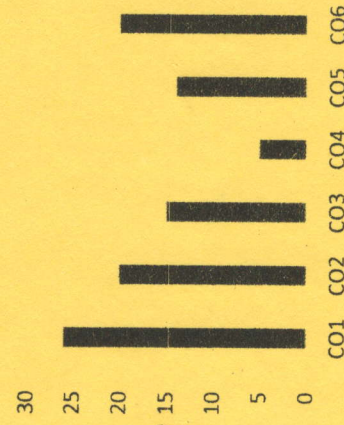
CO1	Tell the feature of the 8085 microprocessor, Hardware Architecture and PIN diagram.
CO2	Demonstrate programming proficiency using the various addressing modes and data transfer instructions of 8085 microprocessor.
CO3	Develop the knowledge on architecture and programming of * Microcontroller 8051.
CO4	Analyze the interrupts handling and demonstrate peripherals applications in different IC.
CO5	Interpret the programming concepts to interface the hardware units with Microprocessor and Microcontroller
CO6	Design microcontrollers based equipments/ projects and interface them with various modules

GRAPHICAL REPRESENTATION

Bloom's level-wise Marks Distribution



Course Outcome-wise Marks Distribution



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

(Each question carries 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain the various logical instructions related to the 8085 microprocessor in detail.	05	CO2	K4
3	Explain the difference between the 8085 microprocessor and the 8051 microcontroller.	05	CO5	K3
4	Draw the block diagram of a programmable interrupt controller and explain its operation.	05	CO2	K4
5	Discuss interrupt structure of 8051 microcontroller and explain in detail.	05	CO4	K4
6	Explain the key differences between assembly language and machine language. Discuss the advantages of using assembly language over machine language programming.	05	CO5	K2
7	Write an Assembly Language Program using 8051 i) Addition of two 8-bit Numbers ii) Addition of two 16-bit Numbers?	05	CO3	K6

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

(Each question carries 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Describe the operation of I/O ports in 8051 with a neat sketch.	10	CO3	K2
9	Explain the architecture of the 8085 microprocessor.	10	CO1	K3
10	Illustrate the functional pin diagram of the 8085 microprocessor.	10	CO2	K5
11	Describe the architecture of the PIC16F877 microcontroller. Explain its key features and applications.	10	CO6	K5
12	Discuss the various data transfer and branching instructions available in the 8051 controller, along with suitable examples.	10	CO6	K4



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

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(Each question carries 10 Marks)

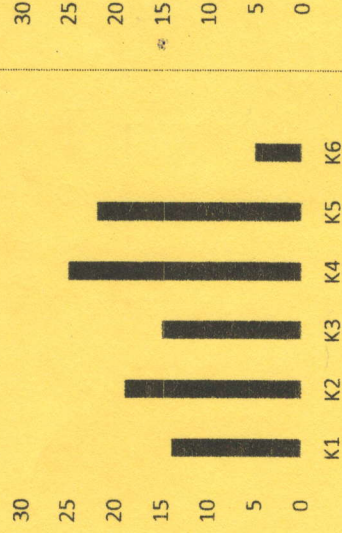
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12	Discuss the various data transfer and branching instructions available in the 8051 controller, along with suitable examples.	10	CO6	K4

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

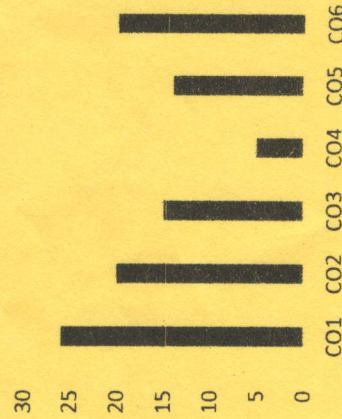
Course Outcomes	CO1	CO2	CO3	CO4	CO5	CO6
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GRAPHICAL REPRESENTATION

Bloom's level-wise Marks Distribution



Course Outcome-wise Marks Distribution

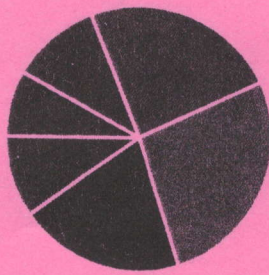


CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

CO1	Select power electronic devices for specific applications
CO2	Understand how to maintain the performance of Thyristors.
CO3	Develop methods for troubleshoot turn-on and turn-off circuits of Thyristors.
CO4	Analyze & maintain phase controlled rectifiers
CO5	Assess different power semiconductor switches.
CO6	Design & maintain different industrial control circuits.

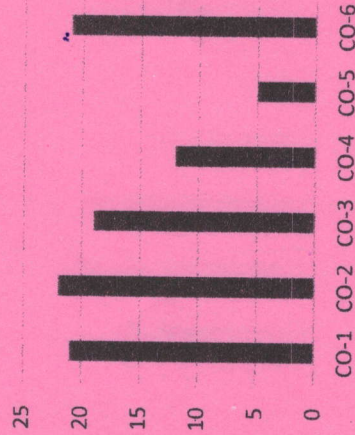
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



ARKA JAIN University
Jharkhand



[22-11-2025]
END SEM EXAMINATION
School of Engineering & IT

Program	Electrical and Electronics Engineering	Branch	Diploma
Subject Name	Fundamentals of Power Electronics	Session	Odd, 2025-26
Semester	V	Year	Nov, 2025
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</u> of the <u>Paper(s)</u>. 		
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

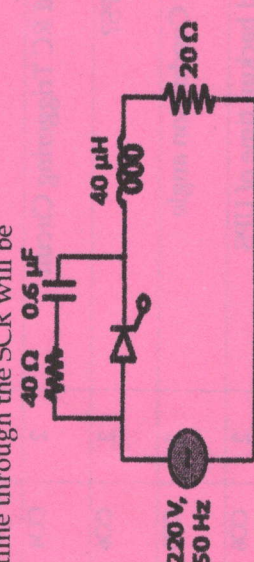
Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q.N	QUESTIONS	Marks	COs	KL
1	Draw the V-I characteristics of SCR	2	CO2	K3
ii	State the advantages of Power Transistor	2	CO1	K2
iii	Give the applications of SET	2	CO1	K1
iv	Draw the symbol of IGBT and MOSFET	2	CO1	K2
v	List the turn on methods of SCR	2	CO3	K2
vi	State any applications of UPS	2	CO6	K1
vii	Compare between R and RC Triggering Circuit	2	CO4	K4
viii	What is the need of SMPS?	2	CO6	K1
ix	Define Firing angle and Conduction angle	2	CO3	K3
x	Define transfer time and backup time of UPS	2	CO6	K1

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Draw the I-V Characteristics of LASCR and Explain	05	CO2	K3
3	Discuss about the various losses in Power Devices	05	CO3	K5
4	Explain the dv/dt triggering circuit with diagram	05	CO2	K2
5	Differentiate between SCR & IGBT	05	CO1	K4
6	A single phase half wave rectifier is used to supply power to load impedance 10 ohm from 230 volt, 50 HZ A.C supply at firing angle 30degree. Calculate average load voltage	05	CO5	K5
7	Draw and Explain Light dimmer Circuit	05	CO6	K3

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Draw V-I Characteristics of SCR with neat sketch and explain its regions.	10	CO2	K3
9	a) Explain with sketch the operation of an auxiliary voltage commutation b) For a class C commutation, answer the following: c) Explain the operation with circuit diagram Interpret with waveforms	10	CO3	K4
10	For the Snubber configuration shown below, the maximum rate of change of current with respect to time through the SCR will be 	10	CO1	K6
11	Draw and Explain Snubber Circuit a) Give importance of freewheeling diode in controlled rectifier b) A single phase FWCR is supplied with a Voltage	10	CO4	K5

$V = 230 \sin 314t$. If firing angle $\alpha = 30^\circ$, find average dc output voltage and current for the load resistance 100 Ω

- a) Describe working of online UPS. List any two advantages of UPS
b) Explain Working of static A.C circuit Breaker

12

K4

CO6

10



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[27-11-2025]
END SEM EXAMINATION
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Branch	Electrical and Electronics Engineering	Program	Diploma
Subject Name	Switchgear and Protection	Session	Odd, 2025-26
Semester	V	Year	Nov, 2025
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 Result in the Cancellation of the Paper(s). 		
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	What is a fault in a power system?	2	CO2	K1
ii	List the functions of a protective system.	2	CO1	K2
iii	Define an isolator.	2	CO1	K1
iv	What does RRRV stand for?	2	CO3	K2
v	List the fundamental quality requirements of a protective relay.	2	CO3	K1
vi	What is the function of a time setting multiplier (TSM)?	2	CO4	K2
vii	List the common faults that occur in an alternator.	2	CO5	K1
viii	State any two limitations of differential protection.	2	CO5	K2
ix	Name the methods of protection used in transmission lines.	2	CO6	K1
x	Name the protection schemes used for busbars.	2	CO6	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Differentiate between symmetrical and unsymmetrical faults.	05	CO1	K4
3	Critically assess the application of MCBs in residential installations.	05	CO3	K6
4	Illustrate the concept of directional relay with a simple example.	05	CO4	K3
5	Illustrate the various types of faults encountered in the transformers.	05	CO5	K3
6	Describe briefly about the double main bus and transfer bus bar system.	05	CO6	K4
7	Explain the functions of a protective system in detail.	05	CO6	K4

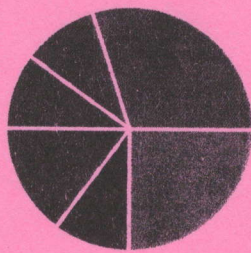
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain what you understand by primary and backup protection. What is the role of backup protection?	10	CO2	K4
9	Describe briefly about the construction and working principle of SF6 circuit breaker with neat sketch diagram?	10	CO3	K6
10	A relay operates with a rated current of 5A has a relay setting of 150 percent. It is connected to a power system through a CT 400/5 ratio. If the fault current is 6000 A, determine the PSM of the relay.	10	CO3	K5
11	What is a Buchholz relay, and which equipment does it protect? What types of faults does it detect? Discuss its working principle, along with a neat sketch diagram.	10	CO5	K3
12	Explain the following terms: (i) Bus Bar (ii) Bus Coupler (iii) Single Phasing	10	CO6	K3

Course Outcomes	CO1	CO2	CO3	CO4	CO5	CO6
	Identify various types of faults in power system.	Select suitable switchgears for different applications.	Interpret various types of existing circuit breakers, their design and constructional details.	Test the performance of different protective relays.	Assess the protection systems of alternators and transformers.	Anticipate protection schemes for motors, transmission lines & other power system devices.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution





ARKA JAIN University
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[27-11-2025]
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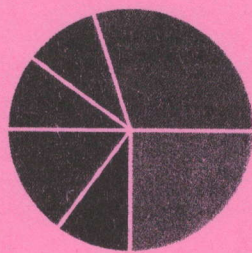
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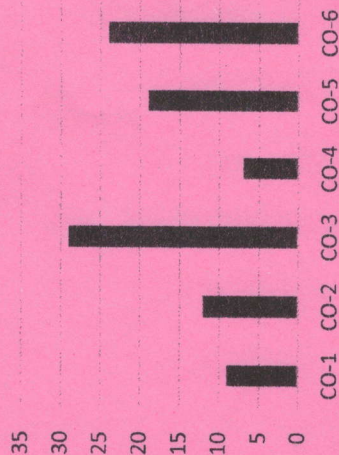
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Bloom's level wise Marks Distribution



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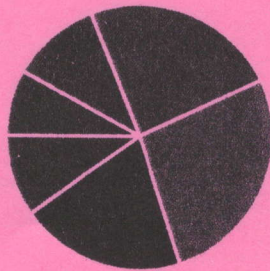
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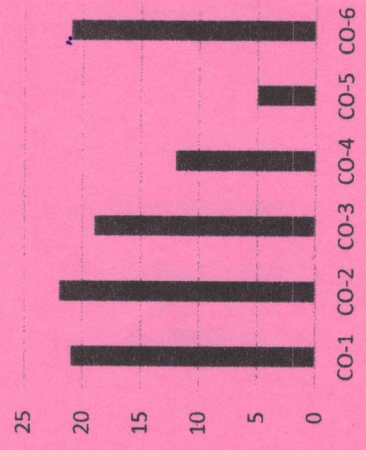
GRAPHICAL REPRESENTATION

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Course Outcome wise Marks Distribution



ARKA JAIN University
Jharkhand

NAAC GRADE A
ACCREDITED UNIVERSITY

[22-11-2025]
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School of Engineering & IT

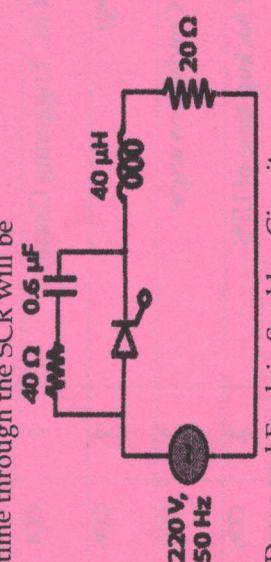
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viii	What is the need of SMPS?	2	CO6	K1
ix	Define Firing angle and Conduction angle	2	CO3	K3
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12	$V = 230 \sin 314t$. If firing angle $\alpha = 30^\circ$, find average dc output voltage and current for the load resistance 100Ω	10	CO6	K4
	a) Describe working of online UPS. List any two advantages of UPS b) Explain Working of static A.C circuit Breaker			

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