JGI	ARKA JAIN University, Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY	[01-05-2026] END SEM EXAMINATION School of Engineering & IT

Program	**Computer Science & Engineering**	**Branch**	**B. Tech**
Subject Name	**Advance Computer Architecture**	**Session**	**Even, 2025-26**
Semester	**VIII**	**Year**	**April, 2026**
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Three out of Five of Section C** • **Possession of Mobile Phone** or any kind of **Written Material, Arguments with the Invigilator or Discussion with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Paper(s).**		
Knowledge Level (KL)	**K1** : Remembering	**K3** : Applying	**K5** : Evaluating
	K2 : Understanding	**K4** : Analysing	**K6** : Creating

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

Q. N 1	QUESTIONS	Marks	COs	KL
i	Define Amdhal's Law	02	CO1	K1
ii	Define dependency and list its types	02	CO1	K1
iii	What do you mean by multiple Issue processors?	02	CO2	K1
iv	How to Enhance Dependability in Memory Systems	02	CO2	K2
v	Describe interconnection network	02	CO3	K2
vi	Differentiate Buses from crossbar networks	02	CO3	K2
vii	Explain warehouse	02	CO4	K1
viii	Differentiate between SMT and CMP	02	CO4	K4
ix	Compare scalar and vector processors	02	CO5	K4
x	Describe the Vector functional units	02	CO5	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Discuss how to reduce Branch cost with dynamic hardware prediction technique.	05	CO1	K4
3	Explain the architecture and function of super scalar processor	05	CO2	K2
4	Differentiate between CISC and RISC Architecture.	05	CO2	K4
5	Demonstrate the Cache Coherence Performance issues.	05	CO3	K2
6	Illustrate in detail Snooping Coherence Protocols.	05	CO3	K2
7	Identify the need for SIMD Extension for multimedia	05	CO5	K2

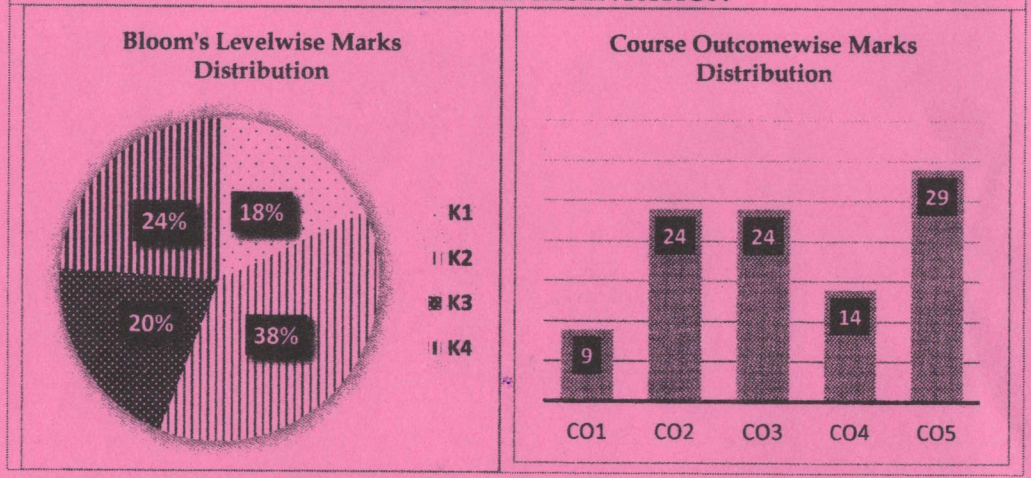
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Prepare the primary components of the instruction set architecture of VMIPS and explain the basic vector architecture with neat block diagram.	10	CO5	K3
9	Order the issues in Eliminating Dependent Computations and Finding Dependences.	10	CO5	K3
10	Explain the SUN CMP architecture in detail and Analyze Intel Multicore Architecture	10	CO4	K4
11	Explain the architecture of VLIW processor and its pipeline operation	10	CO3	K1
12	Describe the various cache hit time reduction techniques for improving the cache performance.	10	CO2	K2

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

Course Outcomes	CO1	Know the classes of computers, and new trends and developments in computer architecture
	CO2	Understand pipelining, instruction set architectures, memory addressing
	CO3	Understand the performance metrics of microprocessors, memory, networks, and disks
	CO4	Understand the various techniques to enhance a processors ability to exploit Instruction-level parallelism (ILP), and its challenges
	CO5	Understand virtual memory and virtual machines

GRAPHICAL REPRESENTATION



JGI	ARKA JAIN University, Jharkhand — NAAC GRADE A ACCREDITED UNIVERSITY	[05-05-2026] END SEM EXAMINATION School of Engineering & IT	
Program	Computer Science & Engineering	Branch	B. Tech
Subject Name	Advanced Operating Systems	Session	Even, 2025-26
Semester	VIII	Year	April, 2026
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Paper(s).		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

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

Q.N 1	QUESTIONS	Marks	COs	KL
i	Define multiprocessor operating system.	2	CO1	K1
ii	What is load balancing in distributed systems?	2	CO3	K2
iii	Define logical clock.	2	CO3	K1
iv	What is mutual exclusion in distributed systems?	2	CO3	K2
v	Define real-time operating system.	2	CO5	K1
vi	What is a microkernel?	2	CO2	K1
vii	Define cluster computing.	2	CO1	K1
viii	What is grid computing?	2	CO1	K1
ix	Define virtualization.	2	CO1	K2
x	What is mobile operating system? Give one example.	2	CO1	K1

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain architecture and organization of distributed operating systems.	05	CO3	K3
3	Discuss resource sharing and fault tolerance in distributed systems.	05	CO3	K4
4	Explain different kernel structures: monolithic, microkernel, and nanokernel.	05	CO2	K3
5	Describe periodic, aperiodic, and sporadic tasks in real-time systems.	05	CO5	K3
6	Explain cluster computing and MOSIX operating system.	05	CO4	K3
7	Describe cloud computing service models: IaaS, PaaS, and SaaS.	05	CO1	K2

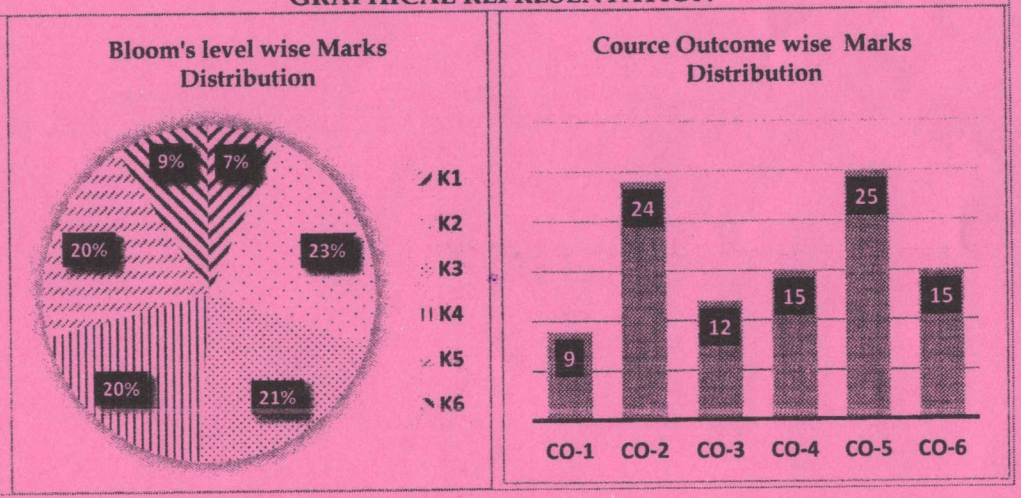
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain multiprocessor and distributed operating systems with design challenges and IPC.	10	CO4	K4
9	Explain logical clocks and mutual exclusion with examples.	10	CO3	K4
10	Explain real-time OS scheduling and compare periodic, aperiodic, sporadic tasks.	10	CO5	K5
11	Explain cluster and grid computing with scheduling and performance analysis.	10	CO4	K4
12	Explain cloud computing, virtualization, KVM, SAN, and NAS.	10	CO2	K4

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

Course Outcomes	CO1	Student should demonstrate understanding of design issues of advanced operating systems and compare different types of operating systems.
	CO2	Analyze design aspects and data structures used for different subsystems of Advanced OS.
	CO3	Demonstrate understanding of different architectures used in Distributed OS and analyze their design issues.
	CO4	Demonstrate understanding of different architectures used in Multiprocessor OS and their scheduling algorithms.
	CO5	Classify Real Time OS and analyze various real time scheduling algorithms.
	CO6	Student should demonstrate understanding of design issues of advanced operating systems and compare different types of operating systems.

GRAPHICAL REPRESENTATION



ARKA JAIN University, Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY	[07-05-2026] END SEM EXAMINATION School of Engineering & IT

Program	**Computer Science & Engineering**	**Branch**	**B. Tech**
Subject Name	**VLSI System Design**	**Session**	**Even, 2025-26**
Semester	**VIII**	**Year**	**April, 2026**
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Three out of Five of Section C** • **Possession of Mobile Phone** or any kind of **Written Material, Arguments with the Invigilator or Discussion with Co-Student** will come under **Unfair Means** and will **Result** in the **Cancellation of the Paper(s)**.		
Knowledge Level (KL)	**K1** : Remembering	**K3** : Applying	**K5** : Evaluating
	K2 : Understanding	**K4** : Analysing	**K6** : Creating

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

Q. N 1	QUESTIONS	Marks	COs	KL
i	What is VLSI? Explain its role in modern era.	02	CO1	K2
ii	What is oxidation?	02	CO4	K1
iii	Explain in brief photolithography.	02	CO3	K2
iv	What is ion implantation?	02	CO4	K1
v	What is noise margin in an inverter?	02	CO2	K1
vi	Explain Field Programmable Gate Array (FPGA).	02	CO1	K2
vii	What is gate array design?	02	CO3	K1
viii	Explain scaling in MOSFET technology.	02	CO1	K2
ix	Why channel in MOS is narrow.	02	CO1	K2
x	What is MEMS? Explain its significance in VLSI technology.	02	CO1	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Illustrate the steps involved in fabrication of NMOS.	05	CO1	K4
3	Discuss and develop standard cell based design.	05	CO2	K6
4	Design a resistive load inverter and discuss the VTC curve.	05	CO4	K3
5	Categorise and write short notes on different levels of integration of active devices per chip.	05	CO2	K4
6	Discuss fabrication process of CMOS transistor.	05	CO1	K2
7	Evaluate the fabrication steps of NMOS technology and justify the importance of each step in determining device performance.	05	CO3	K5

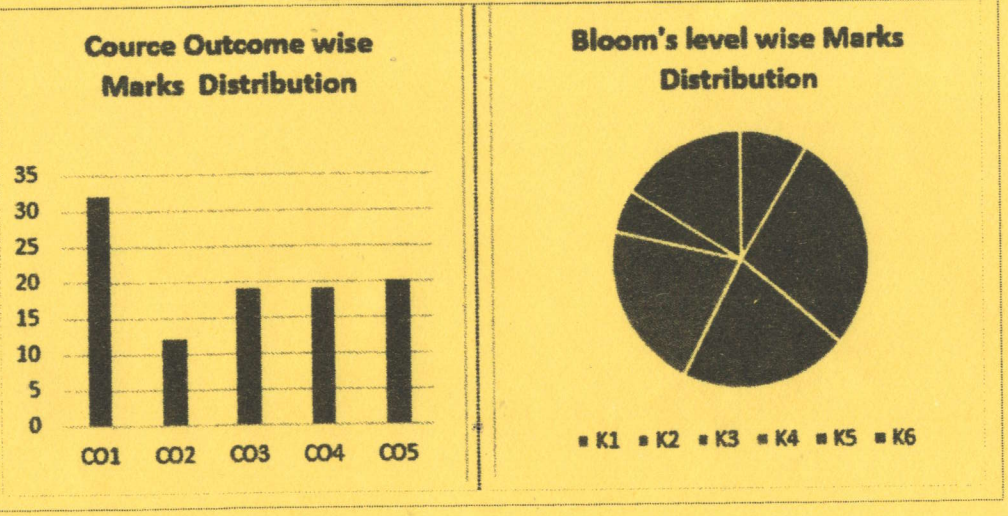
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Design CMOS logic for NOR gate. Explain each and every steps involved in details.	10	CO5	K6
9	Design depletion load inverter and discuss VTC curve.	10	CO4	K3
10	Explain CMOS and its different types with the help of neat and clean diagram also explain its working.	10	CO3	K2
11	Analyse how full custom design varies from standard cell based design elaborate in brief.	10	CO5	K4
12	Write Short Notes on: a. Pull up and network b. Pull down network c. Optimization process d. MOSFET	10	CO1	K3

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

Course Outcomes	CO1	Design vlsi circuits starting from pmos, nmos, cmos, and bicmos technology based design.
	CO2	Gains thorough knowledge on design tools to draw layouts for the transistor structures
	CO3	Understand the design of logic gates
	CO4	Understand the design of sequential systems
	CO5	Understand concept of floor planing

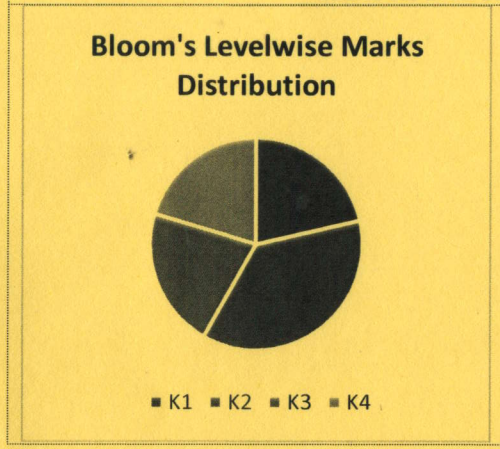
GRAPHICAL REPRESENTATION

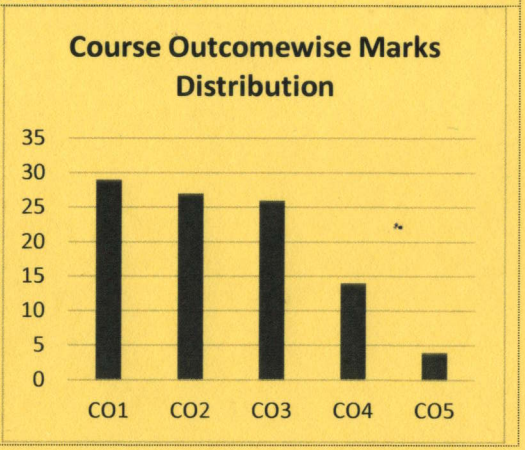


CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Student should understand cyber-attack, types of cybercrimes, cyber laws
	CO2	how to protect them self and ultimately society from such attacks
	CO3	Understand the concepts of Number systems, importance and challenges in Cyber Security.
	CO4	Develop the applications by cyber security tools.
	CO5	Analyze & implement the real- time applications by Cyber Security tools.

GRAPHICAL REPRESENTATION





ARKA JAIN University Jharkhand | NAAC GRADE A ACCREDITED UNIVERSITY

[14-05-2026]
END SEM EXAMINATION
School of Engineering & IT

Program	**Computer Science & Engineering**	**Branch**	**B. Tech**
Subject Name	**Cyber Security**	**Session**	**Even, 2025-26**
Semester	**VIII**	**Year**	**April, 2026**

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)**
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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 1	QUESTIONS	Marks	COs	KL
i	What is the role of a firewall in network security?	02	CO1	K3
ii	Define packet sniffing.	02	CO3	K2
iii	What is data encryption?	02	CO3	K1
iv	How does ARP poisoning work?	02	CO1	K3
v	Explain data pipes and Fpipe.	02	CO4	K2
vi	Define Tcpdump.	02	CO3	K1
vii	Define Windump.	02	CO4	K2
viii	What is firewall?	02	CO5	K3
ix	Define Malware.	02	CO5	K1
x	What is fishing?	02	CO2	K4

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

Q. No.	QUESTIONS	Marks	COs	KL
2	What is Ettercap? Explain its features.	05	CO2	K4
3	Describe the role of sniffers in ethical hacking.	05	CO1	K3
4	Explain injection attacks with an example.	05	CO3	K2
5	Write short notes on WinRelay.	05	CO2	K1
6	Explain the working of Wireshark.	05	CO2	K2
7	What is open port and service identification? Why is it important?	05	CO3	K4

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

Q. No.	QUESTIONS	Marks	COs	KL
8	What is Metasploit? Explain its modules. Explain packet filtering.	10	CO1	K2
9	Explain how Nmap is used for network reconnaissance. Explain packet filtering.	10	CO3	K3
10	Write short notes on THC-Amap and its use. Explain NAT and port forwarding.	10	CO2	K2
11	Illustrate a real-world vulnerability scanning scenario.	10	CO4	K1
12	Describe VPN and its working. How does a firewall protect a network?	10	CO1	K4