



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India
(Autonomous College Affiliated to University of Mumbai)

End Semester Examination (Reexam)

January 2020

Max.Marks: 60

Class: S.E.

Course Code: EL43

Name of the Course: Computer Organization and Architecture

Duration: 60 Min

Semester: IV

Branch: Electronics

SYNOPTIC

Q 1.)		Marks	CO's
a)	Cache memory concepts: cache hit and cache miss. 2 Marks (1 Mark for each) Calculation 1 Mark (No mark for formula) $t_A = Ht_1 + (1-H)t_2 = 0.9 \times 200nS + 0.1 \times 800nS$	3	CO4
b)	Any three differentiations points between polling I/O and interrupt I/O	3	CO5
c)	Computer organization definition 1 Mark Computer architecture definition 1 Mark Computer classification parameters 1 Mark	3	CO1
d)	Definition 1 Mark Calculation 2 Marks $N=6$ $P=0.1$ $\left(\frac{1-P}{1} + \frac{P}{N} \right)^{-1}$ $Speedup = (0.9 + 0.1/6)^{-1}$	3	CO1
Q 2)			
a)	Draw a neat diagram for interfacing 8 bit processor with 16 bit address line to memory of size 16K x 8 bits using two chips of 8 KB. Neat Diagram 3 Marks	3	CO4
b)	Explanation of Micro programming 2 Marks Example of Micro Programming 2 Marks	4	CO3
c)	Part A Diagram 2 Marks Calculation of number of bits 1 Mark Look up method with diagram 2 <div style="text-align: center;">Or</div> Part B Explain need of Cache replacement 1 Mark List of Replacement methods 1 Marks Example 3 Marks	5	CO4

	Part A Algorithm 1 Mark Initialization 1 Mark (0.5 mark for each correct step) X 6 = 3 Marks Correct Answer 1 Mark or Part B Algorithm 1 Mark Initialization 1 Mark (0.5 mark for each correct step) X 6 = 3 Marks Correct Answer 1 Mark		0	CO2																		
b)	Diagram 2 Marks Explanation 4 Marks		6	CO1																		
Q 4)																						
a)	One mark for one point X 6 6 Marks <table><thead><tr><th>CISC</th><th>RISC</th></tr></thead><tbody><tr><td>The original microprocessor ISA</td><td>Redesigned ISA that emerged in the early 1980s</td></tr><tr><td>Instructions can take several clock cycles</td><td>Single-cycle instructions</td></tr><tr><td>Hardware-centric design – the ISA does as much as possible using hardware circuitry</td><td>Software-centric design – High-level compilers take on most of the burden of coding many software steps from the programmer</td></tr><tr><td>More efficient use of RAM than RISC</td><td>Heavy use of RAM (can cause bottlenecks if RAM is limited)</td></tr><tr><td>Complex and variable length instructions</td><td>Simple, standardized instructions</td></tr><tr><td>May support microcode (micro-programming where instructions are treated like small programs)</td><td>Only one layer of instructions</td></tr><tr><td>Large number of instructions</td><td>Small number of fixed-length instructions</td></tr><tr><td>Compound addressing modes</td><td>Limited addressing modes</td></tr></tbody></table>	CISC	RISC	The original microprocessor ISA	Redesigned ISA that emerged in the early 1980s	Instructions can take several clock cycles	Single-cycle instructions	Hardware-centric design – the ISA does as much as possible using hardware circuitry	Software-centric design – High-level compilers take on most of the burden of coding many software steps from the programmer	More efficient use of RAM than RISC	Heavy use of RAM (can cause bottlenecks if RAM is limited)	Complex and variable length instructions	Simple, standardized instructions	May support microcode (micro-programming where instructions are treated like small programs)	Only one layer of instructions	Large number of instructions	Small number of fixed-length instructions	Compound addressing modes	Limited addressing modes		6	CO3
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b)	Explain BUS arbitration in detail. What is bus arbitration 1 Mark Need of bus arbitration 1 Mark Methods of bus arbitration 4 Mark (Any two methods)		6	CO5																		
Q 5)																						
a)	Express (27.4274) in IEEE 754 floating point number representation. 2 mark for representation		2	CO2																		
b)	Example with diagram 4 Marks (2 Marks each)		4	CO3																		
c)	Write a short note of Flynn’s classification. Bases for classification 1 Mark List Classification 1 Mark Each type with example 4 Marks or Explain Hazards in pipe-lining. Explain with example what is pipe lining 2 Marks Hazard with diagram and details 4 Marks		6	CO6																		