

**322732(22)**

**B. E. (Seventh Semester) Examination,**

**April-May 2020/NOV-DEC 2020**

**(New Scheme)**

**(CSE Branch)**

**PARALLEL PROCESSOR & COMPUTING**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note :*** Attempt all the questions. Part (a) from each question is compulsory. Attempt any two parts from parts (b), (c) and (d) of each question.

**Unit-I**

1. (a) What is Moore's law?

2

- (b) Explain Amdahl's law and make an analysis about performance of a parallel computer by doubling and tripling number of processors for computing. 7
- (c) Write a detail notes about architectural classification schemes. 7
- (d) Write short notes on : 7
  - (i) Parallel processing in memory
  - (ii) Parallel algorithms

**Unit-II**

- 2. (a) What do you mean by Pipeline hazards? 2
- (b) Explain data and control dependency create a dependency graph for following set of instructions and find which instructions can be executed in parallel. 7

$$I_1 : C = D \times E$$

$$I_2 : M = G + C$$

$$I_3 : A = B + C$$

$$I_4 : C = L + M$$

$$I_5 : F = G \div E$$

- (c) Explain VLIW computers in detail. 7
- (d) Write short notes on : 7
  - (i) Data-flow computers
  - (ii) Non-linear pipeline and reservation table

**Unit-III**

- 3. (a) What is torus? 2
- (b) Explain PRAM and its application in detail. 7
- (c) Explain Bitonic sorting algorithm with suitable example. 7
- (d) Write short notes on any **two** : 7
  - (i) Wormhole Routing
  - (ii) Shared-memory Algorithms
  - (iii) Shuffle and Shuffle-Exchange Network

**Unit-IV**

- 4. (a) What do you mean by distributed shared memory? 2
- (b) Explain concept of multith reading and latency hiding in detail. 7

[ 4 ]

- (c) Describe functions and applications of parallel operating systems. 7
- (d) Write short notes on : 7
- (i) Emulations for processor architectures
  - (ii) Fault-level methods

#### Unit-V

5. (a) What do you mean by CC-NUMA? 2
- (b) Explain shared-memory MIMD machines with the help of architectural diagram. 7
- (c) Explain vector-parallel cray Y-MP architecture with the help of diagram. 7
- (d) Write short notes on : 7
- (i) Data-parallel SIMD machines
  - (ii) Processor and memory technologies

**322733(22)**

**B. E. (Seventh Semester) Examination,**  
**April-May 2020 / NOV-DEC 2020**

**(New Scheme)**

**(CSE-Engg.)**

**NETWORK PROGRAMMING**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Each question contain (a), (b), (c) and (d) parts.  
Part (a) is compulsory and attempt any two  
from part (b), (c) and (d).***

**Unit-I**

1. (a) What is UUCP? 2  
(b) Explain IPv4 and IPv6 address structure in detail. 7

[ 2 ]

- (c) Explain application layer, Transport layer and network layer in the context of network protocol. 7
- (d) Explain detailed organization of chatting application. 7

**Unit-II**

- 2. (a) Define socket. 2
- (b) Explain various elementary system calls. 7
- (c) Explain the significance of I/O multiplexing. What are the role of select and poll functions for implementing I/O multiplexing. 7
- (d) What are different posix data types in the context of socket. 7

**Unit-III**

- 3. (a) Define DLL. 2
- (b) Explain different APIs and their programming techniques. 7
- (c) Explain blocking socket and blocking function in detail. 7
- (d) What are the advantages of using DLLs in window socket API. 7

[ 3 ]

**Unit-IV**

- 4. (a) Define cryptography. 2
- (b) Explain WAP architecture and services. 7
- (c) Explain component technology in detail. 7
- (d) Explain firewall and security techniques. 7

**Unit-V**

- 5. (a) Define web server. 2
- (b) Write down the procedure to accept connection from browsers. 7
- (c) Explain the concept of parsing data using string tokenizer. 7
- (d) Explain the steps of creating Http server. 7

**322734(22)**

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**(New Scheme)**

**(CSE, IT Engg. Branch)**

**CRYPTOGRAPHY and NETWORK SECURITY**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Attempt all questions. Part (a) of each question is compulsory and containing 2 marks. Attempt two part from (b), (c) and (d) each part carry 7 marks***

1. (a) What is Cryptanalysis? 2
- (b) Explain the types of security attacks in detail. 7

[ 2 ]

- (c) Differentiate between symmetric and asymmetric key cryptography. 7
- (d) Explain working principle of DES. 7
- 2. (a) Define group and ring. 2
- (b) Explain RC 4 with diagram. 7
- (c) Explain the operation of pseudo random number generator. 7
- (d) Explain Euclid's algorithm with suitable example. 7
- 3. (a) State fermat's theorem. 2
- (b) Explain RSA algorithm with example. 7
- (c) Explain Elliptic curve cryptography. 7
- (d) Explain the steps in MD 5. 7
- 4. (a) Define hash function. 2
- (b) Write the requirements and properties of a digital signature. 7
- (c) Explain various authentication protocols. 7
- (d) Write short notes on : 7
  - (i) MAC

[ 3 ]

- (ii) HMAC
- (iii) CMAC
- 5. (a) What is firewall? 2
- (b) What are the various types of virus? Explain the phases of a virus during its life time. 7
- (c) Explain kerberos message authentication scheme. 7
- (d) Explain SSL and TLS architecture with suitable diagram. 7



**322740(22)**

**B. E. (Seventh Semester) Examination,**

**April-May 2020/NOV-DEC 2020**

**(New Scheme)**

**(CSE, IT Engg. Branch)**

**DIGITAL IMAGE PROCESSING**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Attempt all questions. Part (a) from each question is compulsory. Attempt any two parts from part (b), (c) and (d).***

**Unit-I**

1. (a) What are the digital images? What are different types of images used in digital processing? 2
- (b) What is image formation model? Discuss the basic



[ 2 ]

characteristics of image formation model. 7

(c) What are the Histograms? Define histogram equalization and histogram specialization equalize the given Histogram. 7

Gray Level	Number of Pixels
0	790
1	1023
2	850
3	656
4	329
5	245
6	122
7	81

**Unit-II**

2. (a) What is image segmentation? What is the utility of image segmentation in digital image processing. 2

(b) What is Filtering? Briefly explain the various techniques involved in frequency domain filtering. 7

(c) What short notes on : 7  
 (i) Edge detection & Edge Linking

[ 3 ]

(ii) Split and merge technique

(iii) 2-Dimensional discrete fourier transform

**Unit-III**

3. (a) What is morphological Image processing? Mention the elementary operations performed on images. 2

(b) Elaborate the concept of Erosion and Dilation in Morphological image processing. Carryout Erosion and dilation of following image using given structuring element. 7

0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	1	1	0	0	0
0	0	0	1	1	1	1	0	0	0
0	0	0	1	1	1	1	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

1	1
1	1

(c) Discuss the application of morphological Image Processing in Boundary Extraction and Region Filling with suitable example. 7

**Unit-IV**

4. (a) What is data Redundancy? Enumerate various types of data redundancy in digital image processing. 2
- (b) What is compression? Discuss briefly the various compression techniques available for Digital image processing. 7
- (c) What does JPEG stands for? Explain the basic followed in JPEG compression. What are the merits and demerits of JPEG technique? 7

**Unit-V**

5. (a) What is the role of shape numbers and descriptors in representation of digital image? 2
- (b) What is correspondance problem? Discuss various techniques for dealing the correspondence problem. 7
- (c) What is SFM problem? Briefly explain the techniques of genrating structure from motion in Digital Image Processing. 7

**322741(22)**

**B. E. (Seventh Semester) Examination,**

**April-May 2020/NOV-DEC 2020**

**(New Scheme)**

**(CSE & IT Engg.)**

**ADVANCED COMPUTER ARCHITECTURE**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Attempt all the questions. Part (a) from each question is compulsory. Attempt any two parts from parts (b), (c) and (d) of each question.***

**Unit-I**

**1. (a) Pipeline is one way to implement parallelism.**

**Comment and justify.**

**2**

[ 2 ]

- (b) Explain Dynamic Instruction Scheduling in details. 7
- (c) Describe Superscalar processor in detail. 7
- (d) Explain VLIW architecture with its instruction format. 7

**Unit-II**

- 2. (a) What is Cache Coherence problem? 2
- (b) Describe the techniques for increasing the memory bandwidth. 7
- (c) Explain Snoopy Bus Protocol in detail. 7
- (d) Explain back plane system. Also explain bus standards. 7

**Unit-III**

- 3. (a) What is grain size latency? 2
- (b) Compare SISD, SIMD and MIMD. 7
- (c) Explain data and resource dependencies in details. 7
- (d) Compare control flow and Data control. 7

**Unit-IV**

[ 3 ]

- 4. (a) What is Data Routing? 2
- (b) Describe vector processing and its characteristics. 7
- (c) Explain Distributed memory model in detail. 7
- (d) Explain SIMD parallel algorithm with a suitable example. 7

**Unit-V**

- 5. (a) What is node degree? 2
- (b) Explain static and dynamic interconnection networks. 7
- (c) Write a short notes on : 7
  - (i) Baseline networks
  - (ii) Butterfly networks
- (d) Explain multiprocessor system interconnection in detail. 7

**322742(22)**

**B. E. (Seventh Semester) Examination, April-May 2020/**

**NOV-DEC 2020**

**(New Scheme)**

**(CSE, IT Engg. Branch)**

**OPERATION RESEARCH**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Attempt all questions. Part (a) is compulsory, attempt any two parts from (b), (c) and (d) part of each question.***

1. (a) Explain the different phases operation research model.
- (b) Solve the following L. P. P. by graphical method :

Minimize  $Z = 20x_1 + 10x_2$

S.T.C.  $x_1 + 2x_2 \leq 40$

$3x_1 + x_2 \geq 30$

$4x_1 + 3x_2 \geq 60$

$x_1, x_2 \geq 0$

(c) Use the simplex method to LPP problem :

Max.  $Z = 3x_1 + 2x_2$

S.T.C.  $x_1 + x_2 \leq 4$

$x_1 - x_2 \leq 2$

$x_1, x_2 \geq 0$

2. (a) Solve the transportation problem with optimal solution.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Supply
O <sub>1</sub>	2	7	4	5
O <sub>2</sub>	3	3	1	8
O <sub>3</sub>	5	4	7	7
O <sub>4</sub>	1	6	2	14
Demand	7	9	18	

(b) Solve with assignments method :

Job	MACHINES				
	A	B	C	D	E
1	13	8	16	18	19
2	9	15	24	9	12
3	12	9	4	4	4
4	6	12	10	8	13
5	15	17	18	12	20

(c) Find the maximum goods early by students by using dynamic programming :

Study day/course	Subjects		
	x	y	z
0	1	2	1
1	2	2	2
2	2	4	4
3	4	5	4

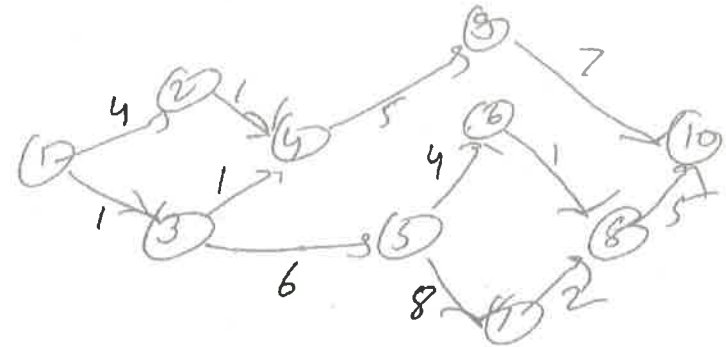
3. (a) Solve the following problem by job sequencing methods :

[ 4 ]

Job	1	2	3	4	5
Machine A	5	1	9	3	10
Machine B	2	6	7	8	4

- (b) Explain the different costs involved in inventory problem.
- (c) Explain the classification of Queuing model with suitable example.
4. (a) Make the difference between linear programming problem and dynamic programming.
- (b) Explain the principal assumptions of an assignment problem.
- (c) Explain the characteristics of a good model.
5. (a) Explain the steps to construct a network.
- (b) Find the different floats of given network :

[ 5 ]



- (c) Explain the basic concepts of term analysis in CPM.



**322743(22)**

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**April-May, 2020/NOV-DEC 2020**

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**E-COMMERCE & STRATEGIC IT**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Part (a) is compulsory in each question.  
Attempt any two parts from (b), (c) and (d),  
and carry 7 marks each.***

**Unit-I**

1. (a) Define E-commerce. 2
- (b) Explain generic framework of electronic commerce  
in detail. 7

[ 2 ]

- (c) Explain consumer to business E-commerce. 7
- (d) What is supply chain management (SCM)? List any six characteristics of SCM in E-commerce and explain primary elements of SCM models. 7

**Unit-II**

- 2. (a) Differentiate LAN and WAN. 2
- (b) Explain TCP/IP reference model. Differentiate it from OSI model. 7
- (c) Explain domain name system. 7
- (d) Explain Ethernet (IEEE standard 802.3) LAN? Differentiate between 10 Base 5 and 10 Base 2. 7

**Unit-III**

- 3. (a) Define electronic tokens. 2
- (b) Describe various risks associated with credit card and how this risk can be minimized. 7
- (c) Describe the factors that must be addressed in designing electronic payment system. 7

[ 3 ]

- (d) Explain the online payment process using third party processor. 7

**Unit-IV**

- 4. (a) What is web browser? 2
- (b) Explain the file transfer architecture. 7
- (c) What is HTTP? Explain it with HTTP session diagram. 7
- (d) Describe the common gateway interface. 7

**Unit-V**

- 5. (a) What is the goal of mobile computing? 2
- (b) Describe the mobile information access devices. 7
- (c) Write and explain cellular data communication protocol. 7
- (d) Define personal communication services and explain its infrastructure. 7

**322746(22)**

**B. E. (Seventh Semester) Examination,  
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**(New Scheme)**

**(CSE, IT Branch)**

**CLOUD COMPUTING**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Attempt all questions carrying equal marks.***

***Part (a) is compulsory from each question &  
carries 2 marks. Attempt any two parts from  
part (b), (c) and (d) of each question which  
carries 7 marks.***

**Unit-I**

1. (a) Give examples of public cloud services. 2

- (b) Some statements are given below regarding the cloud computing model. Mark each of them as either True or False. Justify your answer with proper argument, example or a counter example. Marks will be provided only if correct justification is provided. 7
- (i) Cloud computing is only for start-up organizations and small companies which cannot afford the cost of expensive servers and other IT infrastructure.
  - (ii) Deploying and application over the cloud model brings dependency of the client over the cloud vendor. If the cloud vendor's servers are down the client will have to incur a loss of business. The vendor becomes the owner of the client's data stored on servers and can use them for any purpose.
  - (iii) Cloud computing provides enhanced level of security and performances to any application. This is because cloud vendors use latest security softwares and load balancers to provide high security and performance.

- (iv) Private cloud deployment provides better security and control than public cloud for the client, so sensitive applications should be deployed only on private cloud services.
  - (c) Explain the most common scenario where : 7
    - (i) a private cloud is preferred over a public cloud.
    - (ii) a public cloud is preferred over private cloud.
  - (d) Describe the evolution of cloud computing. 7
- Unit-III**
2. (a) What is vendor lock-in? 2
  - (b) Explain Identity Access Management (IAM) in detail. 7
  - (c) What are the layers in security architecture design? Explain. 7
  - (d) What is Software-as-a-service? What advantages does the software vendor have by delivering a software-as-a-service using the SaaS based subscription model rather than selling the 'software as a packaged product? 7



**Unit-III**

3. (a) What is anything-as-a-service? 2
- (b) Describe the services provided by the MAAS and CAAS service providers. 7
- (c) Write notes on : 7
- (i) SaaS
- (ii) PaaS
- (d) Describe the various products and services offered by Google under cloud computing services. 7

**Unit-IV**

4. (a) What is SOAP? 2
- (b) Discuss the infrastructural requirements for establishing a modern data center. Also describe the environmental effects of data center. 7
- (c) Differentiate between MSP and Cloud Service Provider. 7
- (d) How SOA is helpful for promoting Cloud computing environment? Write advantages of SOA. 7

**Unit-V**

5. (a) What is Virtualization? 2
- (b) Write notes on Type-I Hypervisors and Type-II Hypervisors. 7
- (c) Write down the differences between Storage Area Networks (SAN) and Network Attached Storage (NAS). 7
- (d) Describe the features of Mobile Operating Systems for smart phones by taking a case study. 7