

(3 Hours)

[Total Marks : 80]

N.B. : (1) Question No. 1 is **compulsory**.(2) Solve any **three** questions out of remaining **five** questions.(3) Assume **suitable** data wherever **required**,(4) **Figures** to the **right** indicate **full** marks.

1. (a) Determine an LCS of (1, 0, 0, 1, 0, 1, 0, 1) and (0, 1, 0, 1, 1, 0, 1, 1, 0). **10**
 (b) Find an optimal parenthesization for following matrix chain multiplication sequence **10**
 (5, 10, 3, 12, 5, 50, 6)

2. (a) Find all pairs shortest path for the given weight matrix using Floyd - Warshall algorithm. **10**

	A	B	C	D	E
A	0	5	8	∞	-3
B	∞	0	∞	2	6
W = C	2	∞	0	∞	∞
D	2	∞	-4	0	∞
E	∞	∞	∞	3	0

- (b) Define O , Ω , θ notation for algorithm complexity and solve the recurrence. **10**
 (i) $T(n) = 4T(n/2) + n^2$
 (ii) $T(n) = 2T(n/2) + n^3$
3. (a) Explain zero - sum games. **5**
 (b) Explain naive string matching algorithm. **5**
 (c) Construct Huffmans codes for the data below :- **10**

Keys :	Rte	Hja	Pro	Lpi	Pru	Bhu	KLo	Try	Qwa
Freq. :	5	28	10	20	20	8	13	2	30

[TURN OVER

Con. 8322-BB-12835 -13.**2**

4. (a) Solve the following Linear program using SIMPLEX. **10**
Minimize $Z = 4x_1 + 3x_2 + 2x_3$
Subject to
 $4x_1 + 2x_2 + x_3 \leq 5$
 $3x_1 + x_2 + x_3 \leq 4$
and $x_1, x_2, x_3 \geq 0$
- (b) Explain with example maximum bipartite matching using Ford-Fulkerson method. **10**
5. (a) Explain all sorting techniques based on divide and conquer strategy. **10**
(b) Prove that TSP is NP - complete. **10**
6. Write short notes on (any **four**) :- **20**
(a) The relabel to front algorithm.
(b) K-server problem.
(c) Sum of subsets problem.
(d) Genetic Algorithm.
(e) Online paging problem.
(f) Rabin Karp algorithm.
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N.B. : Answer any **four** questions out of **six** questions.

1. (a) Explain the effect of granularity on performance of parallel programs. **10**
 (b) What is Cannon's algorithm for matrix multiplications? Analyse its performance. **10**
 2. (a) Classify parallel computers and discuss the factors affecting parallelism in each case. **10**
 (b) Describe the characteristics of tasks and interaction which can be used in the process of mapping. **10**
 3. (a) Categorize the stochastic arrays and explain different features. **10**
 (b) Explain the general model of shared memory programming. **10**
 4. (a) What is parallel reduction? Give analysis of parallel reduction algorithm. **10**
 (b) Compare the serial and transpose FFT algorithms. **10**
 5. (a) Discuss briefly the asymptotic analysis of parallel programs. **10**
 (b) Explain the parallel execution of Prim's algorithm. **10**
- Write short notes on any **two** :- **20**
- (a) Grid computing.
 - (b) Multicore systems.
 - (c) High performance Java.
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(3 Hours)

[Total Marks : 80]

- N.B. :** (1) Question No.1 is **compulsory**.
 (2) Solve **three** questions out of remaining **five** questions.
 (3) Assumptions made must be **clearly** stated.

1. Z-link is a corporate firm whose network is evolving. They are currently located in a building with 5 floors and a basement. They have five departments (HR, R and D, Accounts, Production and Marketing) and are located on separate floors. 20
 Each floor has 100 - 120 PCs and 2 to 3 servers, which are Ethernet attached.
 All floors are connected by bridges/switches to a central server room located in the basement. The company is using an arbitrarily selected class B addresses and is not connected to the internet. Z-link is experiencing extensive growth and needs to set up two additional sites with a similar layout. There is a need to interconnect these two sites with the existing one, anticipating that 1% of the traffic from each building will go to the next building. Some application upgrade are also anticipated which will involve more graphical presentation of data.
 New design must provide the following :-
 → Server farm in original site housing mail-server, web-server, db server etc.
 → Logical isolation between floors for the purpose of administrative control.
 → A highly scalable interconnection method within the building.
 Design the network with details of different applications, user communities and data stores servers.
 Give the detailed access layer design with IP-Addressing for each department (subnetting)
 Give detailed recommendations of distribution layer and backbone layer for interconnecting the sites.
2. (a) What are the changes incorporated in SNMP V2 as compared to SNMP V1 and also explain the system architecture of SNMP V2. 10
 (b) Discuss the common network problems and various challenges faced by an I.T. Manager to manage the network of an enterprise. 10

[TURN OVER

Con. 9608- BB-12841-13.**2**

3. (a) A branch office of a large engineering firm has an on-line terminal connected to a central computer system during a normal 8 hour working day. Statistics indicate that the arrival pattern of a people at the branch office to use the terminal has a Poisson distribution with an average of 10 people using the terminal per day. Distribution of time spent by an customer at the terminal is exponential, with a mean-time of 30 minutes. **10**
- What insight can the queuing theory provide about the server utilization ? Calculate the probability of 2 or more customers in the system and the mean steady state in the system.
- (b) Explain the meaning of collision domain and broadcast domain from a hub, switch (layer-2) and router perspective. **10**
4. (a) What are the main phase of n/w design as per the PDIOO approach, explain each phase. **10**
- (b) Explain different types of topologies used in backbone design. **10**
5. (a) With the help of diagram, Explain Network Management Functional groupings. **10**
- (b) Explain the role of RMON in n/w management system. **10**
6. Write short notes on (any two) :- **20**
- (a) TMN functional Architecture
 - (b) ASN.1 notations of SNMP
 - (c) Ethernet Design rules (Fast Ethernet and Gigabit Ethernet).
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(3 Hours)

[Total Marks : 80

- N. B. :** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **three** questions out of remaining **five** questions.
 (3) Draw **neat** labelled diagram wherever **necessary**.

1. (a) Explain the deadlock in database. 5
 (b) Explain BLOB and CLOB with example. 5
 (c) Explain OODBMS and ORDBMS. 5
 (d) What is Database security ? 5

2. (a) Consider the relation $r(X, Y, Z, W)$ and Set $F\{Y \leftrightarrow W, XY \rightarrow Z\}$ where the symbols \leftrightarrow means that $Y \rightarrow W$ and $W \rightarrow Y$ simultaneously. 10
 What are the candidate keys of this relation and what is the highest normal form of this relation.
 (b) Explain the role of Database Administrator with respect to performance and database tuning. 10

3. (a) Consider the following relation :- 10
 EMP (eno, ename, title)
 PROJ (pno, pname, budget, location)
 PAY (title, salary)
 ASG (eno, pno, responsibility, duration)
 (i) Write the query for derived horizontal fragmentation on EMP relation and PAY relation.
 (ii) Fragment the EMP, PROJ and PAY relation vertically and write the resultant fragment.
 (b) Explain the concurrency control in distributed database. 10

4. (a) Write and explain a ODL schema for University database. 10
 (b) What are the type constructor and explain the different types of type constructor with the help of example. 10

5. (a) What is Data warehousing and explain the architecture of data warehousing ? 10
 (b) Design a star and snow flake schema for a college Examination Database system. 10

6. Write a short notes (any two):- 20
 (a) Temporal database
 (b) Client / Server Model
 (c) Multimedia database
 (d) Web database.

ME/EMP/ I CBGS 23/12/2013
E-Business Technology. (e.)

V-A4-II-Ex-13-G-43

Con. 10111-13.

BB-12865

(3 Hours)

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[N.B. : Attempt any **four** questions.]

1. (a) Describe the E-Business. Also explain framework of E-business. 10
(b) Write a note on E-business Opportunities. 10
2. (a) Explain Portal and its different types. 5
(b) Discuss Ethical issues of sell side e-commerce. 5
(c) Explain revenue models for web portals and virtual communities. 10
3. (a) Explain various security issues in social networking sites. 10
(b) Compare various Web hosting technique in detail. 10
4. (a) What are the different ethical and social issues in e-business ? 10
(b) Explain web services and how it impacts e-business. 5
(c) Write a note on E-business research process. 5
5. (a) What is the difference between a business Plan and a business model ? 5
(b) Explain customer oriented trends which drives E-business. 5
(c) Explain various online payment systems. 10
6. Write short notes on :— 20
 - (a) E-business Software.
 - (b) Organizational and Managerial Issues.

Con. 10108-13.

BB-12862

(3 Hours)

[Total Marks : 80

[N.B. : Answer any four questions.]

1. (a) Define the concept of a service and its characteristics. **10**
(b) Describe how services are accessed, used and managed. **10**
2. (a) Analyze the business requirements and design a suitable logical SOA architecture for travel website. **10**
(b) Discuss scalability and availability of services. **10**
3. (a) Describe the stages in constructing and deploying services and the SOA solutions utilizing them. **10**
(b) Discuss the issues related to SOA transactions. **10**
4. (a) What are the elements of WSDL ? Give an example and explain. **10**
(b) If infrastructure services encapsulate technical capability, can you list some of the infrastructure services to support implementation ? **10**

OR

How would you integrate new web services to existing ones using BPEL ?

5. Discuss any **two** of the following with reference to SOA governance.
(a) Run time security **10**
(b) Service level agreement **10**
(c) Life cycle monitoring **10**
6. (a) Specify the change management mechanisms required for versioning services and migrating service components across environments. **10**
(b) Discuss ESB architecture and services. **10**