

Total No. of Printed Pages:1

SUBJECT CODE NO: E-8041
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CSE/SE) Examination Nov/Dec 2017
Performance Analysis & Simulation
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

1. Solve any two questions from each section.
2. Assume suitable data wherever necessary and state it clearly.

Section- A

- | | | |
|-----|---|----|
| Q.1 | a) Explain performance metrics? Explain different commonly used performance metrics. | 10 |
| | b) What are the different common mistakes in performance evaluation? | 10 |
| Q.2 | a) What are different workload characterization techniques? Explain how clustering is used for workload characterization. | 10 |
| | b) Discuss the workload selected for performance evaluation of operating system. | 10 |
| Q.3 | a) Explain simulation and modeling of LAN. | 10 |
| | b) Explain in detail the oracle database architecture with neat diagram. | 10 |

Section- B

- | | | |
|-----|---|----|
| Q.4 | a) Explain evaluation and selection technique for simulation software. | 10 |
| | b) Explain steps in a simulation study. | 10 |
| Q.5 | a) What do you mean by model of a system? What are the characteristics of good model? | 10 |
| | b) Explain the process of validation and calibration of models. | 10 |
| Q.6 | a) Explain the various techniques for generating random numbers. | 10 |
| | b) Explain hypothesis testing and tests for uniformity. | 10 |

Total No. of Printed Pages:1

SUBJECT CODE NO:- E-8003
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp.Sci. & Engg.) Examination Nov/Dec 2017
Internal of Operating System
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- 1) Solve any two questions from each section.
 - 2) Assume suitable data if necessary.
- Section A**
- Q.1
- a) Explain file system in Linux in detail. 10
 - b) Justify the need of wait queues in Linux with its detail of declaring, initializing, insertion, Deletion 10
- Q.2
- a) Discuss Kernel mode Vs User mode in Windows OS. 10
 - b) Explain the Windows azure architecture. How it is different from Windows. 10
- Q.3
- Write Short note on
- i) Vendors security laws
 - ii) Virtualizing windows server for azure
 - iii) Service and data reliance on cloud computing vendors.
 - iv) Assuring fabric controller availability.
- Section B**
- Q.4
- a) Explain point to point synchronization & Global barrier synchronization 10
 - b) List various parallel processor architectures and explain architectural and technology trends. 10
- Q.5
- Write short notes on
- i) QNX
 - ii) Windows CE
 - iii) RT Linux
 - iv) VX Works
- Q.6
- a) Discuss different design challenges in embedded OS. Differentiate RT Linux and Linux 10
 - b) Differentiate between Windows and Linux Security. 10

Total No. of Printed Pages:1

SUBJECT CODE NO: E-8020
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp.Sci.& Engg.) Examination Nov/Dec 2017
Computer Vision
(Revised)

[Time: Three Hours]

[Max.Marks:80]

- N.B Please check whether you have got the right question paper.
- i) Solve any two Questions from each section.
 - ii) Assume suitable data, if necessary and state it clearly.

SECTION A

- | | | |
|-----|--|----|
| Q.1 | a) What is image segmentation? Explain mean shift segmentation in detail. | 10 |
| | b) Explain the fundamental steps in digital image processing with block diagram. | 10 |
| Q.2 | a) With the help of typical pattern recognition system explain any one suitable application. | 10 |
| | b) Explain K-means clustering with example. | 10 |
| Q.3 | a) What is the problem of dimensionality reduction? How principle component analysis is useful for dimensionality reduction. | 10 |
| | b) Discuss the steps of linear discriminate analysis. | 10 |

SECTION B

- | | | |
|-----|--|----|
| Q.4 | a) Explain in detail RANSAC. | 10 |
| | b) Describe different region based shape description methods. | 10 |
| Q.5 | a) What is texture? Explain statistical texture description methods. | 10 |
| | b) How scene reconstruction is done from multiple views using triangulation projective reconstruction and matching constrains. | 10 |
| Q.6 | a) What are interest points? How it is useful for motion detection. | 10 |
| | b) Discuss the concept of video tracking in detail. | 10 |

Total No. of Printed Pages:1

SUBJECT CODE NO: E-8041
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CSE/SE) Examination Nov/Dec 2017
Performance Analysis & Simulation
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

1. Solve any two questions from each section.
2. Assume suitable data wherever necessary and state it clearly.

Section- A

- | | | |
|-----|---|----|
| Q.1 | a) Explain performance metrics? Explain different commonly used performance metrics. | 10 |
| | b) What are the different common mistakes in performance evaluation? | 10 |
| Q.2 | a) What are different workload characterization techniques? Explain how clustering is used for workload characterization. | 10 |
| | b) Discuss the workload selected for performance evaluation of operating system. | 10 |
| Q.3 | a) Explain simulation and modeling of LAN. | 10 |
| | b) Explain in detail the oracle database architecture with neat diagram. | 10 |

Section- B

- | | | |
|-----|---|----|
| Q.4 | a) Explain evaluation and selection technique for simulation software. | 10 |
| | b) Explain steps in a simulation study. | 10 |
| Q.5 | a) What do you mean by model of a system? What are the characteristics of good model? | 10 |
| | b) Explain the process of validation and calibration of models. | 10 |
| Q.6 | a) Explain the various techniques for generating random numbers. | 10 |
| | b) Explain hypothesis testing and tests for uniformity. | 10 |

Total No. of Printed Pages:1

SUBJECT CODE NO: E-8079
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (EC/ECT/ES) Examination Nov/Dec 2017
Elective-II: Embedded Sys. Design (Comp. on Embd)
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Q.1 and Q.6 are compulsory.
- ii) Answer any three Questions in each section.

Section – A

- Q.1 Write Short note on any one.** 10
- a) Timers, Counters and watch dog timers
 - b) ASIPs
 - c) Interrupts Service Routine of ARM7
- Q.2 Explain Data processing, Branch and Load-store instructions of ARM7 with examples.** 15
- Q.3**
- a) Draw and Explain Superscalar Architecture. 08
 - b) Draw and Explain architectural overview of embedded system. 07
- Q.4**
- a) Explain testing and debugging. 08
 - b) Explain UART and RTC. 07
- Q.5**
- a) Explain Interfacing of DC Motor controller with ARM 7. 08
 - b) Explain ARM 7 Register Set. 07

Section – B

- Q.6 Write Short Notes on any one** 10
- a) I_rDA
 - b) Composing memory
 - c) Serial peripheral Interface
- Q.7 Enlist the features of ARM with specification of LPC 314x.** 15
- Q.8**
- a) What is bus arbitration? Explain Dairy Chain Arbitration. 08
 - b) Explain Advance RAM. 07
- Q.9**
- a) Explain ISA Bus protocol with Read and write timing. 08
 - b) Explain IEEE 802.11 protocol. 07
- Q.10**
- a) Explain Memory hierarchy and cache. 08
 - b) Explain Error Detection and Correction. 07

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SUBJECT CODE NO:- E-8060
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp.Sci. & Engg.) Examination Nov/Dec 2017
Data Mining & Big Data
(Revised)

[Time: Three Hours]

[Max.Marks:80]

N.B Please check whether you have got the right question paper.

i) Solve any two questions from each section.

ii) Figures right indicates full marks.

iii) Assume Suitable data if necessary

Section A

Q.1 a) Find frequent item sets for following transactions using Apriori Algorithm. 10

Minimum support count = 2

TID List of item

1 11,12,15

2 12,13

3 12,14

4 11,12,13

5 11,14

6 12,14

7 11,14

8 11,12,14,15

9 11,12,14

b) What is constraint based association mining? What are the different type of constraints? 10

Q.2 a) Cluster following points in three clusters. Take initially A1, B1, C1 as a center points. Use K- 10
means algorithms to show only the three cluster centers after the final round of execution.
A1(2,10) A2(2,5) A3(8,4) B1(5,8) B2 (7,5) B3 (6,4) C1(1,2) C2 (4,9) (Use Euclidean
distance).

b) With an example explain how hierarchical clustering works 10

1) Single linkage

2) Complete Linkage

Q.3 a) What is the concept of page rank by which the page popularity is captured on web? Explain 10
with the page rank algorithm.

b) What is social network analysis (SNA)? How graph techniques are used for SNA? 10

Section B

- Q.4 a) How to improve Data Access in Hadoop using HBase, Sqoop, and Flume? 10
- b) A cloud uses 2000 nodes for data processing and has a processing capacity of 50GB per hour. Considering the charges as 0.4USD per node per hour calculate the total cost and time required for processing one zettabyte of data on this cloud. 10
- Q.5 a) What is object base data products ? How will you apply drive train approach for marketing purpose? 10
- b) Explain “What it takes to build great machine learning products”? 10
- Q.6 a) Explain how ‘Data Personalization’ can be used for ‘discrimination’. Justify with example. 10
- b) Explain in brief how the application of ‘spreadsheet’ got enriched to ‘dashboard’. What is the role of privacy in design? 10

SUBJECT CODE NO:- E-8142
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp.Sci. & Engg.) Examination Nov/Dec 2017
Machine Learning
(Revised)

[Time: Three Hours]

[Max.Marks:80]

N.B

Please check whether you have got the right question paper.

- i) Solve any two questions from each section
 ii) Assume suitable data if necessary

Section A

Q.1 (a) Explain find – S algorithm with given example. Give its application 10

Instance	V ₁	V ₂	V ₃	V ₄	Outcome
1	a	b	b	a	+
2	b	b	b	b	+
3	a	b	b	b	+
4	a	b	a	a	-

(b) Explain – (i) Version space (ii) Inductive bias 10

Q.2 (a) What are the appropriate problem to be solved by 10

- (i) Artificial Neural Network
 (ii) Decision Tree Algorithm

(b) Why a multilayer network is required? Explain algorithm use to train multilayer network. 10

Q.3 (a) How to estimate difference in error between two hypothesis using error $D^{(h)}$ and error $S^{(h)}$? 10

(b) What is recurrent network and Error minimization procedure in Artificial neural network. 10

Section – B

Q.4 (a) Explain cross –over and mutation operations in genetic algorithm and state their significance. 10

(b) Explain following terms with reference to computational learning. 10

- (i) Training error
 (ii) True error
 (iii) Sample complexity

Q.5 (a) What is instance – based learning. Explain K-nearest neighbor algorithm. 10

(b) Describe the Genetic algorithm steps using population, Fitness function, other necessary data and hypothesis it returns. 10

Q.6 (a) Explain Bayesian Belief nets with example. Give its application 10

(b) Describe in brief: 10

- (i) EM Algorithm
 (ii) Lazy and Eager learning.

SUBJECT CODE NO: E-8143
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp.Net.& Engg.) Examination Nov/Dec 2017
Advanced Digital Communication
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i. Solve any two full questions from each section.
 - ii. Assume suitable data if necessary.
 - iii. Figures to the right indicate full marks.

SECTION-A

- | | | |
|-----|--|----|
| Q.1 | a) Explain various line coding techniques with waveforms. | 08 |
| | b) Explain different communication channels and their characteristics. | 08 |
| | c) Explain the fundamental limits on the digital transmission system. | 04 |
| Q.2 | a) What is pulse code modulation? Explain with neat block diagram. Also give its advantages and limitations. | 10 |
| | b) Explain internet checksum used for error detection | 05 |
| | c) Explain ADPCM scheme used for speech encoding. | 05 |
| Q.3 | Write short note on | |
| | i) MODEM | 05 |
| | ii) 2-D parity checks | 05 |
| | iii) Polynomial codes | 05 |
| | iv) Robust quantization | 05 |

SECTION-B

- | | | |
|-----|---|----|
| Q.4 | a) What is correlative coding? Explain. | 06 |
| | b) What is ISI? Explain ISI in PAM. | 06 |
| | c) Explain how eye patterns are used for binary & M-ary modulation ISI detection. | 08 |
| Q.5 | a) What do you mean by keying techniques? Explain binary keying techniques. | 10 |
| | b) Give the comparison between binary and quadrature modulation techniques. | 05 |
| | c) Describe the CMA algorithm. | 05 |
| Q.6 | Write short notes on | |
| | i) Bit versus Symbol error probability | 05 |
| | ii) Discrete PAM signals | 05 |
| | iii) Error probability | 05 |
| | iv) Bandwidth efficiency | 05 |

Total No. of Printed Pages:1

SUBJECT CODE NO: E-8275
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CSE/SE) Examination Nov/Dec 2017
Elective-II: Information Security
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- 1) Attempt any two questions from each section.
- 2) Figures to the right indicate full marks.

Section A

- | | | |
|-----|--|----|
| Q.1 | a) What are different types of security policies? Explain integrity policy in detail. | 10 |
| | b) With an appropriate example explain the DES symmetric block cipher. | 10 |
| Q.2 | a) What is a policy language? With suitable examples explain different types of policy languages. | 10 |
| | b) Explain informational assurances in detail. | 10 |
| Q.3 | a) What are different types of keys? With suitable example explain different methods for key exchange. | 10 |
| | b) Explain the security evaluation criteria in detail. | 10 |

Section B

- | | | |
|-----|---|----|
| Q.4 | a) Explain the followings
i) Physical security
ii) IDS | 10 |
| | b) State and explain the vulnerabilities that impact the cellular n/w | 10 |
| Q.5 | a) Explain followings models in detail
i) ISO 17799/ BS7799
ii) VISA international security model | 10 |
| | b) Explain dynamic anti- virus detection techniques in detail | 10 |
| Q.6 | a) Explain armoring as anti- antivirus technique | 10 |
| | b) Explain the security implications & organizational measures for mobile devices. | 10 |

SUBJECT CODE NO: E – 8145
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Software Engg.) Examination Nov/Dec 2017
System Analysis & Design
(Revised)

[Time: Three Hours]

[Max.Marks:80]

- N.B Please check whether you have got the right question paper.
- i. Attempt any two questions each from section A & section B.
 - ii. Figures to the right indicate full marks.

Section A

- | | | |
|-----|--|----|
| Q.1 | a) Describe three techniques of a feasibility analysis? | 08 |
| | b) Describe the principle step of in planning phase. What are the major deliverables? | 08 |
| | c) What is PERT chart? | 04 |
| Q.2 | a) What is DFD context diagram? What is the difference between a logical DFD & a physical DFD? | 06 |
| | b) Describe the major steps in conducting JAD session? | 08 |
| | c) Discuss problem analysis as a BPA activity. What are the strength & limitations of their technique? | 06 |
| Q.3 | a) Explain the steps to find an actor in use case diagram? | 08 |
| | b) Draw a use case diagram for library management system? | 08 |
| | c) Explain meta data & data dictionary? | 04 |

Section B

- | | | |
|-----|---|----|
| Q.4 | a) What is meant by customizing a software package? | 06 |
| | b) Distinguish between the two – tier, three – tier & n – tier client architecture? | 06 |
| | c) Describe the contents of the system specification? | 08 |
| Q.5 | a) Describe the basic process of user interface design? | 08 |
| | b) Describe the types of Input design & output design? | 08 |
| | c) Why are the interface standard important? | 04 |
| Q.6 | a) Describe Acceptance testing? | 06 |
| | b) How are the test cases develop for unit tests? | 04 |
| | c) What is difference between alpha testing & beta testing? | 06 |
| | d) What is user document, reference document? | 04 |

SUBJECT CODE NO: E-8178
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp.Sci. & Engg.) Examination Nov/Dec 2017
Advanced Algorithm
(Revised)

[Time: Three Hours]

[Max.Marks:80]

N.B Please check whether you have got the right question paper.

1) Assume any two questions from each section.

Section A

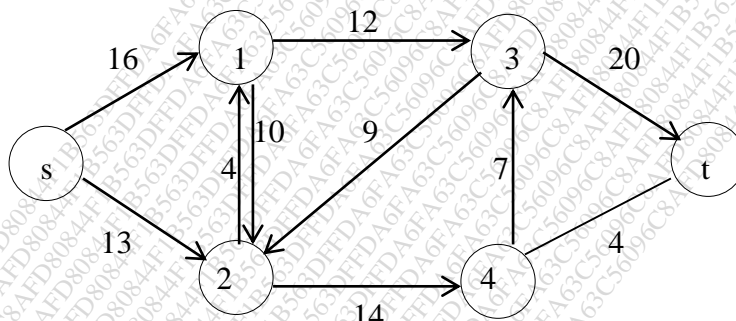
Q.1 a) Define and explain the various asymptotic notations with related graphs and examples. 10

b) Solve the following recurrence relation to give a tight upper bound using substitution method. 10

$$T(n) = 4T\left(\frac{n}{2}\right) + n^2$$

Q.2 a) Explain Hiring problem using Probabilistic analysis and randomized algorithm. 10

b) Solve Maximum flow problem for the following graph. 10



Q.3 a) Sort the following element using heap sort and comment on the complexity. 10

25,67,56,32,12,96,82,44

b) Explain maximum sub array problem using divide and conquer method. 10

Section B

- Q.4 a) Find the position tree for abababa\$ 06
- b) Explain Euclid's GCD algorithm. 06
- c) Explain naive string matching algorithm. 08
- Q.5 a) Draw a state transition diagram of finite automata for the following regular expression over 12
the alphabet $I = \{ a, b, c \}$
- i) $bc^*(abc + b)a^*$
- ii) $(a + bc^*)ab(bb + cc)$
- b) Explain vertex – cover problem. 08
- Q.6 a) Prove that clique is NP- complete. 07
- b) Explain Hamiltonian cycle. 05
- c) Discuss iterative FFT. 08

SUBJECT CODE NO: E-8156
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (C.S.& I.T.) Examination Nov/Dec 2017
Information Theory & Coding
(Revised)

[Time: Three Hours]

[Max.Marks:80]

N.B

Please check whether you have got the right question paper.

- 1) solve any two questions from each section
- 2) assume additional suitable data if necessary and state if clearly

Section A

- Q.1 a) Define 10
- i) Self information
 - ii) Entropy
 - iii) Rate of information
 - iv) Mutual information 10
- b) A BSC channel has the followings noise with source probabilities
- $$P(x_1) = \frac{2}{3} \text{ and } P(x_2) = \frac{1}{3}$$
- $$P\left(\frac{Y}{X}\right) = \begin{bmatrix} \frac{3}{4} & \frac{1}{4} \\ \frac{1}{4} & \frac{3}{4} \end{bmatrix}$$
- Determine : i) $W(x)$, $W(Y)$, $W(X, Y)$, $W\left(\frac{Y}{X}\right)$
- $W\left(\frac{X}{Y}\right)$ and $I(X, Y)$
- ii) channel capacity
 - iii) channel efficiency and redundancy
- Q.2 a) Explain interconnection of discrete time system 07
- b) Explain shannon's theorem 07
- c) List and discuss channel models 06
- Q.3 a) Find entropy of source X generating four types of messages with probabilities 10
- $$\frac{1}{4}, \frac{1}{8}, \frac{1}{8} \text{ and } \frac{1}{16}$$
- b) Explain Lempel –ziv algorithm in details with string 101011011010101011 10

Section B

- Q.4
- Explain parity check matrix with suitable example 07
 - Explain matrix description of linear block code 07
 - Explain matrix description of cyclic codes burst error correction 06
- Q.5
- Explain polynomials the division algorithm for polynomials 07
 - Explain circuit implantation for cyclic codes 07
 - Explain generator polynomials 06
- Q.6
- For a (2, 1, 3) convolutional encoder with $g^{(1)} = [1101]$, $g^{(2)} = [1011]$ 20
 - Draw the convolutional encoder block diagram,
 - Write down the state transition table
 - Draw the code tree
 - Find the encoder O/P produced by MSG sequence "11101" by traversing through the code tree.

Total No. of Printed Pages:1

SUBJECT CODE NO: E-8279
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CSE/SE) Examination Nov/Dec 2017
Real Time Systems (EI-1 CSE)
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i. Attempt any two from each section
 - ii. Assume suitable data if necessary

Section A

- Q.1
- a) How do you estimate execution time in RTS? What is WCET? 10
 - b) What are issues need to consider while designing a typical real time system. 10
- Q.2
- a) Explain feature descriptive language to describe design of Real time system 10
 - b) Explain resources management in real time system 10
- Q.3 Write short note on:- 20
- i) Monolithic O.S.
 - ii) Modular O.S.
 - iii) Lynx O.S.
 - iv) Real time O.S.

Section B

- Q.4
- a) Explain optimistic concurrency & pessimistic concurrency in RTDB. 10
 - b) What are various RT communication issues? 10
- Q.5
- a) What is difference between independent task scheduling Algorithm and aperiodic task scheduling algorithm. 10
 - b) Explain various Real time Message sending techniques. 10
- Q.6
- a) Explain polling server with example? Also explain drawbacks of polling server. 10
 - b) Explain VTCSMA protocol in RTS? How it is different than CSMA in GPS. 10

Total No. of Printed Pages:3

SUBJECT CODE NO: E-8278
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (C.S. & I.T.) Examination Nov/Dec 2017
Elective-II: Advanced Algorithm
(Revised)

[Time: Three Hours]

[Max.Marks:80]

N.B

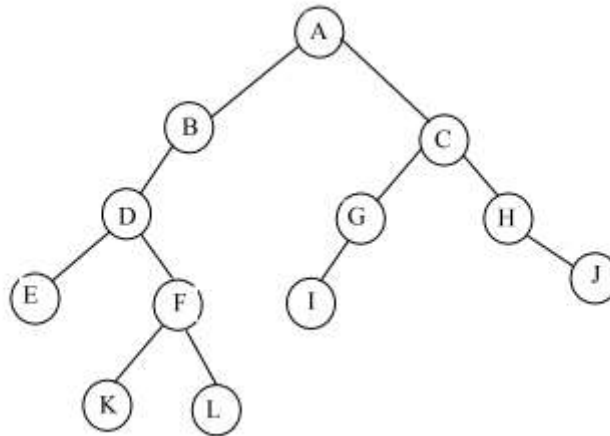
Please check whether you have got the right question paper.

- i. Solve any two questions from each section
- ii. Assume suitable data if required
- iii. All questions carry equal marks.

Section A

Q.1 a) Write binary tree ADT. Give array and linked representation for following binary tree.

10



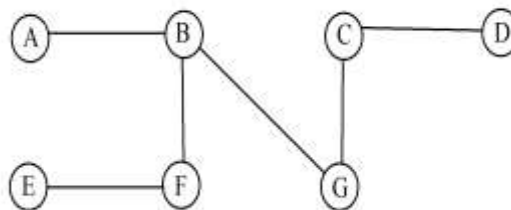
- b) Construct B-tree of order 4
Insert : 5, 3, 21, 9, 1, 13, 2, 7, 10, 12, 4, 8
Delete: 2, 21, 10, 3, 4

10

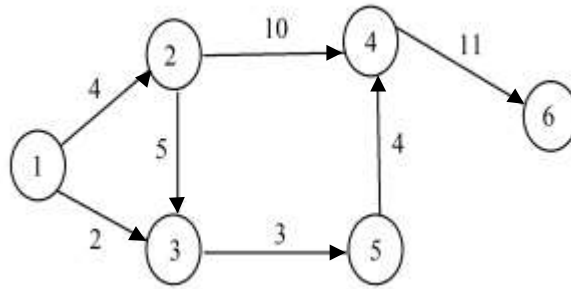
- Q.2 a) Define height balanced binary tree construct AVL tree assuming that insertions are made in the order: Uranus, Earth, Venus, Mars, Mercury, Jupiter, Saturn, Neptune.
- b) Explain graph traversal techniques with algorithm. Traverse the given graph with BFS & DFS, considering starting vertex as 'A'

10

10



- Q.3 a) Write algorithm for single source shortest path. Find shortest path from vertex 1 to remaining all vertices: 10



- b) Explain the working of quick sort. Sort the following data: e, x, a, m, i, n, a, t, i, o, n explain best case & worst case analysis of quick sort using recurrence relation. 10

Section B

- Q.4 a) Write a note on- 10
- Tree vertex splitting
 - Job sequencing with deadlines

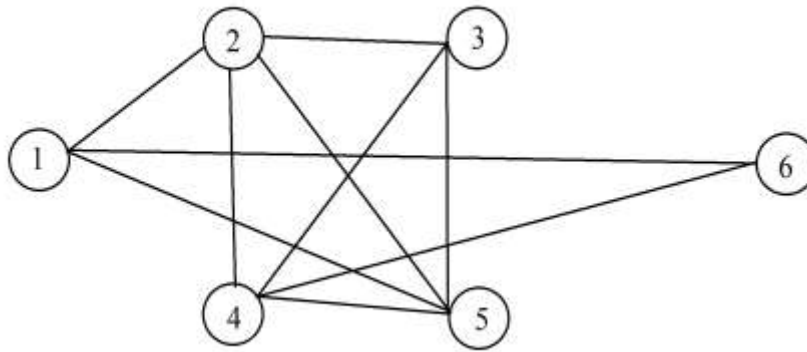
- b) Explain travelling salesperson problem and find the optimal closed tour path using dynamic programming for given cost matrix 10

	1	2	3	4
1	0	2	9	10
2	1	0	6	4
3	15	7	0	8
4	6	3	12	0

- Q.5 a) Write recursive backtracking algorithm for sum of subnet problem let $w = \{5, 7, 10, 12, 15, 18, 20\}$ & $m = 35$. Find all possible subnets of w that sum to m . 10

- b) Explain NP Hard code generation problem and NP-Hard scheduling problem 10

- Q.6 a) What is Cook's theorem? For the graph given below show that clique is directly proportional to vertex cover 10



- b) Explain mesh algorithm with computational model. Packet routing merging and sorting 10