

Note: Answer Five full questions choosing One full question from each Unit.

Unit – I

- | | |
|---|--|
| <p>1. a) Define Operating System. Explain different views of operating system.
b) Explain Multiprogramming and Multitasking systems.
c) Explain different types of services provided by Operating System.</p> <p>2. a) What are system calls? Explain different types of system calls.
b) Define process. Explain process states with diagram and process control Block.
c) What is virtual machine? Explain.</p> | Marks BT*
5 L*2
6 L2
9 L2
8 L2
7 L2
5 L2 |
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Unit – II

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| <p>3. a) What are multithreaded processes? What are their benefits? Explain different multithreading models.
b) Consider the following set of process.</p> | 10 L2 |
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<u>Process</u>	<u>Burst-time</u>	<u>Arrival Time</u>
P ₁	10	0
P ₂	6	1
P ₃	2	2
P ₄	4	3
P ₅	8	4

Draw the Gantt chart and calculate turnaround time and average waiting time for the following algorithms (1) FCFS (2) Preemptive SJF.

Which is the best scheduling algorithm for the above case?

- | | |
|---|------------------------------|
| <p>4. a) Explain the requirements of a solution to the critical section problem. Write and explain Peterson's solution.
b) Consider the following snapshot of a system.</p> | 10 L5
10 L2 |
|---|------------------------------|

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P ₀	0	0	1	2	0	0	1	2	1	5	2	0
P ₁	1	0	0	0	1	7	5	0				
P ₂	1	3	5	4	2	3	5	6				
P ₃	0	6	3	2	0	6	5	2				
P ₄	0	0	1	4	0	6	5	6				

Answer the following questions using Banker's Algorithm.

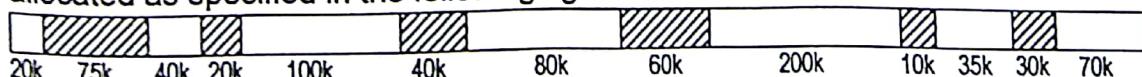
1. What is the content of the matrix Need?
2. Is the system in safe state?
3. If a request from process P₁ arrives for (0, 4, 2, 0) can the regret be granted immediately?

10 L5

10 L2

Unit – III

- | | |
|--|--|
| <p>5. a) What is a hole? Using first fit, best fit and worst-fit allocation strategies allocate holes/memory for additional requisites for 30k, 50k, 200k. Assume memory is allocated as specified in the following figures.</p> | |
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6 L3

- | | |
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| <p>b) On a paging system with a page label containing 5k entries of 16bit each, and a page size of 1024. Calculate.</p> | |
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- i) How many bits in the logical address specify page number?
- ii) How many bits in the logical address specify offset within the page?
- iii) How many bits are in a logical address?

6 L3

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16MCA302

c) What is page fault trap? With neat labeled diagram describe the procedure for handling the page fault.

SEE – November – December 2017

8 L2

6. a) Distinguish between paging and segmentation.

5 L2

b) What is thrashing? Explain.

5 L2

c) Consider the following page reference stream:

5 L2

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3

How many page faults would occur for LRU, FIFO and optimal page replacement algorithms? Assuming 3 and 5 frames. Which one of the above is most effective?

10 L3

Unit – IV

7. a) A disk drive has 5000 cylinders, numbered from 0 to 4999. The drive is currently servicing a request at cylinder 143. The queue of pending requests is: 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. What is the total distance that the disk arm moves to satisfy all the pending requests for each of the following disk scheduling algorithms?

8 L3

1) FCFS 2) SSTF 3) SCAN 4)C-SCAN

6 L2

b) Explain Swap-space management.

6 L2

c) Explain Access matrix model.

6 L2

8. a) Describe different ways of accessing information in the file system.

6 L2

b) Define file mounting and explain it.

5 L2

c) Explain different file allocation methods.

9 L2

Unit – V

9. a) List and explain different program threats.

10 L2

b) What is encryption? Explain different encryption techniques.

10 L2

10. a) Describe process management in Linux OS.

10 L2

b) With a neat labeled diagram, explain the mapping of programs into memory in Linux.

5 L2

c) Describe the device driver system of Linux with diagram.

5 L2

BT* Bloom's Taxonomy, L* Level

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NMAM INSTITUTE OF TECHNOLOGY, NITTE
(An Autonomous Institution affiliated to VTU, Belagavi)

Third Semester M.C.A. (Credit System) Degree Examinations
 November - December 2017

16MCA303 – DATA COMMUNICATION AND COMPUTER NETWORKS

Duration: 3 Hours

Max. Marks: 100

Note: Answer Five full questions choosing One full question from each Unit.

		Unit – I	Marks	BT*
1.	a) Differentiate between guided and unguided media b) Explain the characteristics of optical fiber and Twisted pair c) The spectrum of channel is between 9MHz to 10MHz and SNR is 24dB. Calculate the channel capacity. Also find how many signaling levels are required		4 10	L*2 L2
2.	a) With the help of a diagram, explain the simple communication model b) Discuss briefly about transmission impairments. c) Explain any 2 applications of TCP/IP		6 6 4	L5 L2 L2
		Unit – II		
3.	a) Compare Go-Back -N ARQ with selective Reject ARQ b) Encode 100010101011 bits using i). Bipolar AMI ii). Manchester iii). Differential Manchester c) With the help of a neat diagram , explain the HDLC frame structure		8	L4 L6
4.	a) Find CRC for the data M=1101011011 and P=10011 using digital logic circuit b) Describe the PCM with an example		10 10	L6 L2
		Unit – III		
5.	a) Discuss the various steps routing for mobile hosts b) Compare circuit switching and packet switching		10 10	L2 L4
6.	a) Write a note on Optimality Principle. b) Explain IEEE802.5 LAN standard. c) Explain FDDI.		5 7 8	L4 L2 L2
		Unit – IV		
7.	a) Explain IPV6 header format. Also write the extension header. b) Explain in brief i. Tunneling ii. Jitter control		10	L2 L2
8.	a) Discuss the techniques used in networks to achieve a good quality of service b) Differentiate between leaky bucket and token bucket algorithm. Describe both the algorithm with neat diagram		10 10	L5 L2
		Unit – V		
9.	a) Discuss the different TCP socket Primitives b) Write a short note on DNS c) Write short note on UDP Protocol		10 5 5	L5 L4 L4
10.	a) Briefly explain Berkeley Socket b) With neat diagram explain the concepts of RPC c) Describe how addressing is done in transport layer		6 7 7	L2 L5 L2

BT* Bloom's Taxonomy, L* Level

NMAM INSTITUTE OF TECHNOLOGY, NITTE
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Third Semester MCA (Credit System) Degree Examinations
November – December 2017
16MCA311 – DATA WAREHOUSING AND DATA MINING

Duration: 3 Hours

Max. Marks: 100

Note: Answer **Five full questions choosing One full question from each Unit.**

- | | Unit – I | Marks | BT* |
|------------|---|----------------|-----------------|
| 1. | a) Differentiate OLTP and OLAP.
b) Give three-tier architecture for the data warehouse.
c) Discuss the schemas used for dimensional modeling in data warehouses with examples. | 05
05
10 | L*2
L2
L3 |
| 2. | a) Define and describe an operational data store.
b) With a neat example, explain various operations one can perform on a data cube.
c) Write and explain the guidelines for data warehouse implementation. | 05
05
10 | L2
L3
L4 |
| Unit – II | | | |
| 3. | a) 'Data mining is a multidisciplinary field', Justify.
b) Define different types of attributes with example.
c) Discuss the various important preprocessing steps of data mining. | 05
05
10 | L4
L2
L2 |
| 4. | a) Compute SMC and Jaccard Coefficient for the following binary vectors.
$x=0101010001$
$y=0100011000$
b) Give the well known properties of Euclidean distance measure.
c) Explain the various types of dataset related to data mining in detail. | 05
05
10 | L3
L2
L2 |
| Unit – III | | | |
| 5. | a) Consider the following database consisting of 9 transactions | | |

S. No	Transaction ID	Items
1	101	a,b, e
2	102	b,d
3	103	b,c
4	104	a, b, d
5	105	a, c
6	106	b,c
7	107	a, c
8	108	a, b, c, e
9	109	a, b, c

- Suppose minimum support count is fixed as 2 and the minimum confidence required is 70%. Find out the frequent item-set using apriori algorithm.
- | | | |
|---|----------------------|----------------|
| b) What are Candidate Generation and Candidate Pruning? Discuss with example. | 12 | L3 |
| 6. a) Define support and confidence with an example for each.
b) Write a note on Brute-Force method.
c) Elaborate frequent itemset generation in FP-Growth algorithm with an example. | 08
05
05
10 | L2
L2
L4 |
| Unit – IV | | |
| 7. a) What is cross validation? How the classification model is evaluated using cross validation. | 05 | L3 |

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|-----------------|---|-------|
| b) | Demonstrate the working of sequential covering algorithm for a data set which contains collection of positive and negative examples. | 05 L4 |
| c) | With example, explain the Hunt's algorithm. | 10 L3 |
| 8. a) | Explain general approach to solving a classification problem. | 10 L3 |
| b) | Why do you say classifier as a supervised technique? Explain Bayrsian classifier with an example. | 10 L2 |
| Unit – V | | |
| 9. a) | Write and explain different types of Clustering techniques. | 05 L3 |
| b) | Describe basic Agglomerative Hierarchical Clustering Algorithm. | 05 L2 |
| c) | Group the following data points in which each data point denotes the x and y coordinates of a location, into three clusters using k-means clustering. Use Euclidian distance measure. Use A1, B1, and C1 as the cluster center for each cluster. A1(2,10), A2(2, 5), A3(8,4) B1(5,8) B2(7,5) B3(6,4) C1(1,2) C2(4,9) after two iterations. | 10 L4 |
| 10. a) | Illustrate DBSCAN is a simple and effective density-based clustering algorithm. | 10 L4 |
| b) | Discuss the Classification–Oriented measures of cluster validity. | 10 L3 |

BT* Bloom's Taxonomy, L* Level

NMAM INSTITUTE OF TECHNOLOGY, NITTE
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Third Semester M.C.A. (Credit System) Degree Examinations
 Make up Examinations January 2018

16MCA302 – OPERATING SYSTEMS

Duration: 3 Hours

Max. Marks: 100

Note: Answer Five full questions choosing One full question from each Unit.

Unit – I

1. a) With a neat sketch, describe the services that an operating system provides to users, processes and other systems
- b) Distinguish between client-server and peer-to-peer models of distributed systems.
- c) Differentiate between long term, short term and mid term schedulers.
2. a) What are Multiprocessor Systems? What are the advantages of multiprocessor system?
- b) Explain the purpose and importance of system calls and discuss the calls related to device management and communication briefly.
- c) Explain the various memory hierarchies with a neat block diagram.
- d) List out the data fields associated with Process Control block.

Marks BT*

08 L*2

06 L4

06 L4

04 L2

06 L5

06 L2

04 L1

Unit – II

3. a) Differentiate between a Process and a Thread.
- b) Apply the FCFS, preemptive and non-preemptive versions of Shortest Job First and Round Robin (time-slice2) scheduling algorithms for the four processes given. Show the seedling using Gantt chart. Compare their average turn around and wait time.

Process	Arrival time	Burst time
P1	0	10
P2	1	6
P3	2	12
P4	3	15

12 L3

04 L2

- c) What are the various methods for Handling Deadlocks? Explain.
- a) Consider the following snapshot of the system

	Allocation	Max	Available
P0	0012	0012	1520
P1	1000	1750	
P2	1354	2356	
P3	0632	0652	
P4	0014	0656	

Answer the following based on banker's algorithm.

- i) Give the safety algorithm
- ii) . What is the content of need matrix?
- iii) Is the system in a safe state?
- iv) Suppose a request from process P1arrives for(0,4,2,0) Can the request be granted immediately?
- b) Discuss what a critical section is and what requirements must a solution to the critical solution problem satisfy?

14 L3

06 L2

Unit – III

5. a) Compare which among the first fit, best fit and worst fit. algorithms make the most efficient use of memory .Given memory partitions of 500 KB, 100 KB, 300 KB, 200 KB and 600 KB in order, how would each of the first-fit, best-fit, and worst-fit algorithms place processes of size 418 KB, 202 KB, 506 KB, 112 KB, and 95 KB (in order)? 06 L4
 b) Distinguish between Logical and Physical address space. 04 L4
 c) Describe the various techniques for structuring the page table in a page memory management scheme 10 L2
6. a) Evaluate the maximum number of pages needed If a system supports 16 bit address line and 1K page size 04 L5
 b) Given that the main memory is composed of three page frames for public use and that a program requests pages in the follow order. A, B, A, C, D, A, B, D, B, A, C, A, C, D, Use FIFO and LRU page removal algorithms and do a page fault analysis. 08 L4
 c) Consider the following segment table:

Segment	Base	Length
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

What are the physical addresses for the following logical addresses?

- a. 0,430 b. 2,500 c. 3,367 d. 4,102

08 L3

Unit – IV

7. a) Compare the various file access methods. 08 L5
 b) Illustrate the various file allocation methods. 12 L3
 8. a) Differentiate bit map-based allocation of blocks on disk and a free block list 06 L4
 b) Describe any four common file types. Write the various functions associated with the types. 06 L2
 c) Assume the head of a moving disk with 200 tracks, numbered 0....199, is currently serving a request at track 92, and has just finished a request at track 85 and the queue request is kept in the FIFO order, 109, 148, 89, 72, 126, 142. What is the total head movement needed to satisfy these requests for the SCAN,C-SCAN,LOOK and C-LOOK disk scheduling algorithms? 08 L3

Unit – V

9. a) Explain the various components of a Linux System. 10 L2
 b) Explain system and network threats. 10 L2
 10. a) Explain in detail the user authentication. 10 L2
 b) What are the main components of the Linux modules support Explain . 10 L2

* Bloom's Taxonomy, L* Level

USN

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NMAM INSTITUTE OF TECHNOLOGY, NITTE
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Third Semester M.C.A. (Credit System) Degree Examinations

Make up Examinations – January 2018

16MCA303 – DATA COMMUNICATION AND COMPUTER NETWORKS

Duration: 3 Hours

Max. Marks: 100

Note: Answer Five full questions choosing One full question from each Unit.

Unit – I

- | | |
|--|-------|
| a) List and explain the main design issues for network layers. | 8 L4 |
| b) The spectrum of the channel is between 3MHz to 4 MHz the SNR is 24dB. Determine the capacity of channel. | 4 L5 |
| c) What is the purpose of cladding in an optical fibre? Write a note on the modes of transmission in an optical fibre. | 8 L1 |
| a) Illustrate TCP/IP protocol architecture with a neat diagram. | 10 L2 |
| b) Explain the following terms
i.Attenuation ii.B8ZS iii.NRZ iv.Thermal Noise | 10 L5 |

Unit – II

- | | |
|---|-------|
| a) Distinguish between synchronous and asynchronous transmission. | 6 L4 |
| b) With a help of neat diagram explain the basic characteristics of HDLC frame structure. | 8 L2 |
| c) How selective reject ARQ is different from Go Back N ARQ? | 6 L1 |
| a) Consider the pattern 110101 and message 1010001101. Determine FCS and compute CRC using modulo 2 arithmetic. | 10 L5 |
| b) With a neat diagram explain error correction process. Also explain hamming distance for error correction. | 10 L2 |

Unit – III

- | | |
|---|-------|
| a) Discuss Fiber Distributed Data Interface transmission with frame structure | 8 L2 |
| b) Interpret the flooding algorithm. | 8 L2 |
| c) Explain optimality principle . | 6 L2 |
| a) Briefly explain link state routing algorithm. | 10 L2 |
| b) Discuss the frame structure of IEEE802.5 LAN standard. | 10 L2 |

Unit – IV

- | | |
|---|-------|
| a) Draw and explain IPV4 header structure. | 8 L5 |
| b) Illustrate the techniques used in networks to achieve a good quality of service. | 12 L2 |

P.T.O.

16MCA303

Make up – January 2018

8. a) What is congestion? What are the congestion prevention policies at various level?
b) Discuss Jitter control.
c) Define fragmentation. Briefly explain the types of fragmentation with necessary diagram.

Unit – V

- a) What is remote procedure call? With a neat diagram explain the steps in making remote procedure call.
b) Summarize i. Crash recovery ii Multiplexing

a) Draw and explain the important components of TCP header segment
b) Discuss the different TCP socket primitives.

Bloom's Taxonomy, L* Level

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NMAM INSTITUTE OF TECHNOLOGY, NITTE
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Third Semester M.C.A. (Credit System) Degree Examinations
Make up Examinations – January 2018

16MCA311 – DATA WAREHOUSING AND DATA MINING

Duration: 3 Hours

Max. Marks: 100

Note: Answer **Five full** questions choosing **One full question from each Unit.**

- | | Unit – I | Marks | BT* |
|-------|--|-------|----------------|
| 1. a) | What is ODS and what is it used for? | 5 | L ¹ |
| b) | Differentiate between MOLAP and ROLAP. | 5 | L ² |
| c) | Discuss the operation roll up, drill down, slice and dice. | 10 | L ³ |
| 2. a) | Describe the DW system. | 5 | L ² |
| b) | Explain the star schema technique of modeling of a data warehouse. | 5 | L ³ |
| c) | What are the steps involved in building a data warehouse? | 10 | L ¹ |

Unit – II

- | | | | |
|-------|--|----|----------------|
| 3. a) | Briefly explain data mining with respect to KDD. | 8 | L ² |
| b) | Explain the four core data mining tasks. | 12 | L ³ |
| 4. a) | Compute SMC between two data objects having binary attributes.
$X=(1,0,0,0,0,0,0,0,0)$
$Y=(0,0,0,0,0,1,0,0,1)$ | 5 | L ⁴ |
| b) | Elaborate the concept of Aggregation. | 5 | L ² |
| c) | Explain the three groups of data set. | 10 | L ³ |

Unit – III

5. a) Generate the frequent item set using Apriori algorithm, for the following data where minimum support count=3

Transaction id	Items
100	Bread, Cheese, Eggs, Juice
200	Bread, Cheese, Juice
300	Bread, Milk, Yogurt
400	Bread, Juice, Milk
500	Cheese, Juice, Milk

- | | | | |
|-------|---|----|----------------|
| b) | Explain the concept of support counting and confidence with example. | 10 | L ³ |
| 6. a) | How do you generate frequent item sets from an FP-tree? Explain with the example. | 10 | L ³ |
| b) | Explain the concept of Candidate Generation and Candidate Pruning. | 5 | L ² |
| c) | How do you represent market basket data in a binary format? Explain it with an example. | 5 | L ² |

Unit – IV

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|-------|--|----|----------------|
| 7. a) | Write a note on general approach to solve a classification problem. | 8 | L ² |
| b) | Explain the four methods commonly used to evaluate the performance of a classifier. | 12 | L ³ |
| 8. a) | How do you construct a decision tree using Hunts algorithm? Explain it with an example. | 10 | L ⁴ |
| b) | Give a high-level summary of k-nearest neighbor classification along with the characteristics of nearest neighbor classifiers. | 10 | L ⁴ |

Unit – V

- | | | | |
|--------|--|----|----------------|
| 9. a) | What is cluster analysis? Explain the different types of clusters. | 12 | L ³ |
| b) | Describe the DBSCAN Algorithm. | 8 | L ³ |
| 10. a) | Explain the commonly used classification oriented measures to evaluate the performance of a cluster model. | 10 | L ³ |
| b) | Explain the basic k-means algorithm. | 10 | L ³ |

BT* Bloom's Taxonomy, L* Level

NMAM INSTITUTE OF TECHNOLOGY, NITTE

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Fourth Semester M.C.A. (Credit System) Degree Examinations

April – May 2018

16MCA401 – ENTERPRISE JAVA

Duration: 3 Hours

Max. Marks: 100

*Note: Answer Five full questions choosing One full question from each Unit.***Unit – I**

1. a) Explain Java Networking. Illustrate with an example Java Socket Programming. Marks 10 BT* 10 L*4
 b) Write short note on
 i) Inet Address
 ii) URL 10 L2
2. a) Discuss the difference between Socket and Server Socket classes, and Datagram Socket and Datagram Packet classes. 10 L4
 b) Describe the use of two RMI objects that provides remote communication between the applications. 10 L4

Unit – II

3. a) Write short note on:
 i) J Button
 ii) J Text Field
 iii) J Combo Box
 iv) J check box 10 L2
 b) Illustrate with a suitable example the use of JTree and JTable. 10 L4
4. a) Discuss the difference between statement and prepared statement interface. Illustrate with simple example batch processing in JDBC. 10 L4
 b) Explain types of JDBC drivers, their advantages and disadvantages. 10 L4

Unit – III

5. a) Write short note on
 i) Class Introspection
 ii) Bean Development kit (BDK)
 iii) JAR files 10 L2
 b) Describe the steps to implement Bound property support within a Bean. 10 L4
6. a) Discuss the life cycle of a servlet. Explain web server and web container. 10 L4
 b) Explain the use of javax.servlet package and javax.servlet.http package. Discuss different interfaces of javax.servlet package. 10 L4

Unit – IV

7. a) Explain the types of techniques used in session tracking. 10 L4
 b) Discuss various advantages of JSP over servlet. 10 L2
8. a) Write a short note on
 i) JSP Tags
 ii) Tomcat 10 L2
 b) Explain the use of cookies. Illustrate with an example the use of cookies in a web application. 10 L4

Unit – V

9. a) Discuss the difference between statefull and stateless session beans. Give an example for statefull session bean. 10 L4
 b) Discuss the use of Entity Manager in the context of EJB. Give an example. 10 L4
10. a) Describe the states of a J2ME application with a suitable example. 10 L4
 b) Write a note on configuration and profiles. 10 L4

BT* Bloom's Taxonomy, L* Level

NMAM INSTITUTE OF TECHNOLOGY, NITTE

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Third Semester M.C.A. (Credit System) Degree Examinations
Supplementary Examinations – July 2018**16MCA302 – OPERATING SYSTEMS**

Max. Marks: 100

Duration: 3 Hours

Note: Answer Five full questions choosing One full question from each Unit.

Unit – I

- 1 a) What is a system call? Illustrate the use of system calls in writing a program to read data from one file and write them to another file. 10 L*2
- b) Describe the differences among short-term, medium-term, and long-term schedulers. 8 L2
- c) Briefly explain the features of any two special purpose systems. 4 L2
- 2 a) With a neat diagram explain the layered approach design of an operating system. State its advantages. 6 L2
- b) Interpret virtual machines and list its benefits. 8 L2
- c) Describe the various models of Interprocess communication in an operating system. 6 L2

Unit – II

- 3 a) How are signals handled in multithreaded programs? 6 L2
- b) Name the various criteria for evaluating scheduling algorithms. 4 L1

Assume you have the following jobs to execute with one processor. And Consider the set of Processes, Priorities, and CPU burst time as given in table

Process	Burst time	Priority
1	10	3
2	1	1
3	2	3
4	1	4
5	5	2

Draw a Gantt chart and calculate average waiting time and turnaround time of each process, Using FCFS, SJF, Priority and RR scheduling algorithms.
(Time quantum=1)

10 L3

- 4 a) What is critical section problem? Give the general solution for it. 6 L1
- b) Define readers-writers problem. 4 L2
- c) Consider the following Snapshot of the system.

	Allocation	Max	Available
	ABCD	ABCD	ABCD
P0	0012	0012	1520
P1	1000	1750	
P2	1354	2356	
P3	0632	0652	
P4	0014	0656	

Answer the following questions using Bankers Algorithm.

- i) What is the content of Need Matrix?
ii) Is the system in Safe state?
iii) If request from P1 arrives for (0 4 2 0), can request be granted immediately?

10 L3

Unit - III

Supplementary – July 2018

- a) Swapping increases the operating system overhead .Justify 5 L5
 b) Explain the Paging process 8 L2
 c) Describe the Hashed Page tables in Paging 7 L2
- a) Compare global and local replacement schemes of frame allocation. 5 L5
 b) Consider a reference string 0,1,7,2,3,2,7,1,0,3 with four page frames. How many page faults occur using page replacement algorithms: (i) FIFO (ii) LRU?Also describe the drawbacks of these algorithms. 10 L3
 c) Compare external and internal fragmentation. How compaction can solve the problem of external fragmentation? Explain. 5 L5

Unit - IV

- a) Describe the Tree structure directories and acyclic graph directory structures. 10 L2
 b) List the different File Attributes. 5 L1
 c) Outline the Indexed Allocation of disk space. 5 L2
- a) Suppose a disk drive has 200 cylinders numbered 0 to 199 .the queue of pending request in FIFO order is 98, 183, 37, 122, 14, 124, 65, 67. Starting from the 53 head position, what is the total distance the disk arm moves to satisfy all the pending requests for each of the following disk scheduling algorithms?
 i)FCFS ii)SSTF iii)SCAN iv)C-SCAN 12 L3
 b) Describe the Domain Structure of a system. 3 L2
 c) Represent the view of Access Matrix in the system. 5 L3

Unit - V

- a) List the Security Violation Categories and Security violation methods. 10 L1
 b) Describe the Asymmetric encryption Techniques. 10 L2
- a) Describe the components of the Linux System. 10 L2
 b) Explain the Virtual File system and Linux Proc file systems. 10 L2

Bloom's Taxonomy, L* Level

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Third Semester M.C.A. (Credit System) Degree Examinations

Supplementary Examinations – July 2018

16MCA303 – DATA COMMUNICATION AND COMPUTER NETWORKS

Max. Marks: 100

Duration: 3 Hours

Note: 1) Answer Five full questions choosing One full question from each Unit.
 2) Answer the questions briefly and draw the figures wherever it is necessary.

Unit – I

- | | |
|---|--|
| 1. a) What is the need for communication model in computer networks? Explain key features of communication models.
b) How different types of transmission Impairments effects on communication networks? Explain.
c) Calculate the maximum data rate possible for a satellite TV channel with a signal to noise ratio of 20 dB and video bandwidth of 10 MHz. | 8 L [*] 1 |
| 2. a) Distinguish between TCP/IP model and ISO-OSI reference model.
b) Explain the features of coaxial cable and Optical Fiber for communication.
c) Consider a noiseless channel with bandwidth of 3000 Hz transmitting a signal with eight signal levels. Calculate the maximum bit rate possible over this channel. | 8 L [*] 2
8 L [*] 3
8 L [*] 4
4 L [*] 1
4 L [*] 2
4 L [*] 3 |

Unit – II

- | | |
|---|--|
| 3. a) With an example for each, explain digital data to analog signal encoding techniques.
b) With an example, explain the Go-Back N ARQ with two bit sequence number for following scenarios.
i) The Frame is lost
ii) Acknowledgment if lost | 10 L [*] 2
10 L [*] 2
10 L [*] 3
10 L [*] 2 |
| 4. a) Calculate CRC for the given data M=100110000111 using CRC-8 polynomial equation (x^8+x^2+x+1)
b) Explain with an example, advantages of Selective Repeat ARQ compared to other two ARQ protocols. | 10 L [*] 2 |

Unit – III

- | | |
|---|---|
| 5. a) Explain the token ring standard IEEE 802.5 with respect to following functions.
(i) Token passing and packet transmission
(ii) Recovery process when token is lost.
b) Explain the routing techniques used for mobile hosts. | 10 L [*] 1
10 L [*] 1
10 L [*] 2 |
| 6. a) Explain Multicast routing. What are its advantages and disadvantages?
b) Consider the network shown in Figure 1. Calculate the route for all nodes using distance vector routing algorithm. | 10 L [*] 2 |

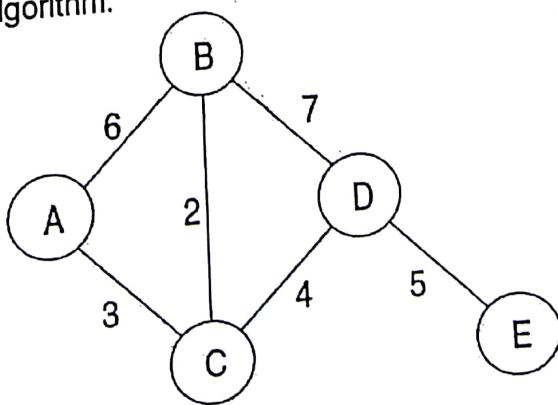


Figure 1

10 L

P.T.O.

16MCA303

Supplementary – July 2018

Unit – IV

- | | | | |
|----|--|----|----|
| 1. | a) What is the need for fragmentation in network layer? Explain. | 5 | L1 |
| | b) What is tunneling? Explain how it works? | 5 | L1 |
| | c) Explain load shedding and jitter control. | 5 | L1 |
| | d) What are the requirements for providing Quality of Service? Explain. | 5 | L1 |
| 8. | a) Explain various congestion prevention policies used in transport layer. | 10 | L2 |
| | b) Explain Integrated and differentiated services. | 10 | L2 |

Unit – V

- | | | | |
|-----|--|----|----|
| 9. | a) Explain TCP connection establishment and connection release process in transport layer. | 10 | L2 |
| | b) Explain UDP protocol along with its header format. | 10 | L2 |
| 10. | a) With an example, explain flow control and buffering in transport layer. | 10 | L2 |
| | b) Write a note on
i) Remote procedure call
ii) Domain Name System | 10 | L2 |

BT* Bloom's Taxonomy, L* Level

NMAM INSTITUTE OF TECHNOLOGY, NITTE
(An Autonomous Institution affiliated to VTU, Belagavi)
Third Semester M.C.A. (Credit System) Degree Examinations
Supplementary Examinations – July 2018
16MCA311 – DATA WAREHOUSING AND DATA MINING

USN

Duration: 3 Hours

Max. Marks: 100

Note: Answer **Five full questions choosing One full question from each Unit.**

- | | Marks | BT* |
|--|--------------|----------------|
| 1. a) What is Data ware house? List the difference between operational database systems and data warehouses. | 6 | L ² |
| b) Discuss in detail about star, snow flake and fact constellation schemas in detail. | 10 | L3 |
| c) Briefly explain ETL. | 4 | L2 |
| 2. a) With a neat diagram, explain in detail about three-tier data warehousing architecture. | 10 | L4 |
| b) Explain data ware house implementation steps. | 10 | L3 |

Unit – II

- | | | |
|--|----|----|
| 3. a) Define data mining. Explain the challenges that motivated the development of data mining. | 6 | L2 |
| b) Explain the various types of data sets. | 10 | L3 |
| c) What is sampling? Explain the different types of sampling approaches. | 4 | L2 |
| 4. a) Explain the process of knowledge discovery in databases. | 6 | L2 |
| b) Discuss different data mining tasks in detail. | 10 | L2 |
| c) Define the data preprocessing. Explain dimensionality reduction with respect to data preprocessing. | 4 | L2 |

Unit – III

- | | | |
|--|----|----|
| 5. a) Write the Apriori principle and explain the pseudo code for the frequent itemset generation part of the Apriori algorithm. | 10 | L3 |
| b) Discuss the FP growth algorithm in detail. | 10 | L3 |
| 6. a) Briefly explain the maximal frequent item sets and closed frequent item sets. | 6 | L2 |
| b) Construct the FP tree for the following transaction data set and explain. | | |

TID	items
1	{a,b}
2	{b,c,d}
3	{a,c,d,e}
4	{a,d,e}
5	{a,b,c}
6	{a,b,c,d}
7	{a}
8	{a,b,c}
9	{a,b,d}
10	{b,c,e}

10 L4
4 L3

- c) Illustrate the brute force method with reference to the association analysis.

P.T.O.

16MCA311

Supplementary – July 2018

- Unit – IV**
1. a) What is decision tree? Write an algorithm for decision tree induction. 10 L2
b) What are the methods used for improving accuracy of classification methods. 10 L3
Mention the evaluation criteria for classification methods.
8. a) Explain building of decision tree with Hunt's algorithm. Explain the different characteristics of decision tree induction. 10 L2
b) Explain the K-nearest neighbour classification algorithm with an example. 10 L3
- Unit – V**
9. a) What is cluster analysis? Explain agglomerative clustering method in detail. 7 L2
b) Describe DBSCAN method in detail. 7 L2
c) Discuss the following terms.
i) Entropy 6 L3
ii) Purity
- a) Explain the K-Means clustering method in detail, with an example. 8 L3
b) Explain the desired features of cluster analysis. 7 L3
c) Describe the following approaches to clustering methods.
i) Partitioning method. 5 L2
ii) Hierarchical method.

* Bloom's Taxonomy, L* Level

NMAM INSTITUTE OF TECHNOLOGY, NITTE
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Fourth Semester M.C.A. (Credit System) Degree Examinations
Make up / Supplementary Examinations – July 2018

16MCA401 – ENTERPRISE JAVA

Duration: 3 Hours

Max. Marks: 100

Note: Answer Five full questions choosing One full question from each Unit.

Unit – I

- | | Marks | BT* |
|--|-------|-----|
| 1. a) Write a client/server program using socket API to accept a number on the client side and send it to the server where the factorial of the number is calculated and display the factorial on the client side. | 10 | L*3 |
| b) Describe the use of InetAddress and URL classes with suitable examples. | 10 | L4 |
| 2. a) Briefly discuss the API available in Java to send and receive datagrams through the network. Illustrate with a suitable example. | 10 | L4 |
| b) Write an application using RMI with a remote method to calculate simple interest for which input is accepted on the client side. | 10 | L3 |

Unit – II

- | | | |
|---|----|----|
| 3. a) Create a window to accept the day of the week in numeric form and on clicking on a button the corresponding day of the week in text form should be displayed. | 10 | L3 |
| b) Describe the different types of JDBC drivers, | 5 | L2 |
| c) With a suitable example describe the use of Callable Statement. | 5 | L2 |
| 4. a) Differentiate between Statement and PreparedStatement objects. With a simple code snippet, illustrate the use of both objects. | 10 | L4 |
| b) With a suitable example describe how batch process can be implemented using JDBC. | 5 | L4 |
| c) Write a program to illustrate the use of JTree. | 5 | L3 |

Unit – III

- | | | |
|--|----|----|
| 5. a) Briefly discuss the features of a Java Bean. | 5 | L2 |
| b) Briefly discuss the lifecycle of a servlet. | 5 | L2 |
| c) Write the html as well as the Http servlet to accept a colour from the client and change the background colour of the web page. | 10 | L3 |
| 6. a) Create a Java Bean which has a property called amount. When the amount is changed, the listener should automatically calculate commission as 2% of the amount. | 12 | L3 |
| b) Differentiate between GenericServlet and HttpServlet. Illustrate HttpServlet with a suitable example. | 8 | L4 |

Unit – IV

- | | | |
|---|----|----|
| 7. a) Briefly discuss the different types of JSP elements. Provide suitable examples for each. | 10 | L2 |
| b) What is session tracking? With a suitable example explain how session objects are created and used in JSP. | 10 | L4 |
| 8. a) Describe the use of Struts 2. Discuss its architecture with a simple diagram. | 10 | L4 |
| b) Briefly discuss some of the basic elements of JSF. | 10 | L2 |

16MCA401

Make up / Supplementary – July 2018
Unit – V

- | | | |
|--|----|----|
| a) Describe and discuss the use of state full session bean with a suitable example. | 10 | L4 |
| b) Write a brief note on configuration and profile in the context of J2ME. | 10 | L2 |
| a) Discuss the different types of EJB components. Give an example for a persistent EJB component. | 10 | L4 |
| b) Describe the different types of Command Objects. Illustrate with a suitable example how actions for Commands are handled. | 10 | L4 |

Bloom's Taxonomy, L* Level
