SE

Subject code: 20CS3103

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES
ONGOLE CAMPUS
E3 (2018 BATCH) SEM 1 MID 1 EXAMINATIONS, OCTOBER 2022(AY: 2022-23)

SUBJECT: **Software Engineering** DATE: 22 .10.2022 (AN)

Time: 1hrs BRANCH: CSE Max. 15 Marks

Answer all the following questions $3 \times 5\ M = 15M$

1. (a). Explain about SDLC with neat diagram?

   (OR)

   (b). Explain about Exploratory VS Model style of development?

2. (a). Explain the Different Characteristics of good SRS document?

   (OR)

   (b). Explain about Heuristic Estimation Technique with examples?

3. (a). Explain about waterfall and Code and Fixed process models with neat diagrams?

   (OR)

   (b). Explain the Step-by-Step Process to Calculate the FPC and Productivity, Cost per Function?

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RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES
ONGOLE CAMPUS

E3 (2018 BATCH) SEM 1 MID 2 EXAMINATIONS, DECEMBER 2022(AY: 2022-23)

SUBJECT: **Software Engineering** DATE: 09.12.2022 (FN)

Time: 1hrs BRANCH: CSE Max. 15 Marks

Answer all the following questions 3 ×5 M = 15M

1. (a). Explain about Behavioral design pattern and different types of Behavioral design patterns?

   (OR)

   (b). Explain about different Software Design Strategies?

2. (a). Explain about coding and Standard guidelines of a coding?

   (OR)

   (b). What is code review? Explain Code walk through and standard guidelines of code walk through?

3. (a). Explain about sequence diagram and draw a sequence diagram for withdrawing money from the ATM?

   (OR)

   (b). Explain about Use Case diagram and draw a Use Case diagram for withdrawing money from the ATM?

OS

Subject code: 20CS3101

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES
ONGOLE CAMPUS

E3 (2018 BATCH) SEM 1 MID 1 EXAMINATIONS, OCTOBER 2022(AY: 2022-23)

SUBJECT: **Operating Systems** DATE: 21.10.2022(FN)

Time: 1hrs BRANCH: CSE Max. 15 Marks

Answer all the following questions $3 \times 5\ M = 15M$

1. (a). What is an operating system. Explain the Dual-Mode operation of an operating system.

(OR)

(b). What is a system call? Explain different categories of System calls. (1+4)

2. (a). Explain the different services provided by the operating system. (5)

(OR)

(b). Define a process. Explain different process states with neat sketch. (1+4)

3. (a). What is PCB? What does PCB contain, explain them. (1+4)

(OR)

(b). Consider the following four processes represented as (Process, Arrival Time, Burst Time) with the length of CPU burst in milliseconds. { (P1, 0, 10), (P2, 1, 7), (P3, 2, 13), (P4, 3, 11) }. Using preemptive SJF scheduling: i) Draw Gantt chart. ii) Calculate average waiting time, iii) Calculate average turnaround time. (5)

Subject code:20CS5101

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES
ONGOLE CAMPUS

E3 (2018 BATCH) SEM 1 MID II EXAMINATIONS, DECEMBER2022(AY: 2022-23)

SUBJECT: Operating Systems DATE:08 .12.2022(FN)

Time: 1hr BRANCH:CSE Max. 15 Marks

Instructions: Answer all the following questions $3 \times 5\ M = 15M$

1. (a).Why We Need Process Synchronization? Explain the Concept of "Critical Section" with an example? **(OR)** (b). Explain **Peterson's Solution** and **Test and set Method** to solutions of Critical Section?
2. (a).What is Semaphore? Explain Reader Writer Problem along with Semaphore solution?(OR) **(b).**What is Dead Lock & write Necessary conditions for deadlock? What do you understand the term monitor?
3. (a).Write a notes on Dining Philosopher Problem? (OR) (b).Consider a system with four processes Po through P3 and four resource types A,B, C and D. Resource type A has 6 instances, resource type B has 9 instances, resource type C has 6 instances, and D has 9 instances. Suppose that, at time T_0, the following snapshot of the system has been taken: Is the system in safe state or not? Can a request of P3 for (1,1,1,1) be granted?

	ALLOCATED				MAX			
	A	B	C	D	A	B	C	D
P0	2	3	2	3	3	4	4	5
P1	1	1	0	2	2	2	2	2
P2	1	2	0	1	1	2	2	1
P3	0	1	1	0	2	2	4	3

CN

Subject code: 20CS3102

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES
ONGOLE CAMPUS
E3 (2018 BATCH) SEM 1 MID 1 EXAMINATIONS, OCTOBER 2022(AY: 2022-23)

SUBJECT: Computer Networks DATE: 21.10.2022 (AN)

Time: 1hrs BRANCH: CSE Max. 15 Marks

Answer all the following questions 3 ×5 M = 15M

1. (a). Define Modulation and write the need for Modulation? Explain about any three Intermediate devices with their Functionalities.

   (OR)

   (b). Briefly explain about OSI reference model in proper order.

2. (a). Explain any four networking topologies.

   (OR)

   (b). Briefly explain about unshielded twisted pair (UTP).

3. (a). Define Error Detection and Calculate CRC using polynomial long division method for the following data: M(x) = 10110111 C(x) = 110011 (Both at Sender and Receiver Side)

   (OR)

   (b). Eleven messages bits need to be transmitted using a Hamming code. How many parity bits are needed to ensure that the receiver can detect and correct error? Show the bit pattern transmitted for the message 11010011001. Assume that even parity is used in the hamming code.

Subject code: CS3102

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES
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E3 (2018 BATCH) SEM 1 MID 1 EXAMINATIONS, OCTOBER 2022(AY: 2022-23)

SUBJECT: Computer Networks — DATE: 08.12.2022 (AN)

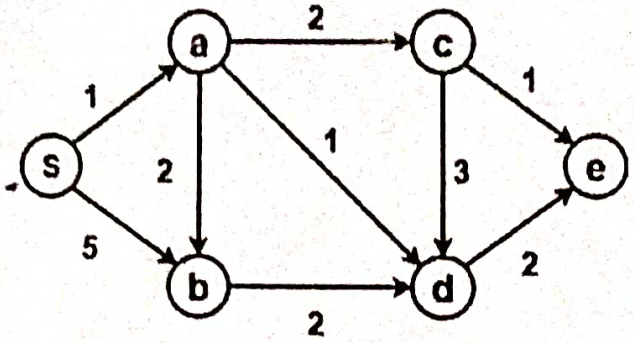
Time: 1hrs — BRANCH: CSE — Max. 15 Marks

Answer all the following questions — 3 ×5 M = 15M

1. (a). Explain with an example ALOHA, SLOTTED ALOHA and CSMA Protocol.

(OR)

(b).Define Routing? Using Dijkstra's Algorithm, find the shortest distance from source vertex 'S' to remaining vertices for the following Network.



2. (a).What is the difference between host address, subnet mask and gateway address? Choose the suitable IP and construct a network with minimum of 6 subnets, each subnet should contain minimum of 70 end systems.

Note: Label all the network address, Broad cast address and Usable Address range.

(OR)

(b). Explain the congestion control algorithm used to improve QOS of the computer networks.

3. (a).Explain with an example connection establishment and connection release in TCP And list out the services of transport layer.

(OR)

(b). Explain in detail about TCP header and write the difference between TCP and UDP protocols.

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DM

Subject code:20CS3121

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES
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E3 (2018 BATCH) SEM 1 MID 1 EXAMINATIONS, OCTOBER 2022(AY: 2022-23)

SUBJECT: DATA MINING DATE: 22.10.2022 (AN)
Time: 1hrs BRANCH: CSE Max. 15 Marks

Answer all the following questions 3 ×5 M = 15M

1. (a). Define Data mining. Explain KDD s ps with neat diagram.

(OR)

(b). Explain Data cleaning process and methods with example.

2. (a). Write about Data Warehouse and Operational database system.

(OR)

(b). Explain Data Warehouse Implementation.

3. (a). What is Market-Basket analysis? Explain with example.

(OR)

(b). Explain Multidimensional data cube model with example and neat diagram.

Subject code:CS3121

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES
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E3 (2018 BATCH) SEM 1 MID 1 EXAMINATIONS, OCTOBER 2022(AY: 2022-23)

SUBJECT: DATA MINING DATE: 09.12.2022 (AN)

Time: 1hr BRANCH: CSE Max. 15 Marks

Answer all the following questions 3 ×5 M = 15M

TID	*items_bought*
T100	{M, O, N, K, E, Y}
T200	{D, O, N, K, E, Y}
T300	{M, A, K, E}
T400	{M, U, C, K, Y}
T500	{C, O, O, K, I, E}

min_sup=60% and min_confidence = 80%.

1. (a). Find all the frequent item-sets and confidence using Apriori algorithm.

(OR)

(b). Find all the frequent items sets using FP growth algorithm.

2. (a). Briefly outline the major steps of decision tree classification.

(OR)

(b). Association rule mining often generates a large number of rules. Write effective methods that can be used to reduce the number of rules and find strongest associations.

3. (a). Write about classification and rule-based classification with an example.

(OR)

(b). Predict a class label using Bayesian classification for the below sample X from the data set.

X= {age = Senior, Income = High, Student = Yes, Credit-rating = Fair}.

Class-Labeled Training Tuples from the *AllElectronics* Customer Database

RID	*age*	*income*	*student*	*credit_rating*	*Class: buys_computer*
1	youth	high	no	fair	no
2	youth	high	no	excellent	no
3	middle_aged	high	no	fair	yes
4	senior	medium	no	fair	yes
5	senior	low	yes	fair	yes
6	senior	low	yes	excellent	no
7	middle_aged	low	yes	excellent	yes
8	youth	medium	no	fair	no
9	youth	low	yes	fair	yes
10	senior	medium	yes	fair	yes
11	youth	medium	yes	excellent	yes
12	middle_aged	medium	no	excellent	yes
13	middle_aged	high	yes	fair	yes
14	senior	medium	no	excellent	no

MFDS

Subject code: 20CS3104

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES

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E3 (2018 BATCH) SEM 1 MID 1 EXAMINATIONS, OCTOBER 2022(AY: 2022-23)

SUBJECT: Mathematical Foundation for Data Science DATE: 22.10.2022 (AN)

Time: 1hrs BRANCH: CSE Max. 15 Marks

Answer all the following questions $3 \times 5\ M = 15M$

1. (a). Define vector space and vector subspace? Explain the properties of vector space?

(OR)

(b). Find the basis and dimension for the four subspaces associated with

$$A = \begin{bmatrix} 1 & 2 & 0 & 1 \\ 0 & 1 & 1 & 0 \\ 1 & 2 & 0 & 1 \end{bmatrix}$$

2. (a). Explain linear transformations of the plane by four matrices with figure?

(OR)

(b). Calculate Eigen values and Eigen vectors for $A = \begin{bmatrix} 3 & 1 \\ 1 & 3 \end{bmatrix}$.

3. (a). Explain norm of vector, inner product, with examples? Define orthogonality, orthogonal complement?

(OR)

(b). Find the vector orthogonal to both u = (-6,4,2) and v = (3,1,5)

Subject code: 20CS3104

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES
ONGOLE CAMPUS
E3 (2018 BATCH) SEM 1 MID II EXAMINATIONS, DECEMBER 2022(AY: 2022-23)

SUBJECT: Mathematical Foundation for Data Science DATE: 09.12.2022 (AN)
Time: 1hrs BRANCH: CSE Max. 15 Marks

Answer all the following questions 3 ×5 M = 15M

1. (a). Define Jordan Canonical Form? Find the Jordan Canonical Form (J) of the given matrix A.

$$A = \begin{bmatrix} 0 & 1 \\ -1 & -2 \end{bmatrix}$$

(OR)

(b). Explain Principal Component Analysis algorithm and Linear Discriminant Analysis algorithm?

2. (a). Define Directional Derivative? Find the directional derivative of $f(x, y, z) = x^2yz$ in the direction $4i - 3k$ at the point $p(1, -1, 1)$.

(OR)

(b). Define Gradient, Jacobian, Hessian, convex set and convex function?

3. (a). Explain Singular Value Decomposition and various applications of the SVD.

(OR)

(b). Find the orthonormal basis for subspace R^4 whose generators are $v_1 = (1,1,1,1)$ and $v_2 = (1,2,4,5)$, $v_3 = (1, -3, -4, -2)$ using Gram-Schmidt orthonormalization method.