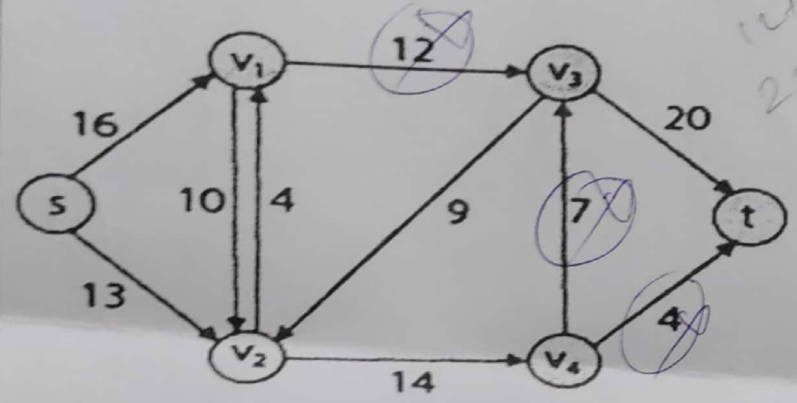
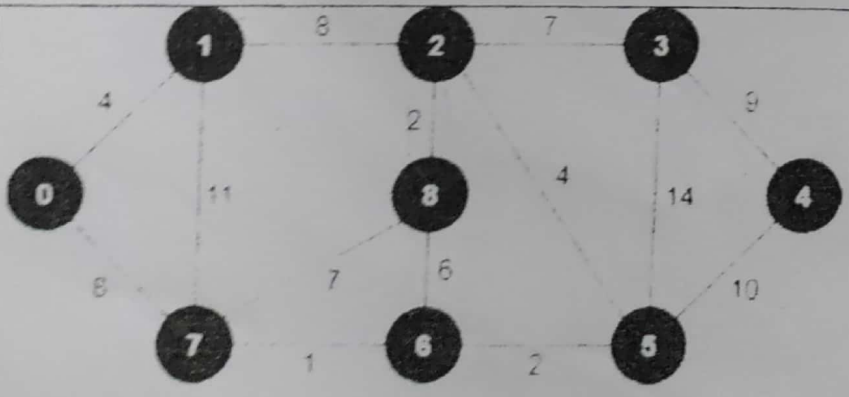
VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE
[Central Technological Institute, Maharashtra State]
Matunga, Mumbai-400 019

SEMESTER EXAMINATION	*Mid Semester Examination-Oct 2023*	DATE :	13/10/2023
SEMESTER & PROGRAM	*Sem-I FIRST Year. M.Tech. (CE/NIMS/SE)*	TIME	9.15 AM to 10.45 AM
TIME ALLOWED	*1.30 Hr*	MARKS	*40*
COURSE (Course Code)	**Advanced Algorithms(COCE5011T)(Core1)**		

Q1	Solve following problem using Ford-Fulkerson algorithm for maximum Flow. Write pseudo code for the same.	10M	CO1
Q2.	Compare BFS and DFS algorithm with an example graph and denote its time complexities.	10M	CO2
Q3.	Analyze the best, average and worst case complexity of quick sort. Solve below example using quick sort 5,3,8,6,4,7,xy,1 Where xy are last two digit of roll number	10M	CO1
Q4.	Compute a minimum cost spanning tree for the grah below using kruskal's algorithm. Write psuedo code for Kruskal algorithm	10M	CO2





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EXAMINATION	MST	DATE OF EXAM	October 9, 2023
SEMESTER & PROGRAM	Sem.I - M.Tech.(All Branch)	TIME	9.15AM to 10.45 AM
TIME ALLOWED	1.5 hrs	MARKS	40
COURSE NAME – (CODE)	Entrepreneurship Development (PEPM5061S) Open Elective -I		

Instructions

1. Figures to the right indicate full marks.
2. Attempt **all** questions.
3. Assume additional data if required

Q.1	a	Discuss the principles of Design Thinking	5	CO1
	b	Explain Effectuation in details.	5	CO1
Q.2	a	How do you explain the importance of customer segmentation, marketing and positioning of your product as entrepreneur.	5	CO2
	b	What are the factors affecting to Entrepreneurship.	5	CO2
Q.3	a	Explain the Value Proposition Canvas	5	CO2
	b	Explain the sources of Idea Field	5	CO2
Q.4		Explain Business Model Canvas using the example of Netflix	10	CO3

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EXAMINATION	Mid Semester Test (MST) October 2023	DATE OF EXAM	12/10/2023
SEMESTER & PROGRAM	Sem-I, M. Tech. Computer Engg./NIMS/Software Engg.	TIME	09:15 AM to 10:45 AM
TIME ALLOWED	90 mins	MARKS	40
COURSE NAME – (CODE)	Computational Methods – (COCE5001S)		

Instructions
1. All questions are compulsory.
2. Figures to the right indicate full marks.

Q.1 Use the Akra-Bazzi formula to find asymptotic bounds for the following recurrences. [CO1, CO5]

a. $T(n) = 16T(\log n + n/4) + n$ (01)
b. $T(n) = 1/4T(n/4) + 1/n^2$ (07)
c. $T(n) = 4T(n/7) + 3T(n/7) + n$ (02)

Q.2 Mumbai is home to 12.0% of all households in the Bharat. In contrast to Mumbai, where 3.30% of households make more than Rs. 500.0K annually, only 1.30% of households in the Bharat do so. A random Bharat household is selected. [CO4]

a. How many non-Mumbai households make more than Rs. 500.0K annually? (05)
b. What is the likelihood that the selected household, which has an annual income of above Rs. 500.0K, is a Mumbai household? (05)

Q.3 Answer the following for the quick sort algorithm. [CO1, CO4]

a. Provide the recurrence equation for best and worst case. (01)
b. Identify the pattern by solving the recurrence using plug and chug process. (06)
c. Verify the pattern generated by plug and chug process. (01)
d. Express the pattern using early term and known values. (01)
e. From Q.3(d), provide the complexity of quick sort for best and worst case. (01)

Q.4 Consider two grid frameworks with 9 and 12 components. The components are arranged as 3x3 and 3x4. One component from each grid will be randomly and independently chosen for an experimental work of drug pattern analysis. [CO4]

a. How likely is it that both of the chosen component are corner components? (02)
b. How likely is it that both components are not a corner component? (02)
c. How likely is it that at least one of the chosen components is a corner component? (02)
d. How likely is it that at least one of the chosen components is a center component? (02)
e. How likely is it that both components are not a corner and center component? (02)

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EXAMINATION	Mid Semester Test (MST) Oct 2023	DATE OF EXAM	11th Oct 2023
SEMESTER & PROGRAM	Sem-I, First Year M Tech (CE,NIMS,SE)	TIME	9.15 am to 10:45 am
TIME ALLOWED	**1.5 HRS.**	MARKS	**40**
COURSE NAME – (CODE)	Internet of Things (COCE5032S)		

Instructions

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Write your answer to the point with your own legible handwriting.
4. Assume suitable data if required but justify the same
5. Wherever possible express your answer with supporting diagram.
6. You are not allowed to use book, notes, Internet, Mobile phone
7. Irrelevant answer will not get any marks

Q1a	Consider a weather monitoring station which generates large data. Taking this as an example bring out distinctions on Raw data, information and Knowledge	05	CO1
Q1b	Draw Block diagram of ESP32, as an IoT device and described it.	05	CO2
Q2a	What is the relation between web services and IoT device, application, database and analysis components? Elaborate on how web service is implemented?	05	CO3
Q2b	Describe M2M ecosystem and M2M service platform with supporting figures	05	CO3
Q3a	Express IoT applications for various domains using mind map	05	CO2
Q3b	Draw Block diagram of Raspberry pi Pico W, as an IoT device and described it.	05	CO3
Q4	You are given following items/components. Raspberry Pi Pico W (fully functional to run python code), DHT11, laptop, etc. Using all above items/components Describe what task can be performed with this, with its range and limitations? Draw setup figure/logical representation of the setup to perform the task. Describe software aspect/component will be required to accomplish the task? Draw figure showing suitable IoT level by identifying components of setup.	10	CO1 CO2

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EXAMINATION:	*Mid Semester Examination*	DATE OF EXAM:	*16 Oct 2023*
SEMESTER & PROGRAM	*I* *M. Tech. SE / NIMS*	TIME	*09.15 am to 10.45 am*
TIME	*1 Hour 30 Minutes*	MARKS	*40*
COURSE (CourseCode)	*Software Engineering / PE 1 (COSE5012S) / (CONM5021T)*		

Instructions		1. All questions carry equal marks. 2. Figures to the right indicate full marks. 3. Make suitable assumptions and state in answer-sheet(s) if necessary.		
Q.1	A	What is a Software project?	02	CO1
	B	What are the constraints in the Quality Triangle (Iron Triangle). Which one is more important? Justify your answer.	04	CO1
	C	What is Software Engineering. List out the layers	04	CO1
Q.2	A	What are the constituents of the Software Engineering process framework and list out the Umbrella Activities	04	CO1
	B	Describe the Linear process flow and the Evolutionary process flow and highlight the key difference between the two.	06	CO1
Q.3	A	**Case:** All Auto Ltd. is one of the leading manufacturers of auto ancillary parts. It supplies to Auto Companies, OEMs and service agencies. It also exports a large percentage of its output across all continents. All Auto has hired EXP Comsys a Software Services organization to develop and deliver a comprehensive Integrated Software solution covering all aspects of manufacturing at its factory. Consider the following: 1. The Requirements provided by the Customer are sketchy and not well defined 2. EXP is executing a project of this size and complexity for the 1st time in its history 3. The project has to be done using a completely new technology with emphasis on innovation 4. EXP does not have the requisite expertise on the specified technology 5. The project is a Fixed Price contract Considering the case description, if we have to choose between Waterfall and Agile, explain which process methodology will you choose to execute the project. Justify your answer	06	CO2

	B	List the key metrics used to monitor any Agile methodology project	04	CO2
Q4	A	List out reasons why we need a high-quality Software Requirements Specifications	06	CO3
	B	In a software development project: 1. Defect fixing costs: **Phase** / **Cost (Person-Hours)** Requirements: 2 Design: 5 Coding: 15 Acceptance Test: 50 Maintenance: 150 2. If an additional 100 person-hours are invested in the requirements phase, an average of 57 new requirement defects will be detected and removed 3. Distribution of defects that remain after the requirements phase: 60% in design, 2% in coding, 35% in Testing, 3% in maintenance 4. Assuming that the 57 defects are detected in the later phases after requirement **Calculate the following:** 1. The cost of fixing the defects 2. Net savings in development costs	04	CO3

+100
60%
2%
35%
3%

60
2
3 5
3
100

2+100 ⇒ 57

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EXAMINATION	Mid Semester Test (MST) Oct 2023	DATE OF EXAM	10th Oct 2023
SEMESTER & PROGRAM	Sem-I, First Year M Tech (CE,NIMS,SE)	TIME	9.15 am to 10:45 am
TIME ALLOWED	**1.5 HRS.**	MARKS	**40**
COURSE NAME – (CODE)	Cloud Computing (COCE5012S)		

Instructions

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Write your answer to the point with your own legible handwriting.
4. Assume suitable data if required but justify the same
5. Wherever possible express your answer with supporting diagram.
6. You are not allowed to use book, notes, Internet, Mobile phone
7. Irrelevant answer will not get any marks

Q1	With reference to IaaS cloud architecture describe and represent with neat figure logical view of IaaS logical cloud structure and its operation.	10	CO1
Q2	Draw a neat figure showing various aspects of public cloud and describe it. Write elaborated comments on workload location, risk from multi tenancy, network dependency etc.	10	CO3
Q3	Explain the term service oriented architecture. Further elaborate on it how it is related to and its role in cloud computing.	10	CO2
Q4a	Explain the term hypervisor. What are the important observations made by Popek and Goldberg in their research paper about virtual machine architecture?	05	CO3
Q4b	Explain hardware assisted virtualization with supporting figure	05	CO2 CO3