

B. Tech.
(SEM V) ODD SEMESTER
MINOR EXAMINATION: 2022-2023
Subject Name: ENGINEERING AND MANAGERIAL ECONOMICS

Time: 2 Hrs.

Max. Marks: 30

Note: Attempt all questions.

1. Attempt any Three parts of the following. Q. 1(a) is compulsory.

- (a) Economics is a social science concerned with the production, distribution, and consumption of goods and services. Explain briefly. (4)
(b) Differentiate between microeconomics and macroeconomics. (3)
(c) Briefly discuss the law of demand. Also, discuss its exception. (3)
(d) Discuss demand schedule and demand curve. (3)

2. Attempt any Three parts of the following. Q. 2 (a) is compulsory.

- (a) Define managerial economics. Also, discuss the scopes of managerial economics. (4)
(b) Explain the decision-making process. (3)
(c) Discuss macroeconomic theories and policies. (3)
(d) Discuss the role of managerial economics from an engineering perspective. (3)

3. Attempt any Three parts of the following. Q. 3(a) is compulsory.

- (a) Knowledge of elasticity of demand is very essential for managerial decision-making. Explain (4)
(b) Explain any ten determinants of demand. (3)
(c) What do you understand by demand forecasting? Discuss the opinion polling methods of demand forecasting. (3)
(d) Define Supply. What are the determinants of supply? (3)

BIT-28

Roll No.

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B. Tech

ODD SEMESTER

Minor Exam (Vth Semester)

Session: 2022-2023

Software Engineering

Time: 02 Hrs

Max. Marks: 20

Note: Be precise in your answer.

Q.1 Attempt any Three parts of the following. Q. 1(a) is compulsory.

- a. Draw the block diagram of Waterfall Model and explain its various steps in detail. List 4 its various advantages and disadvantages also.
- b. Explain the Prototype Model along with its various advantages and disadvantages. 2
- c. What is the significance of feasibility study in software engineering? Illustrate the 2 various types of feasibility studies.
- d. Describe the various data gathering techniques in brief. 2

Q.2 Attempt any Two parts of the following. Q. 2(a) is compulsory.

- a. Draw the block diagram of Spiral Model and explain its working in detail. What are the 4 limitations of such a model?
- b. What is requirement engineering? Describe the various type of requirements in detail. 2
- c. What is modularity? Describe the important properties of a modular system design. List 2 its various advantages also.

Q.3 Attempt any Two parts of the following. Q. 3(a) is compulsory.

- a. What is the significance of SRS in software development? List the various steps of SRS 4 as per guidelines and standards of IEEE.
- b. What is Software Design? Draw the Data Flow Diagram (DFD) for Library 2 Management System by assuming the data of yourself.
- c. Draw the E-R diagram for the course registration process of the students. 2

Roll No.

2020071016

B.Tech
(SEM V) ODD SEMESTER
MINOR TEST (EXAMINATION) 2022, 2023
AUTOMATA THEORY

Time: 2 Hours

Max. Marks: 30

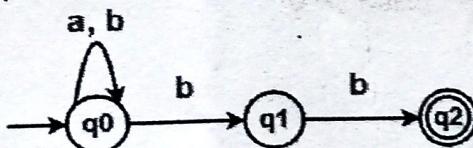
Note: Answer all questions

Q.1 Attempt any Three parts of the following. Q.1 (a) is compulsory.

- (a) Construct the DFA that accept all string a,b with 4
 1) $w=2$ 2) $w \geq 2$ 3) $w \leq 2$
(b) Define alphabet, grammar and string. State the difference between DFA & 3
 NFA
(c) What do you mean by NFA with ϵ -transition and define Myhill-Nerode 3
 theorem
(d) Difference between Moore and Mealy machine and its conversion. 3

Q.2 Attempt any Three parts of the following. Q.2 (a) is compulsory.

- (a) i. Define Arden's theorem with proof. 4
 ii. Define Kleen's Theorem with proof
(b) State the closure property of regular expression. 3
(c) Define pumping lemma and its applications. 3
(d) Convert NFA to DFA: 3



BCS-73

ROLL NO:

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**B.Tech (SEM V) ODD SEMESTER
MINOR TEST (EXAMINATION) 2022-2023**

Neural Network & Fuzzy System

Time: 2 Hours

Max. Marks: 30

Note: Answer all questions

Q.1 Attempt any Three parts of the following.Q.1 (a) is compulsory.

- (a) What is Mc-Culloch-pitts model explain in detail with the help of figure. (4)
- (b) Compare biological neuron and artificial neuron. What is weight or connection strength explain? (3)
- (c) What are the advantages and disadvantages of Artificial Neural Networks? (3)
- (d) What is Associative Memory? Explain its types. (3)

Q.2 Attempt any Three parts of the following.Q.2 (a) is compulsory.

- (a) What are the various types of learning techniques in neural network with example? (4)
- (b) In which manner Multilayer Perceptron Models differ from Single Layer Perceptron Model? Explain the reasons for emergence of Multilayer Perceptron Model. (3)
- (c) List some practical applications of Artificial Neural Networks. (3)
- (d) What is an Activation Function in Neural Networks ? Why to use them? (3)

Q.3 Attempt any Three parts of the following.Q.3 (a) is compulsory.

- (a) Implement AND Function using Perceptron Model, where $W_1=W_2=b=0$ and $\alpha=1$ given (4)
- (b) Explain Single-Layer and Multi-layer Perceptron Model with the help of diagram. (3)
- (c) What is architecture of Backpropagation-Networks(BPN)? Explain there methods. (3)
- (d) What is Single-Layer and Multi-layer Feed Forward Neural Networks? (3)

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**B.TECH(IT)
(SEM V) ODD SEMESTER
MINOR TEST (EXAMINATION) 2021-2022**

COMPUTER NETWORK

Time: 2 Hours

Max. Marks: 20

Note: Answer all questions

Q.1 Attempt any Three parts of the following.Q.1 (a) is compulsory.

- (a) Explain OSI model in detail with a diagram! Briefly explain different layers and their functions. 4
- (b) Write the difference between the circuit switching and packet switching. 2
- (c) Write short notes on different transmission medium used in networking. 2
- (d) Represent the differential Manchester encoding for the following binary sequence. 2

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Q.2 Attempt any Two parts of the following.Q.2 (a) is compulsory.

- (a) Explain the different method of Framing with suitable examples. 4
- (b) We need to send 265 kbps over a noiseless channel with a bandwidth of 20 kHz. How many signal levels do we need? 2
- (c) A telephone line normally has a bandwidth of 3000 Hz (300 to 3300 Hz) assigned for data communication. The SNR is usually 3162. What will be the capacity for this channel? 2

Q.3 Attempt any Two parts of the following.Q.3 (a) is compulsory.

- (a). Explain the error handling by CRC with a suitable example. 4
- (b) Write the difference between the pure ALOHA and slotted ALOHA. 2
- (c). Briefly explain the FDDI. 2

BCS-73

Roll No. 2030071016

B.tech. (V Sem.)
 ODD SEMESTER
 Major Examination (2022-2023)
 Neural Networks & Fuzzy Systems

Time: 3 Hrs.

Max. Marks: 50

Note: Answer all questions. Each question carries equal marks.

Q.1 Attempt any five parts of the following: (5x2=10)	
(a)	Draw the diagram of an artificial neuron and a biological neuron and compare their functionality.
(b)	Define linear separability and explain with suitable example.
(c)	Give two basic points of supervised and unsupervised learning.
(d)	What is the role of dendrites and synapse in biological neurons?
(e)	What is relevance of threshold and bias in ANN?
(f)	Calculate net input (Y_{in}) where $x_1=0.3$, $w_1=0.2$, $x_2=0.5$, $w_2=0.1$.
(g)	What do you mean by Recurrent neural network? Explain with a diagram.
Q.2 Attempt any two parts of the following. (2x5=10)	
(a)	Explain learning methods with their applications and chart diagram.
(b)	Differentiate single layer perceptron method and multilayer perceptron method with the help of diagrams.
(c)	What do you understand by fuzzy logic? Describe its significance and how it is different from crisp logic
Q.3 Attempt any two parts of the following. (2x5=10)	
(a)	Differentiate between Fuzzification and Defuzzification with an example and diagram.
(b)	Explain basic fuzzy set operations with an example and what is membership function in fuzzy logic?
(c)	Explain Cartesian product of fuzzy sets with an example and explain the features of membership function with the help of a diagram.
Q.4 Attempt any two parts of the following. (2x5=10)	
(a)	What are Fuzzy Inference Systems (FIS)? Explain each of the components with the help of a block diagram.
(b)	What is Genetic Algorithm? Compare and contrast it with a traditional algorithm.
(c)	What are the applications of fuzzy logic and explain each and every point?
Q.5 Attempt any two parts of the following. (2x5=10)	
(a)	Draw the flow chart and explain the working principle of the genetic algorithm.
(b)	Using genetic algorithm maximize $f(x) = -x^2$ over $[0, 1, 2, 3, \dots, 31]$ with initial x values of $(13, 24, 8, 16)$. Show one crossover and mutation operation.
(c)	What are the operators involved in a single genetic algorithm? Explain each with an example.

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**B.Tech.
(SEM V) ODD SEMESTER
MAJOR EXAMINATION: 2022-2023
Subject Name: ENGINEERING AND MANAGERIAL ECONOMICS**

Time: 3 Hrs.**Max. Marks: 50****Note: Attempt all questions. Each question carries equal marks.****1. Attempt any Five parts of the following. (5*2=10)**

- (a) Define micro-economics.
- (b) What are the important business decision problems?
- (c) List out the tools of decision sciences.
- (d) Differentiate between joint demand and composite demand.
- (e) Explain cross elasticity of demand.
- (f) Discuss the barometric technique of demand forecasting.
- (g) Explain law of supply.

2. Attempt any Two parts of the following. (2*5=10)

- (a) Discuss law of variable proportion.
- (b) Differentiate between fixed cost, variable cost and total cost.
- (c) Discuss the theories of profit given by Prof F. A. Walker, F. B. Hawley and J.B. Clarke.

3. Attempt any Two parts of the following. (2*5=10)

- (a) Discuss law of return to scale.
- (b) Explain the concept of profit. Also differentiate between accounting profit and economic profit.
- (c) Explain cost concept. Also discuss marginal cost and opportunity cost concept.

4. Attempt any Two parts of the following. (2*5=10)

- (a) Differentiate between perfect competition, oligopoly, monopoly, monopolistic market structure.
- (b) What are the methods to measure national income.
- (c) Discuss the methods to control inflation.

5. Attempt any Two parts of the following. (2*5=10)

- (a) What is inflation? What are the types of inflation on the basis of intensity.
- (b) Discuss all stages of business cycle.
- (c) Comment on any three of the following.

- I. GDP
- II. GNP
- III. Disposable Income
- IV. Per Capita Income

B TECH
ODD SEMESTER
MAJOR EXAMINATION 2022 – 2023

OPERATING SYSTEM

Q. No.	Marks
1. Attempt any Five Parts of the following:	5*2=10

- (a) What are the three main purposes of an operating system? Explain.
- (b) Describe two kinds of off-line operations in brief.
- (c) Explain in brief the layered architecture of operating system design.
- (d) What are the five major activities of an operating system in regard to process management? Explain any one in brief.
- (e) *Prefetching* is a method of overlapping the I/O of a job with that job's own computation. The idea is simple. After a read operation completes and the job is about to start operating on the data, the input device is instructed to begin the next read immediately. The CPU and input device are then both busy. With luck, by the time that the job is ready for the next data item, the input device will have finished reading that data item. The CPU can then begin processing the newly read data, while the input device starts to read the following data. A similar idea can be used for output. In this case, the job creates data that are put into a buffer until an output device can accept them. Compare the prefetching scheme with the spooling scheme, where the CPU overlaps the input of one job with the computation and output of other jobs.
- (f) Suppose that the following processes arrive for execution at the times indicated. Each process will run the listed amount of time. In answering the questions, use pre-emptive scheduling and base all decisions on the information you have at the time the decision must be made.

Process	Arrival Time	Burst Time
<i>P</i> 1	0.0	8
<i>P</i> 2	0.4	4
<i>P</i> 3	1.0	1

What is the average turnaround time for these processes with the SRTF scheduling algorithm?

- (g) If the average page faults service time of 25 ms and a memory access time of 100ns. Calculate the effective access time.

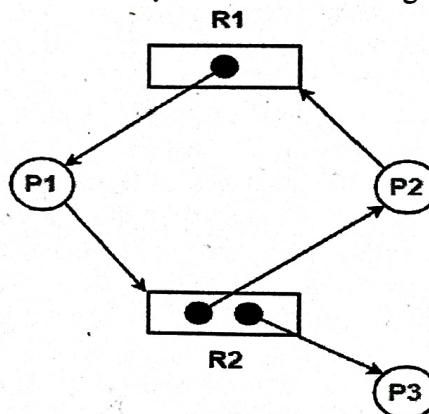
Q. No.

Marks
 $2*5=10$

2. Attempt any Two Parts of the following:

- (a) Consider a system consisting of processes P_1, P_2, \dots, P_n , each of which has a unique priority number. Write a monitor that allocates three identical line printers to these processes, using the priority numbers for deciding the order of allocation.
- (b) In a real computer system, neither the resources available nor the demands of processes for resources are consistent over long periods (months). Resources break or are replaced, new processes come and go, new resources are bought and added to the system. If deadlock is controlled by the banker's algorithm, which of the following changes can be made safely (without introducing the possibility of deadlock), and under what circumstances?
- Increase *Available* (new resources added).
 - Decrease *Available* (resource permanently removed from system).
 - Increase *Max* for one process (the process needs more resources than allowed, it may want more).
 - Decrease *Max* for one process (the process decides it does not need that many resources).
 - Increase the number of processes.
 - Decrease the number of processes.

Consider the resource allocation graph in the following figure-



Find if the system is in a deadlock state, otherwise find a safe sequence.

Q. No.

Marks
 $2*5=10$

Attempt any Two Parts of the following:

- (a) Suppose the head of a moving head disk with 200 tracks is currently serving a request for track number 143 and just finished a request for track number 85. If the queue of the requests is kept in FIFO order: 86, 147, 91, 177, 94, 150; What is the total head movement to satisfy these requests for the following scheduling schemes?
- C-SCAN
 - LOOK

147 - 143 +

Page 2 of 4

143
86 177

- (b) (i). Could you simulate a multilevel directory structure with a single-level directory structure in which arbitrarily long names can be used? If your answer is yes, explain how you can do so, and contrast this scheme with the multilevel directory scheme. If your answer is no, explain what prevents your simulation's success. How would your answer change if file names were limited to seven characters?
- (ii). Give an example of an application in which data in a file should be accessed in the following order:
- Sequentially
 - Randomly
- (c) None of the disk scheduling algorithm, except FCFS, is truly fair (starvation may occur).
- Explain why this assertion is true?
 - Explain why fairness, is an important goal in algorithm designs?
 - Describe a way to modify algorithm such as SCAN to ensure fairness.

Q. No.		Marks 2*5=10
4.	Attempt any Two Parts of the following:	
	<p>(a) (i) List eight functions for file manipulation.</p> <p>(ii) What do you mean by external and internal commands concerning to MS-DOS? Explain. You are also required to give Three commands along with syntax for each category of commands.</p> <p>(b) Explain Indexed allocation method of files with suitable example. You are also required to give its advantages of over other methods.</p> <p>(c) (i) Consider a system that supports 5000 users. Suppose that you want to allow 4990 of these users to be able to access one file.</p> <ul style="list-style-type: none"> - How would you specify this protection scheme in UNIX? - Could you suggest another protection scheme that can be used more effectively for this purpose than the scheme provided by UNIX? <p>(ii). Researchers have suggested that, instead of having an access list associated with each file (specifying which users can access the file, and how), we should have a <i>user control list</i> associated with each user (specifying which files a user can access, and how). Discuss the relative merits of these two schemes.</p>	
5.	Attempt any Two Parts of the following:	Marks 2*5=10

Q. No.		Marks 2*5=10
5.	<p>(a) (i). Explain first-fit, best-fit, and worst-fit methods of allocating space for contiguous files.</p> <p>(ii). Explain UNIX directory structure as well as I-node structure. You are also required to explain how the path /usr/ast/mbox/file1 in UNIX is looked up.</p> <p>(b) What is Access Matrix? Explain with suitable example. You are also required to explain the global table implementation of the Access Matrix.</p> <p>(c) What is encryption and decryption of messages? What are the different types of encryptions? Explain. You are also required to explain in brief RSA algorithm for encryption with example.</p>	

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B. Tech. 3rd Year
 (SEM V) ODD SEMESTER
 MAJOR EXAMINATION 2022-2023

Subject Name: Computer Networks

Times: 3 Hrs.

Max Marks: 50

Note: Answer all questions. Each question carries equal marks.

Q.1 Attempt any five parts of the following: (5x2=10)

- a) Define twisted pair wire and its components. Write type of twisted pair and ratings of twisted pair cable.
- b) Briefly explain time division multiplexing and frequency division multiplication.
- c) Explain sliding window protocol with help suitable diagrams of send window and receive window, before and after sliding for m=4.
- d) Explain the working of slotted ALOHA protocols with help of flow chart.
- e) Give the difference between OSI & TCP/IP model. Which model is more popular & why?
- f) Five channels, each with a 100-kHz bandwidth, are to be multiplexed together. What is the minimum bandwidth of the link if there is a need for a guard band of 10 kHz between the channels to prevent interference?
- g) What are the advantages of multipoint connection over point-to-point connection? What are the reasons for using layered protocols?

Q.2 Attempt any two parts of the following: (2x5=10)

- a) Explain leaky bucket and token bucket algorithm with help of suitable diagrams.
 - i. Identify the address class of the following IP addresses: 200.58.20.165, 128.167.23.20, 16.196.128.50, 150.156.10.10 and 250.10.24.96. A small organization has a class C address for 7 networks each with 24 hosts. What is an appropriate subnet mask?
 - ii. Suppose a router receives an IP packet containing 600 data bytes and has to forward the packet to a network with maximum transmission unit of 200 bytes. Assume that the IP header is 20 bytes long. Show the fragments that the router creates and specify the relevant values in each fragment header (i.e. total length, fragment offset, and more bit).
- c) What is Congestion? Differentiate between congestion control and flow control with help of example. Also discuss congestion prevention policies.

Q.3 Attempt any two parts of the following: (2x5=10)

- a) Explain how the Distance Vector Routing Algorithm works. Differentiate between Distance Vector Routing and Link State Routing.
- b) Draw and explain the header format of IPv4 and IPv6. Differentiate between the IP_{v4} and IP_{v6}.
- c) Explain the drawbacks of classful addressing and how classless addressing is beneficial in the current growing network. Also, explain NAT.

Q.4 Attempt any two parts of the following: (2x5=10)

- a) Explain the header formats of UDP & TCP with help of diagrams. Also differentiate between UDP & TCP.
- b) What are the various functions which are carried out by presentation layer? Explain the design issues of session layer. How dialogues are controlled in session layer
- c) Explain in detail how TCP provides flow control and QoS. Explain different socket primitives used in TCP.

Q.5 Attempt any two parts of the following: (2x5=10)

- a) What are the main components in the email architecture? Explain FTP with help of suitable diagram.
- b) Explain three ways handshaking mechanism used in establishing a connection between two transport entities.
- c) Write technical notes on the following:
i) DNS
ii) Firewalls
iii) Network security

B.Tech
ODD SEMESTER
Major Examination 2022 – 2023
AUTOMATA THEORY

Time: 03 Hrs

Max. Marks: 50

Note: Attempt ALL questions. Each question carries equal Marks.

Q.1 Attempt any five of the following. (5x2 = 10)

- a. What is ambiguous grammar? Give an example.
- b. Briefly discuss about Finite Automata with Epsilon- Transitions.
- c. State the Arden's theorem and its use.
- d. Define pigeonhole principle.
- e. Define Regular Expression? Explain about the properties of Regular Expressions.
- f. How Moore machine is different from Mealy machine.
- g. Illustrate an example to explain the process used to convert a non-deterministic automata to deterministic automata?

Q.2 Attempt any two of the following. (2x5 = 10)

- a. What is Chomsky Normal Form(CNF)? Convert the following context-free grammar(CFG) to Chomsky Normal Form(CNF):

$$\begin{aligned} S &\rightarrow abSb \mid a \mid aAb \\ A &\rightarrow bS \mid aAAb \end{aligned}$$

- b. Design a DFA which accepts set of all strings which are divisible by 3 for binary alphabet.
- c. Define the closure property of a regular language. Also prove that the regular languages are closed with respect to union, concatenation and Kleene closure.

Q.3 Attempt any two of the following. (2x5 = 10)

- a. i. What do you mean by reduced form of a CFG? Explain with a example.
ii. What is Greibach normal form(GNF)? Convert a CFG into GNF.

$$\begin{aligned} S &\rightarrow AACD \\ A &\rightarrow aAb|a \\ D &\rightarrow aDa \mid bDb \mid d \\ C &\rightarrow aC|C \end{aligned}$$

- b. Prove that PDA = CFG. Also construct a PDA for the following CFG

$$G = (\{S, X\}, \{a, b\}, P, S) \text{ where the productions are :}$$

$$\begin{aligned} S &\rightarrow XS \mid \epsilon \\ X &\rightarrow aXb \mid Xb \mid ab \end{aligned}$$

- c. Define pumping lemma for context free language (CFL). Also prove that the language $L = \{a^n b^n c^n : n \geq 1\}$ is not a CFL

Q.4 Attempt any two of the following. (2x5=10)

- a. Define Turing machine. Also construct a Turing machine for even palindrome language over input symbol $\Sigma = \{a, b\}$.

- b. Construct the CFG for the PDA $M = (\{q_0, q_1\}, \{0, 1\}, \{R, Z_0\}, \delta, q_0, Z_0, \Phi)$ and δ is given by

$$\begin{aligned} \delta(q_0, 1, Z_0) &= (q_0, RZ_0) \\ \delta(q_0, 1, R) &= (q_0, RR) \\ \delta(q_0, \epsilon, Z_0) &= (q_0, \epsilon) \\ \delta(q_1, 1, R) &= (q_1, \epsilon) \end{aligned}$$

- c. What are Moore and Mealy Machine? Also define a procedure to convert Moore machine to Mealy machine

Q.5 Attempt any two of the following. (2x5=10)

- a. Design a Turing machine over $\Sigma = \{a, b\}$ to accept the language $L = \{WcW^R \mid W \in (a, b)^*\}$.

- i. Explain Decision Properties of Context-Free Languages.
ii. Explain the concepts of Undecidable Problems about Turing Machines.
- i. Discuss in detail about P, NP and NP complete problems.
ii. Explain about Post's Correspondence Problem with an example.

B TECH
 ODD SEMESTER
 MINOR TEST 2022 - 2023

OPERATING SYSTEM

Time: 2 Hrs.

Max. Marks: 20

Note: Answer all questions.

Q.1 Attempt any Three parts of the following. Q. 1(a) is compulsory.

- (a). Discuss each of the following unconventional page replacement schemes in the context of virtual storage multiprogramming system servicing both batch and interactive users: 4
- (i) "Global LIFO"- The page brought into real storage most recently is replaced.
 - (ii) "Local LIFO"- The page brought in most recently by the process which requested the incoming page is replaced.
 - (iii) "Tired Page"- The most heavily referenced page in the system is replaced. (Consider both the global and local variants of this scheme.)
 - (iv) "Battered Page"- The most heavily modified page in the system is replaced. (Consider both the global and local variants of this scheme.)
- (b). What are the various services of an operating system? Explain any one in brief. 2
- (c). Given memory partitions of 100K, 500K, 200K, 300K, and 600K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212K, 417K, 112K, and 426K (in order)? Which algorithm makes the most efficient use of memory? 2
- (d). What are the different schedulers? Explain the use these schedulers with help of queuing diagram 2

Q.2 Attempt any Two parts of the following. Q. 2(a) is compulsory.

- (a). Assume you have the following jobs to execute with one processor 4

Process	Burst Time	Priority	Arrival Time
P1	75	3	0
P2	40	2	10
P3	25	1	20
P4	20	0	80

P5 45 2 85

The system uses Priority based Preemptive scheduling algorithm:

- i) Create a Gantt chart illustrating the execution of these processes.
- ii) What is the Turnaround Time for Process P3?
- iii) What is the average Turnaround Time?
- iv) What is the average Waiting Time?

(b). Explain the following terms with suitable example or diagram:

2

- (i) Turnaround Time
- (ii) Waiting Time
- (iii) Response Time
- (iv) Execution time

You are also required to give the use of the above time metrics.

(c). Explain Multilevel feedback queues processor management (or CPU scheduling) algorithm with suitable example/diagram.

2

Q.3 Attempt any TWO parts of the following. Q. 3(a) is compulsory.

(a). Consider the following reference string:

4

1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2

22

Find the number of page faults for Optimal page replacement algorithm for 3-page frames.
(Assume initially all page frames are empty)

(b). Consider a variant of the RR scheduling algorithm where the entries in the ready queue are pointers to the PCBs.

2

- (i). What would be the effect of putting two pointers to the same process in the ready queue?
- (ii). What would be the major advantages and disadvantages of this scheme?
- (iii). How would you modify the basic RR algorithm to achieve the same effect without the duplicate pointers?

(c). Explain virtual address translation scheme with combined mapping in a paged segmentation system with suitable diagram.

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BIT-28

Roll No.

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B. TECH

ODD SEMESTER (SEM - V)

MAJOR EXAMINATION 2022-23

SUBJECT: SOFTWARE ENGINEERING

Time: 3Hrs.

Max. Marks: 50

Note: Attempt all questions. Each question carries equal marks.

Q 1. Attempt any five parts of the following. 5x2 = 10

- (a) What is the significance of “**Feasibility Study**” in software project development?
Describe the various types of feasibility study in brief.
- (b) What is Requirement Engineering? Illustrate the various type of requirements with a suitable example.
- (c) Compare the waterfall model and the spiral model of software development.
- (d) What is the significance of modularity in software design? Describe the Top-Down and Bottom-Up design with a suitable diagram.
- (e) What is the significance of module coupling in software development? Illustrate the various types of coupling in brief.
- (f) What is Software Requirement Specification (SRS)? List the various steps of IEEE standards for SRS.
- (g) What is Software Quality? Illustrate the various software quality attributes in brief.

Q 2. Attempt any two parts of the following. 2x5 = 10

- (a) What is the objective of software testing? Describe test, test case and test suite with a suitable example.
- (b) Describe the various levels of software testing in detail.
- (c) Compare verification and validation. Explain Alpha, Beta and Acceptance testing with a suitable example.

Q 3. Attempt any two parts of the following. 2x5 = 10

- (a) What is the difference between white box and black box testing? Is determining the test case easier in black or white box testing? Is it correct to claim that if white box testing is done properly, it will achieve close to 100% path coverage?

(d) What is static testing strategy? Illustrate the Formal Technical Reviews and Walk Through in brief.

(c) Write short notes on Software Reliability Metrics.

Q 4. Attempt any two parts of the following. 2x5 = 10

(a) What is the need of software maintenance? Describe the various categories of software maintenance. Which category of software maintenance consumes maximum effort and why?

(b) Illustrate the various levels of Reverse Engineering. Differentiate between new system development and re-engineered system.

(c) A project size of 200 KLOC is to be developed. Software development team has average experience on similar type of projects. The project schedule is not very tight. Calculate the effort, development time, average staff size and productivity of the project

Q 5. Attempt any two parts of the following. 2x5 = 10

(a) Illustrate the Software Configuration Management Activities and change control process in detail.

(b) Explain all the levels of COCOMO model. Assume that the size of an organic software product has been estimated to be 32,000 lines of code. Determine the efforts required to develop the software product and the nominal development time.

(c) What is Software Risk? Describe the various types of typical risks in detail.