

POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE.

Name Yashveer

Enrollment No. 14162166

Jaypee Institute of Information Technology, Noida End Term Examination, 2021 B.Tech 5th Semester

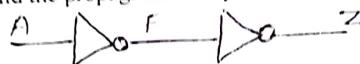
**Course Title: Microprocessors and Microcontrollers Maximum Time: 02 Hrs
Course Code: 15B11EC313 Maximum Marks: 35**

Course Outcomes:

- CO1:** Recall the basics of digital circuits, specifications and applications.
- CO2:** Familiarize with the basics of 8-bit, 16-bit and 32-bit microprocessor/ microcontrollers and its internal organization.
- CO3:** Use the knowledge of different 8085 microprocessors/8051 microcontroller to write the various programmes in assembly language.
- CO4:** Interface the memory chips and peripheral chips, LEDs, LCD, Keyboard, Motor and sensors with 8085 microprocessors and microcontrollers.

Note: All questions are compulsory.

- Q1** For the NOT gate $t_{PLH}=10\text{ ns}$ and $t_{PHL}=14\text{ ns}$. Find the propagation delay of signal 'F' w.r.t. [2, CO1]
signal 'A'. Also, find the propagation delay of signal 'Z' w.r.t. signal 'F' and signal 'A'.



- Q2** Interface 4k x 8 EPROM and 2k x 8 RAM with 8085 microprocessor using 3:8 decoder. [5, CO1]
Also, show the address range of each memory chip.
- Q3** Write an assembly language programme for 8085 microprocessor to count the number of [3, CO3]
1's in the content of D register and store the final count in B register. The content of D
register has to be fetched from external memory location 2000H interfaced with 8085.
- Q4** Draw the timing diagram of STA instruction in the program given below. Also, mention [5, CO2]
the addressing modes of each instruction given below for 8085 microprocessor.

MVI A, 05H

MOV B, A

STA 2050H

HLT

- Q5** Differentiate between vectored and non-vectored interrupts. Also, calculate the vectored [2, CO2]
address of TRAP interrupt in 8085 microprocessor.

- Q6**
 - a) Explain the working of PUSH and POP instruction w.r.t. to 8051 microcontroller by [2, CO2]
giving suitable example.
 - b) Discuss the concept of GATE bit for timers in 8051 microcontroller with suitable [2, CO2]
diagram.

- Q7** Write an assembly language program for 8051 microcontroller to transfer the message [CO3]
"HELLO" serially using Mode-1 at baud rate of 9600 bps.

- Q8**
 - Design a MOD-6 counter using 8051 microcontroller. Display the count on a [3+2+2+
common anode seven-segment display. [2, CO4]

- Q9**
 - Use Timer-1 in Mode-0 to generate the delay of 1 sec in between the successive [CO3]
counts.

- Q10**
 - Interface a switch at INT0 interrupt pin to STOP the counter at any instant of time.
 - Draw the neat and clean diagram of the complete system.

POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE.

Name Yashasvi

Enrollment No. U102706

Jaypee Institute of Information Technology, Noida

End Term Examination, 2023

B.Tech V Semester

Course Title : Positive Psychology
Course Code : 1621NHS432

Maximum Time : 2 Hrs
Maximum Marks : 35

CO1: Demonstrate an understanding of the various perspectives of positive psychology and apply them in day to day life

CO2: Examine various theories and models of happiness, well-being and mental health

CO3: Recommend possible solutions for enhancing happiness, well-being and mental health

Ques. 1. Suggest interventions/strategies for overall positive functioning

Answer: Attempt all questions

- Q1. According to Seligman, what are the three contours of a “positive life”? Briefly describe each. → (2 marks) CO-1
- Q2. Describe any two dimensions of social well-being with relevant examples. (2 marks) CO-1
- Q3. How good mood of a person increases the chances of helping behaviour? (2 marks) CO-2
- Q4. Evaluating by Alice Isen experiencing mild emotions is related to which outcomes? (2 marks) CO-2
- Q5. What are the three stages in the strengths-based approach to gainful employment? (2 marks) CO-3
- Q6. What is well-being therapy and how is it implemented to counteract distress? (4 marks) CO-4
- Q7. What protective factors in family and close relationships can affect resilience in children and youth? (4 marks) CO-4
- Q8. Analyze important teacher behaviours in the context of positive schooling. (4 marks) CO-2

- Q9. Evaluate Beatrice Wright's four front approach for measuring mental (4 marks) CO-4 health. Elaborate your answer with appropriate examples.
- Q10. Compare hedonic and eudaimonic views of happiness and on the (4 marks) CO-4 basis of each view make two recommendations for enhancing well-being.
- Q11. Recommend secondary enhancement strategies people can use to (5 marks) CO-3 enhance their pre-existing mental health.

POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE.

Name Yashasvi

Enrollment No. 19162106

**Jaypee Institute of Information Technology, Noida
End Term Examination, ODD Semester 2021
B.Tech V Semester**

Course Name: Data Structure and Algorithm

Maximum Time: 2 Hr.

Course Code: 15B11C1518

Maximum Time: 2 H

After pursuing this course, the student will be able to:

CO1: Apply fundamental operations on data structures such as linked-list, trees binary search trees, AVL trees, heap, graphs and hash table

CO2: Analyze and compare different sorting algorithms – Merge sort, Quick sort, Shell sort and Bucket sort.

CO3: Identify suitable data structure and develop solution for the given problem.

CO4: Formulate solutions for programming problems or improve existing code using algorithms such as, Backtracking, Branch and Bound, Greedy Algorithm and Dynamic Programming.

Note: Attempt all questions.

Q.1 [CO2] Given an unsorted array A={5, 3, 8, 1, 4, 6, 2, 7}. Sort the given array such that at least k elements get sorted after k iterations. Use a recursive, in-place sorting algorithm with average case time complexity of $O(n \log n)$. In every recursive call, place the first element at its correct position. Show all the passes. [5 Marks]

Q.2 [CO1] Consider a hash table with size 11 and a hash function with $H(x) = x \% 11$. The keys are 11, 12, 19, 20, 52, 44, 56, 37 are inserted in order.

1. Perform the insertion using the double hashing with $H_1(x) = x^0 + 11$ and $H_2(x) = 7 - (x^0 + 7)$.
 II. How many total collisions occur during insertion in Part I.
 III. While selecting hash table size values like 10, 100 or 10^3 are avoided whereas prime numbers are preferred, why? [3-1+1 marks]

Q.3 [CO3] [5 Marks] Identify the efficient data structure used in real life situation and justify your answer in one or two sentences.

- I. To store a set of fixed keywords which are referenced very frequently.

II. You need to parse an expression about validity of expression like in compiler.

III. You need to store the friendship information on a social media site i.e. who is friends with whom.

IV. To implement back functionality in internet browser.

V. To store the possible moves in a chess game. [5 marks]

Q.4 [CO4] John went to superstore with a knapsack of capacity $n = 15$. In a particular section of superstore there are 5 elements available. details (weight and profit) of items available is shown below:

Item	1	2	3	4	5
Profit	2	28	25	18	9
Weight	1	4	5	3	3

1. Now help John in selecting the items so that he can gain maximum profit. He can choose the item either in full or in fraction.

Name Yashwantrao

Enrollment No. LA102106

Jaypee Institute of Information Technology, Noida

End Semester Examination, Odd 2021
B.Tech., V Semester

Course Title: Laser Technology and Applications

Maximum Time: 2 Hrs

Course Code: 16B1NPH533

II. What would happen if the weights of all items are equal? [3+2 Marks]

Q.5 [CO4] Consider a 4*4 chessboard where each block (square) has been assigned a positive integer, as shown below. Now 4 Queens are to be placed on this chessboard, such that

- No two queens are in the same row, same column or same diagonal.
- The sum of the integer corresponding to the blocks where the queens can be placed should not be greater than 15.

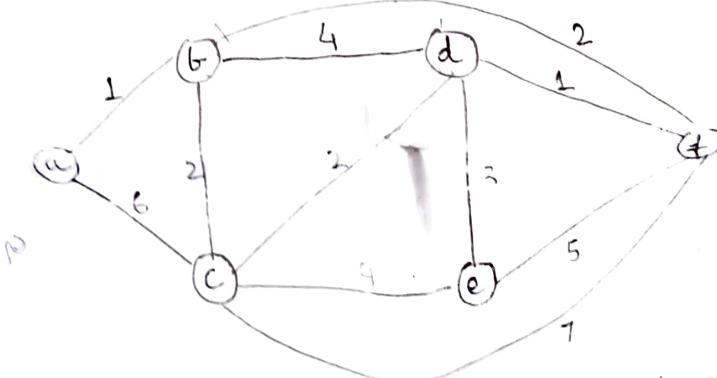
Draw the state space tree for all possible solutions, for the following chessboard. Each node in the state space tree should represent the cumulative sum of integer visited upto that point in the path. [5Marks]

6	5 Q_1	2	8. ●
1 Q_1	4 ●	7	3 Q_2
8	9 .	5 ●	1 Q_3
3	6	8	4

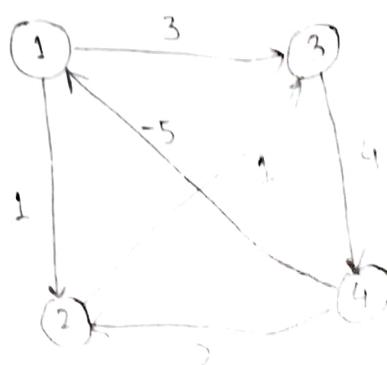
Q.6 [CO4] Modify Prim's algorithm to find the maximum spanning tree in an undirected graph $G(V,E)$. A maximum spanning tree is a spanning tree having maximum weight.

- I. Write pseudo-code of your approach.
- II. Also apply your algorithm to solve the given problem using source node as 'a'.

[5 Marks]



Q.7 [CO4] Show the complete execution of Floyd-Warshall algorithm for given graph. Find out all the matrices for given graph. [5 Marks]



Name Yashwanit

Enrollment No. 19102106

Jaypee Institute of Information Technology, Noida

End Semester Examination, Odd 2021
B.Tech., V Semester

Course Title: Laser Technology and Applications

Maximum Time: 2 Hrs

Course Code: 16B1NPH533

Maximum Marks: 35

CO1 Define the coherent properties, high brightness of laser, population inversion and optical feedback to laser technology

CO2 Extend the knowledge of lasers in some applications like LIDAR, laser tracking, bar code scanner, lasers in medicine and lasers in industry

CO3 Apply the optical ray transfer matrix to determine the stability of a laser resonator

CO4 Distinguish the operational principles of CW, Q-switched, mode locked lasers; laser rate equations for three & four level lasers; different types of laser systems

Note: All questions are compulsory

- 1.[CO4] Draw energy level diagram of CO₂ laser. State which mode of energy is represented by (020). Further, discuss the roles of N₂ and He gases used in this laser. [7]
- 2.[CO4] What is the active material for dye laser? Draw the energy level diagram of dye laser by showing the emission wavelength(s). [5]
- 3.[CO4] For GaAs material, effective mass of electron in conduction band $m_e = 0.067 m_0$, effective mass of hole in valence band $m_h = 0.46 m_0$ and $(E_g)_{\text{Bulk}} = 1.424 \text{ eV}$ where, $m_0 = 9.1 \times 10^{-31} \text{ kg}$ is free electron mass. Determine Effective bandgap and emission wavelength for Quantum well laser of width 10 nm. [5]
- 4.[CO3] Determine whether or not the following mirror arrangements lead to stability: [5]
 - (a) Two mirrors with radii of curvature of 1.8 m, separated by a distance of 2 m.
 - (b) One mirror with radius of curvature of 2 m and the other with radius 3 m, separated by a distance of 2.3 m.
 - (c) One mirror with radius of curvature 5 m and the other with radius 3 m, separated by a distance of 4 m.
 - (d) Two mirrors with radius of curvature of 0.5 m, separated by a distance of 0.5 m.
- 5.[CO4] Write the laser rate equations for two level laser system and show that the steady state population inversion is not possible. [5]
- 6.[CO2] Discuss the working of bar code scanner by showing its ray diagram. [3]
- 7.[CO2] Write the full name of following: [3]
 - (i) LIDAR
 - (ii) LIGO
 - (iii) LAGEOS
- 8.[CO4] Mention two key differences between Q-switching and mode locking of a laser. [2]

POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE

Name.....Yashwanit Jundeen

Enrollment No.....19102106

Jaypee Institute of Information Technology, Noida
END TERM Examination, Odd Semester 2021
B. Tech. V Semester

Course Title: Electromagnetic Field Theory/Electromagnetic Engineering **Maximum Time:** 2 Hrs
Course Code: 18B11EC312/15B11EC612 **Maximum Marks:** 35

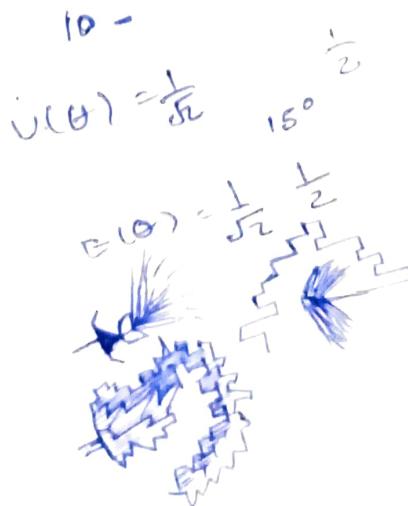
After pursuing this course, the students will be able to:

- CO1** Recall concepts of vector calculus to solve complex problems and relate among different coordinate systems. Explain the basic principles of electrostatics and magnetostatics and relate the electric and magnetic fields using Maxwell's Equations.
- CO2** Illustrate the propagation of electromagnetic waves in different medium and their reflection and transmission parameters. Distinguish among different wave polarizations.
- CO3** Estimate the current, voltage and power for the different types of transmission lines, determine reflection parameters. Demonstrate the waveguide theory, wave equations, and evaluate different waveguide parameters.
- CO4** Classify and compare the different parameters associated with the antenna and also interpret the radiation mechanism.

Note: Attempt all the questions:

- Q. 1 (a) Find the circulation of $\vec{A} = \rho \cos \phi \hat{a}_\rho + \rho^2 \hat{a}_z$ enclosed by a path defined by [2, CO1] –
 $0 \leq \rho \leq 1$ and $0 \leq \phi \leq \pi/2$.
- (b) A uniform surface charge density $\rho_s = 2 \mu\text{C}/\text{m}^2$ is situated at $z = 2 \text{ m}$ plane. What is the value of electric flux density at $P(1, 1, 1) \text{ m}$? [2, CO1]
- Q. 2 (a) Find the displacement current density within a parallel-plate capacitor having dielectric constant $\epsilon_r = 10$, area of the plates $A = 0.01 \text{ m}^2$, distance of separation $d = 0.05 \text{ mm}$, and applied voltage $V = 200\sin(200t)$ volts. [2, CO1] –
- (b) Given that $\vec{E}_1 = 10 \hat{a}_x - 6 \hat{a}_y + 12 \hat{a}_z \text{ V/m}$ in region 1 ($\epsilon_1 = 3\epsilon_0, x < 0$) and region 2 is defined by ($\epsilon_2 = 4.5\epsilon_0, x > 0$). Find the electric field intensity in region 2 and the angle \vec{E}_2 makes with the normal to the interface. [2, CO1]
- Q. 3 A plane wave in free space ($z \leq 0$) is incident normally on a large block of material with ($\epsilon_r = 12, \mu_r = 3, \sigma = 0$) that occupies $z \geq 0$. If the incident electric field is $\vec{E} = 30 \cos(\omega t - z) \hat{a}_y \text{ V/m}$. Find: [1.5 + 1.5 + 1.5 = 6, CO2]
- (a) ω
 - (b) the standing wave ratio
 - (c) the reflected magnetic field
 - (d) the average power density of the transmitted wave.
- Q. 4 A distortionless line operating at 110 MHz has $R = 23 \Omega/\text{m}$, $L = 0.4 \mu\text{H}/\text{m}$ and $C = 60 \text{ pF/m}$. [3+2 = 5, CO3]
- (a) Determine propagation constant (γ), wave velocity (u) and characteristic impedance (Z_0).
 - (b) How far will a voltage wave travel before it is reduced to 20% of its initial value.

- Q. 5** A 50Ω lossless line is connected to a source with $V_g = 10$ volts, $Z_g = 40 - 30j \Omega$ and terminated by a load of $30j \Omega$. If the line is 100 m long and $\beta = 0.25 \text{ rad/m}$, then calculate voltage (V) at – [2 + 2
+ 2 = 6,
CO3]
- (a) the sending end (b) the receiving end (c) 8 m from the load.
- Q. 6** An air-filled rectangular waveguide operating in TE₁₂ mode at a frequency which is 20% higher than the cut-off frequency. The dimensions of waveguide are given by $a = 1 \text{ cm}$ and $b = 3 \text{ cm}$. Determine: [2 + 1 + 1 + 1 = 5, CO3]
- (a) the operating frequency, (b) phase constant (c) wave impedance, (d) phase velocity.
- Q. 7** The maximum radiation intensity of a 90% efficient antenna is 200 mW/sr. Find the directivity in dB when: [1.5 + 1.5 = 3,
CO4]
- (a) input power is 125.66 mW.
 - (b) radiated power is 125.66 mW.
- Q. 8** Find the Half-power beam width (HPBW) and First-null beam-width (FNBW) for the normalized radiation intensity, $U(\theta) = \cos 3\theta$. [2, CO4]



POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE.

Name Yashasvi

Enrollment No. 1102106

Jaypee Institute of Information Technology, Noida
End Semester Examination, 2022
B.Tech. 6th Semester, ECE

Course Title : Telecommunication Networks
Course Code : 15B11EC611

Maximum Time : 2 Hours
Maximum Marks : 35

After pursuing the course, the students will be able to:

- CO1:** Understand the basic concept of telecommunication network models, traffic engineering and switching technologies.
- CO2:** understand the concepts of OSI model, analyse the various error, and flow control mechanism introduced by data link layer
- CO3:** Understand the TCP/IP protocol, routing algorithms, and apply the concepts of sub-netting to allocate and distribute the logical addresses in a network
- CO4:** Understand the concepts of LAN access protocols, ISDN, B-ISDN, and ATM, their implementation and performance issues.

Note: All questions are compulsory

Q1.[CO1] A 32 X 64 basic time division switch is operating in sequential write/random read mode. Find the following: [5 Marks]

- a) Number of address lines,
- b) Number of data lines,
- c) Size of control memory,
- d) Size of data memory,
- e) Contents of control memory for the following connections of input and output

30.....50

12.....26

28.....21

16.....60

Q2.[CO2] Derive the link utilization efficiency of Go-Back-N ARQ protocol. Consider 'p' is the probability of a frame in error. [5 Marks]

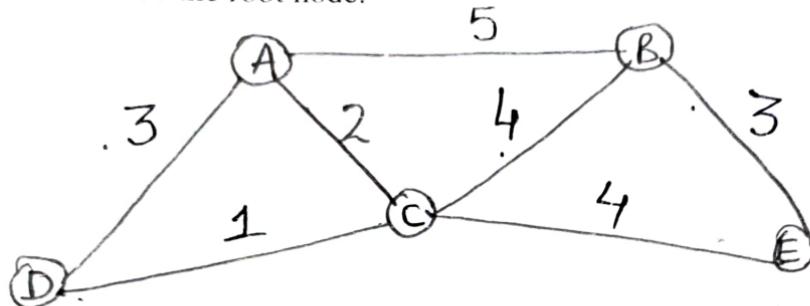
Q3.[CO3] An ISP is granted a block of addresses starting with 190.120.192.0/18. The ISP needs to distribute these addresses to 3 groups as follows:

- (i) Group 1 has 32 customers, each needs 128 host addresses. 207
- (ii) Group 2 has 128 customers, each needs 64 addresses. 208 - 239
- (iii) Group 3 has 16 customers, each needs 128 addresses. 240 - 247

Design the sub blocks and find out how many addresses are still available after these allocations.

[5 Marks]

Q4.[CO3] Construct the link state tree using Djikstra's Algorithm for given network. [5 Marks]
Consider A to be the root node.



Q5.[CO4] State the significance of ISDN. Discuss ISDN channels and interfaces with proper illustration. [5 Marks]

Q6.[CO3] Discuss congestion in a network and its control in TCP. [5 Marks]

Q7.[CO3] Define QOS in an interconnected network. Also discuss traffic shaping techniques to improve QOS. [5 Marks]

POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE

Enrolment no U102106

Name Yashasvi

Jaypee Institute of Information Technology, Noida
End Term Examination, Even Semester, 2022
B.Tech. VI Semester

Course Title: Photovoltaic Techniques

Maximum Time: 2 Hrs.

Course Code: 16B11PH633

Maximum Marks: 35

CO1: Classify various types of renewable energy sources and explain working of photovoltaic device.

CO2: Demonstrate the use of basic principles to model photovoltaic devices.

CO3: Identify challenges and apply strategies to optimize performance of various type of solar cells

CO4: Analyze the Solar PV module, mismatch parameter and rating of PV module

CO5: Evaluate the performance of various stand-alone PV systems with battery and AC and DC load

Note: Attempt all questions:

1. (a) What is the meaning of two days autonomy in PV system?
 - (b) What do you mean by stand alone and hybrid PV systems?
 - (c) How solar PV modules are made from individual solar cells?
 - (d) Calculate the minimum thickness of ARC material to be deposited over solar cell material ($n = 3.8$) to minimize the reflection loss for 600 nm.
 (e) Absorption coefficient of 500 nm wavelength, falling on a semiconductor material is 10^4 cm^{-1} . What is the maximum distance that a photon of this wavelength can travel in semiconductor before absorption?

[1x5] CO1

2. (a) Explain hot spot and role of a bypass diode in solar module?
 (b) A solar cell has an I_{sc} of 0.5 A and V_{oc} of 0.55V. What will be the I_{sc} and V_{oc} of the combination in which there are five strings connected in parallel, and in each string 4 cells are connected in series? Assume all cells are identical.

[2-3] CO2

3. (a) A solar PV module is operating at ambient temperature of 35 °C under solar radiation of 900 W m^{-2} . What will be the temperate of module? Given NOCT = 45 °C
 (b) Establish the relation between change in V_{oc} of a solar cell and temperature.

[2-3] CO3

4. (a) Define STC, SOC, and NOC. How module temperature is related to ambient temperature.
 (b) An individual solar cell has the following parameters: $V_{oc} = 0.55 \text{ V}$, $I_{sc} = I_L = 5.2 \text{ A}$, $R_s = 0.005 \text{ Ohms}$, diode ideality factor = 1.7, FF = 0.75, operating temperature = 25°C and $I_o = 8.6 \times 10^{-9} \text{ A}$. This specified solar cell is connected in a module (36 cells in series). Several such modules are used in an array. The array has 6 rows of modules connected in parallel and each row has 8 modules connected in series.
 (i) Write down a single I-V equation for one array.
 (ii) What would be the open circuit voltage of the array?
 (iii) What would be the short circuit current of the array?
 (iv) What would be the peak power of the array under standard test condition?
 (v) What would be the current of the array at the operating voltage of 70.0V?
 (vi) What would be the operating voltage of the array for the current of 15 A?

[4-6] CO4

5. (a) Design a PV DC water pumping system with backup batteries and 2-days autonomy, to draw 25,000 litres of water per day. Given: Total vertical lift = 12m, water density = 1000 kg m^{-3} , $g = 9.8 \text{ m s}^{-2}$, PV module 75 Wp (15V, 5A); Operating factor = 0.75, DC pump efficiency = 30%, Mismatch factor = 0.85, system voltage = 24V, battery (12V, 100Ah), DoD = 70, peak sunshine hours = 6h, battery efficiency = 85%, controller efficiency = 90% and frictional losses = 5%.
 (b) In the above question, what would happen if the system voltage is reduced to 12 V?

[8-2] CO5

Given: $k = 1.38 \times 10^{-23} \text{ J/K}$, $q = 1.6 \times 10^{-19} \text{ C}$

POSSESSION OF MOBILES IN EXAM IS A UFM PRACTICE.

Name _____

EnrollmentNo. _____

Jaypee Institute of Information Technology, Noida
T3 Examination 2022

Course Title: Non-linear Data Structures & Problem Solving
Course Code: 20B16CS324

Max. Hours: 2Hr
Max. Marks: 40

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- [CO1] Demonstrate operations on different data structures.
 - [CO2] Use critical thinking skills and creativity to choose the appropriate data structure and solve the given problem.
 - [CO3] Identify the correctness and efficiency of the solution by constructing different test cases.
 - [CO4] Develop solutions to real world problems by incorporating the knowledge of data structures
-

Q1 [CO1] Why leftist heaps are preferred over other balanced binary trees? Consider the following leftist heaps in Fig.1 and perform merge operation. [1+4 marks]

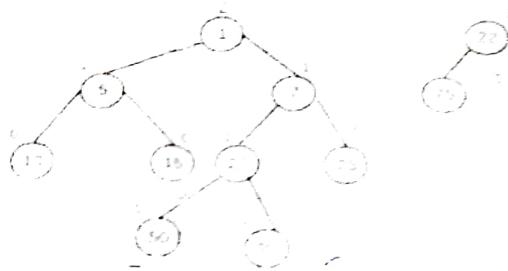


Fig. 1

Q2 [CO1] There is a need of certain language processing based research and Prof Den Harry needs to have longest common substrings of the words "Carnation", "Planation" and "Crenation".

- a) Suggest and construct the appropriate tree data structure to help him out.
- b) Design an algorithm for finding such longest common substring using the above identified data structure.
- c) Deduce the longest common substring. [5+2+2 marks]

Q3 [CO3] A weather forecasting team at Delhi station keeps a record of average temperature (°C) in a tree like structure which can preserve the locality of references property by default. The Delhi station engineer entered the data of last seven days in the order given as 21, 10, 5, 12, 3, 18, 16 where 21 is the oldest entry and 16 is the recent one. During late evening hours, the station master had to check whether the recorded average temperature on any last seven days is 11 or not and proceeded on deleting 16. However, while deleting 16, he has wrongly provided 6 as the candidate to delete and then rectified it to the actual value 16. Construct the resultant data structure which is best fit to this given scenario. [8 marks]

- ✓ Q4 [CO1] With given Covid-19 dataset, identify whether the patient is infected or not using ID3 procedure. Show Level-0 and Level-1 of decision tree. [3+5 marks]

Patient-Id	Fever	Cough	Breathing issues	Infected
1	No	No	No	No
2	Yes	Yes	Yes	Yes
3	Yes	Yes	No	No
4	Yes	No	Yes	Yes
5	Yes	Yes	Yes	Yes
6	No	Yes	No	No
7	Yes	No	Yes	Yes
8	Yes	No	Yes	Yes
9	No	Yes	Yes	Yes
10	Yes	Yes	No	Yes
11	No	Yes	No	No
12	No	Yes	Yes	Yes
13	No	Yes	Yes	No
14	Yes	Yes	No	No

- ✓ Q5 [CO2] a) For two-way traversal in linked list, doubly linked list is used where each node contains forward as well as backward nodes pointers. However, implementation of doubly linked list needs an overhead pointer, i.e. backward node pointer, hence it is not memory efficient. Propose an efficient data structure which is memory efficient and provides the functionality of doubly linked list. Also, write the algorithm to show the backward and forward traversal using proposed data structure.

- ✓ [CO2] b) Consider that there are 100,000 cherries, numbered 0 through 99,999. We start eating the cherries in some arbitrary random order. We might eat cherries number 34,567, followed by cherry number 12,980, etc. At any point however, we might be asked how many cherries are still available from some range. For example, after eating several cherries, we might be asked to determine the number of cherries that aren't eaten in between cherry number 12,000 and cherry number 12,999, inclusive. If we had eaten cherry number 12,980 already, then the answer to the query would be 99. So, to implement this scenario identify the correct data structure and justify your steps to solve it.

[5+5 marks]



POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE.

Name Yashwanvi

Enrollment No. 1a182106

Jaypee Institute of Information Technology, Noida

**T-2 Examination, 2022
B.Tech. VI Semester**

Course Title: VLSI Design

Course Code: 18B11EC315

Maximum Time: 1 hour

Maximum Marks: 20

CO1: Understand VLSI Design flow, VLSI Design Styles, Digital Systems Modelling using verilog HDL.

CO2: Demonstrate the operation of MOSFET, understanding technology scaling and its effects.

CO3: Develop concepts of static and dynamic characteristics of MOS inverters, combinational and sequential circuits

CO4: Understand the dynamic logic circuits, stick diagrams, layout and working principle of different type of semiconductor memories.

Q.1 [CO2] Consider the n-channel enhancement type MOSFET. The process parameters are given as:

Substrate Doping $N_A = 2 \times 10^{15} \text{ cm}^{-3}$ 5 Marks

S/D Doping $N_D = 10^{19} \text{ cm}^{-3}$

Sidewall Doping $N_A(\text{sw}) = 4 \times 10^{16} \text{ cm}^{-3}$

Gate oxide thickness $t_{ox} = 45 \text{ nm}$

Junction depth, $x_j = 5 \mu\text{m}$

Assume substrate bias = 0V. Find the average drain-substrate junction capacitance C_{db} assuming drain voltage is changing from 2.5V to 5V.

Q.2 [CO3] (a) For a CMOS inverter with the following parameters

2+3=5 Marks

nMOS: $V_{T0,n} = 0.6 \text{ V}$ $\mu_n C_{ox} = 60 \mu\text{A/V}^2$

pMOS: $V_{T0,p} = -0.8 \text{ V}$ $\mu_p C_{ox} = 20 \mu\text{A/V}^2$

Supply voltage is 3V and $\lambda = 0$.

Determine (W/L) ratio of nMOS and pMOS transistor such that the switching threshold $V_{th} = 1.5 \text{ V}$.

(b) Derive expression of V_{IL} of CMOS inverter.

Q.3 [CO3] Consider a CMOS inverter with the following parameters:

5 Marks

nMOS $V_{T0,n} = 1 \text{ V}$ $\mu_n C_{ox} = 45 \mu\text{A/V}^2$ ($W/L)_n = 10$

pMOS $V_{T0,p} = -0.8 \text{ V}$ $\mu_p C_{ox} = 20 \mu\text{A/V}^2$ ($W/L)_p = 20$

$V_{DD} = 5 \text{ V}$ and $C_{load} = 1.5 \text{ pF}$.

Calculate the rise time of the output signal using differential equation method.

Q.4 Short Notes

5 Marks

(a) [CO3] Static and Dynamic power Dissipation of a CMOS inverter. -

(b) [CO4] DRAM

POSSESSION OF MOBILE PHONE IN EXAM IS UFM PRACTICE

Name Yashasvi

Enrollment Number 19102106

Jaypee Institute of Information Technology, Noida

T2 Examination Even 2022, B.Tech VI Sem

Course Name : Machine Learning for Signal Processing

MaxTime:1hr

Course Code: 18B13EC314

MaxMarks :20

After Completion of the course students must able to:

C01: Illustrate various machine learning approaches.

C02: Experiment with the different techniques for feature extraction and feature selection.

C03: Apply and analyze various classifier models for typical machine learning applications

C04: Make use of Deep Learning Techniques in real life problems.

Q1. John is an investor. His portfolio primarily tracks the performance of the S&P 500 and John wants to add the stock of Apple Inc. Before adding to his portfolio, he wants to assess the correlation between the stock and the S&P 500. To ensure that adding the stock won't increase the systematic risk of his portfolio. Find the Correlation coefficient for given the following prices for the last five years.

[5]

[C04]

	S&P 500	Apple
2013	1691.75	68.96
2014	1977.80	100.11
2015	1884.09	109.06
2016	2151.13	112.18
2017	2519.36	154.12

Q2. Calculate the Minkowski distance with order 2 between given two vectors:

[C02]

$$U = [2, 3, 0, -1, 2]^T, V = [1, -2, 0, 2, 0]^T. \quad [5]$$

Q3. Consider a classification problem where we want to detect whether a mail is spam or not, the two selected features are email content (x_1) and complaint from users(x_2). The plus and star represent spam and not spam respectively, the feature space with a decision boundary is shown below.
[5]

[C04]



ALL THE TOPICS IN EXAM IS UFM PRACTICE.

100% 100%

Derive a confusion matrix from the given feature space. Also calculate precision, recall, and accuracy. Additionally, suggest what should be objective here, 100% precision, 100% recall or balance between the precision and recall.

Q4. Consider the data set given in the table..

[C03]

[5]

Cook	Mood	Cuisine	Tasty
Sita	Bad	Indian	Yes
Sita	Good	Continental	Yes
Asha	Bad	Indian	No
Asha	Good	Indian	Yes
Usha	Bad	Indian	Yes
Usha	Bad	Continental	No
Asha	Bad	Continental	No
Asha	Good	Continental	Yes
Usha	Good	Indian	Yes
Usha	Good	Continental	No

Build a Naïve Bayes classifier (or Bayes theorem) using only two features 'Mood' and 'Cuisine' (Ignore 'Cook') to classify a new pattern Cook=Sita, Mood=Bad, Cuisine=Continental as Tasty=Yes or Tasty =No.

After pursuing this course, the students should be able to:

CO1: Classify the various types of renewable energy source and explain working of photovoltaic device

CO2: Demonstrate the use of basic principles to model photovoltaic devices.

CO3: Identify challenges and supply strategies to optimize performance of various type of solar cell

CO4: Analyse solar PV module, mismatch parameters and rating of PV module

CO5: Evaluate the performance of various stand alone PV systems with battery and AC and DC load

Note: Attempt all questions:

1. (a) With figure, state the direction of current flow inside the emitter & base region of the solar cell.

(b) Explain the effect of increasing series resistance on the IV characteristics of Si solar cell.

(c) If finger spacing becomes 2 times, then the modified power loss in emitter will becomes _____ times.

(d) Why blue photons are absorbed near the surface of the semiconductor? Give two reasons.

(e) Why single contact on top of solar cell is not suitable for collecting light generated charge carriers.

[1x5=5]

CO1

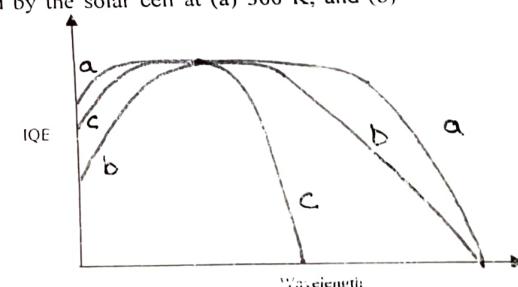
2. (a) Show that for low series (R_S) and low shunt resistance (R_{SH}), $1/R_{SH}$ is approximately equal to the slope of I-V curve ($\partial I/\partial V$), near $V = 0$.

(b) A pn junction Si solar cell operating at 300K has short circuit current density, $I_{SC} = 2.2 \text{ mA/cm}^2$ under standard illumination of 1000 W/m^2 . If the area of the solar cell is 10 cm^2 , FF = 0.75 and dark current density = 10 pA/cm^2 , calculate the maximum power delivered by the solar cell at (a) 300 K, and (b) 330K.

3. (a) The IQE analyses of three cells are given in figure.

i. Why cell 'a' is better than cell 'b'. Give minimum 4 reasons.

ii. Explain the performance of cell 'c'.



(b) An ideal solar cell (without series and shunt resistance) has $V_{OC} = 0.6 \text{ V}$, $I_{SC} = 2 \text{ A}$, $V_{MP} = 0.55 \text{ V}$, and $I_{MP} = 1.8 \text{ A}$. Calculate the modified short circuit current, open circuit voltage and FF with series resistance of 0.1Ω .

[2+3=5] CO3

4. (a) Calculate the total power loss in the fingers of a solar cell with one busbar and 40 fingers design. Given area of solar cell = 100 cm^2 ($L = 10 \text{ cm}$, $W = 10 \text{ cm}$), peak current = 2.1 A , width of fingers = 0.1 mm , height of finger = 0.15 mm and width of busbar = 2.5 mm .

(b) In the question no 4 (b), if the resistivity of finger metal is $1.6 \times 10^{-8} \Omega\text{m}$, calculate the total power loss in the fingers.

[2+3=5] CO3

T2 Examination, 2022
B.Tech ECE: 6th Semester

Course Title : Telecommunication Networks

Course Code : 15B11EC611

Maximum Time : 1 Hr
Maximum Marks : 20

Note: All the questions are compulsory.

CO1	Understand the basic concept of Telecommunication network model, traffic engineering and switching technologies.
CO2	Understand the concepts of OSI model and analyse the various errors and flow control mechanisms introduced by data link layer
CO3	Understand the TCP/IP protocol, routing algorithm and apply the concept of subnetting to allocate and distribute the logical addresses in a network
CO4	Understand the concept of LAN access protocols, ISDN, B-ISDN and ATM, their implementation and performance issues.

Q. 1 a) Draw the flowchart of pure ALOHA protocol.

|CO4, 2+2=4|

b) 100 stations in a Slotted ALOHA network share a 1 Mbps channel. If frames are 1000 bits long, find the throughput of the system, if each station is sending 10 frames/sec.

Q. 2 A system uses Selective Reject ARQ protocol with packet size of 1 Kbits and bit rate of 1 Mbps. Consider the distance between the transmitter and receiver of 1000 Km and the propagation speed of 2×10^8 m/sec. Determine the probability of frame in

Q. 3 a) State any two differences between network layer and transport layer of OSI model.

6 Illustrate with proper flow diagram the concept of encapsulation. [CO2, 2+2=4]

Q.4 a) Determine the CRC generated codeword for the given polynomial data sequence $x^8 + x^7 + x^5 + x + 1$ with divisor pattern of $x^3 + x + 1$.

5) Also, check the codeword at the receiver side if one-b

•) ALSO, check the code word in the CO₂ from LSB. |CO₂, 2+ 2=4| |CO₂, 1+3=1|

Q. 5 a) Draw the frame structure of HDLC protocol.

[CO₂, 1+3=4]

b) Explain in detail the Control field and Address field in extendable mode.

Name: ...Yashasvi.

Jaypee Institute of Information Technology, Noida

T2 Examination, Even Semester, 2022

B.Tech. 6th Semester

Course Name: Control Systems

Maximum Marks: 20

Course Code: 15B11EC613

Maximum Time: 1 hr

[CO1] Classify the open loop and closed loop control systems and construct mathematical model for physical systems.

[CO2] Solve complex systems through block diagram reduction method and signal flow graph techniques.

[CO3] Determine transient response and steady state response of the systems using standard test signals.

[CO4] Analyze the stability of the system and select suitable controllers and compensators for linear time invariant system.

[CO5] Apply time domain and frequency domain techniques to identify the stability of control systems.

[CO6] Solve continuous time and discrete time systems using state variable approach.

Note: Answer all questions.

Q1. [CO3] Determine the static error coefficients K_p , K_v and K_a for a unity feedback system with an open loop transfer function given by [3]

$$G(s) = \frac{50}{s(1 + 0.1s)(s + 5)}$$

Q2. [CO3] Determine the unit step response for the system shown in Fig.1. [5]

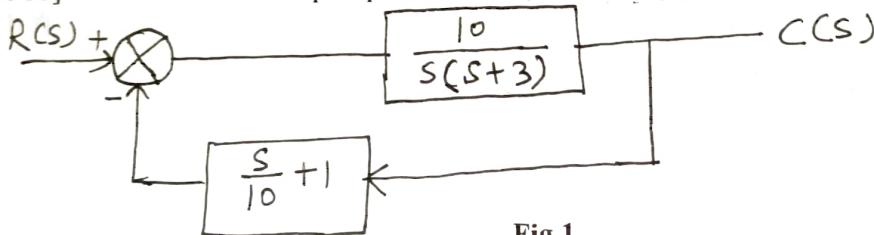


Fig.1

Q3. [CO4] Determine the constant k_t for the derivative rate controller shown in Fig. 2 so as to obtain 0.5 damping ratio. Calculate the corresponding values of ω_d , t_p , t_s and M_p . [5]

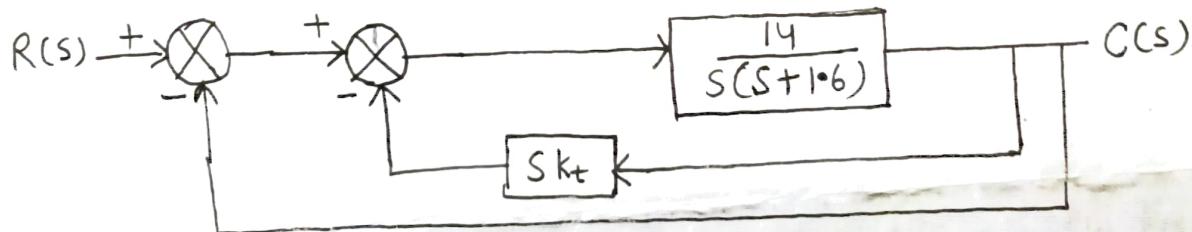


Fig.2

Q4. [CO5] The characteristic equation of a system is $s^6 + 3s^5 + 5s^4 + 9s^3 + 8s^2 + 6s + 4 = 0$. Find the number of roots in the right half of s-plane and on imaginary axis. [4]

Q5. [CO5] Consider a negative feedback system with $G(s) = \frac{1}{s+1}$ and $H(s) = \frac{K}{s(s+2)}$. Find the range of K for which the closed loop system is stable. [3]

Jaypee Institute of Information Technology, Noida

T2 Examination, 2022
B.Tech/ M.Tech VI Semester**Course Name: Marketing Management****Course Code: 18B12HS611****Maximum Time: 1hr**
Maximum Marks: 20

After passing this course, the students will be able to:

CO1 To illustrate the fundamentals of marketing, marketing environment and market research

CO2 To model the dynamics of marketing mix

CO3 To appraise the importance of marketing ethics and social responsibility

CO4 To conduct environmental analysis, design business portfolios and develop marketing strategies for business to gain competitive advantage

Note: Attempt all questions.

- Q1** Revolt has launched its first Electric bike last year (2021). They have introduced RV400 priced at approximately 1,10,000/-INR. Market response was very good for RV400. The RV400 is powered by a 5Kw motor paired with a swappable 3.24Kwh lithium-ion battery. The battery takes about 4.5 hours to charge completely using a 15 A socket. Revolt claims that it can run 156 Kms on full charge of battery. The company offers the battery warranty for eight years/ 1.5 lakh km. RV400 has LED headlights, full-LCD instrument console and 4G connectivity. Riders can also pair their smartphone with the bike and the Revolt app gives them access to travel history, battery health, range, and nearest swap station. For added security, it's also equipped with geofencing and keyless operation. The Revolt RV400 even gets speakers for an artificial engine sound. The company has launched its bikes in 10 cities of India and in all the places they got encouraging response. Now company wants to go for the market expansion. Also they want to introduce some more features or improvise the existing features in RV400 to make it even a better proposition for their target customers. Revolt has decided to go for marketing research to finalize new geographical locations and to identify new features to be introduced. You are required to help Revolt in making their Marketing research plan.
- a. Suggest the target customers for them and also suggest the basis for selecting new geographical locations in India. [2, CO5]
- b. Suggest the appropriate contact method to contact the respondents and conduct the survey. Give reasoning for your suggested contact method. [2, CO5]
- c. Which sampling technique you will suggest? Justify your suggestion. [2, CO5]
- d. Make at least 4 questions with proper structure and give the relevant choices for the respondents. These questions must help in identifying new key features or improvise the existing features in RV400. [4, CO5]
- Q2** Read the following buying decisions made by the mentioned individual and categorize them by referring to VALS 2 framework. [4, CO3]
- a. Rajiv had gifted himself a Rolex watch after getting a recent promotion.
- b. Karan belongs to rich business family and is a college student. He purchased Hayabusa bike for himself.
- c. Ravi firmly believes in savings for the better future of his family. He avoids spending heavily on shopping, fine dining and travelling.
- d. SpaceX is offering tickets for space visit at Rs. 417 crores. What kinds of customers will purchase these tickets?
- Q3** Identify the type of buying decision in the following scenarios. [3, CO3]
- a. When a person is buying a house
- b. When a person is buying grocery items for his regular consumption.
- Q4** Briefly discuss the criteria which must be referred while selecting the right competitive advantages. [3, CO3]

'POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE'

Name: Yash

Enrollment No.: 19102106

Jaypee Institute of Information Technology, Noida

End Term Examination, Even Semester, 2022
B.Tech. 6th Semester

Course Name: Marketing Management
Course Code: 18B12HS611

Maximum Marks: 35
Maximum Time: 2 hrs

Course Outcomes:

- CO1: To illustrate the fundamentals of Marketing, marketing environment & market research.
- CO2: To model the dynamics of marketing mix.
- CO3: To demonstrate the implications of current trends in social media marketing & marketing trends.
- CO4: To appraise the importance of marketing ethics & social responsibility.
- CO5: To conduct environmental analysis, design business portfolios & develop marketing strategies for businesses to gain competitive advantage.

Note: Attempt all questions.

- Q1. Atulya Ltd. is planning to launch their cosmetics & grooming kits for both Men & Women in the age category of 18-30 years. Develop the advertising strategy for them after considering all the major decisions related to Objectives, Budget, Message & Media choice. Also suggest how they can evaluate the success of their advertising campaign. [5,CO5]
- Q2. Rajat has worked for 15 years for a leading organization of confectionary products. He has worked in Sales & Marketing division. Recently he got some good amount of money after selling his ancestral property. He decided to quit his job & start looking for the distributorship from any reputed organization of FMCG industry for his known market area. Discuss the functions of a distributor and considering his past background and experience, create his value proposition, which he can offer to an organization. [5,CO5]
- Q3. Explain Market skimming & Marginal cost pricing strategies. Describe the market situations when these strategies can be deployed. Give relevant examples to substantiate your answer. [5,CO5]
- Q4. This is the world of Marketing and behind all the successful products there is a good marketing strategy. Critically evaluate the negative impact of Marketing on individual consumers and society as a whole. What is Societal Marketing and how it can control the negative impact of marketing? [5,CO4]
- Q5. Online advertisements are the most popular and effective ways to reach to the tech savvy new generation. Briefly explain any 2 mostly used forms of online advertising. [4,CO3]
- Q6. What is your understanding on Porter's generic strategies and how do these strategies help marketers in differentiating their products with the competition. [5,CO2]
- Q7. Write short notes on the following: [2*3,CO1]
 - a. Horizontal Marketing System
 - b. Positioning Concepts
 - c. Buyer's decision process

POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE

Enrollment no.....19102106

Name.....Yashadvi

Jaypee Institute of Information Technology, Noida

T-1 Examination, 2022

B.Tech. VI Semester

Course Title: Photovoltaic Techniques

Maximum Time: 1 Hrs.

Course Code: 16B1NPH633

Maximum Marks: 20

After pursuing this course, the students should be able to:

- CO1 Classify the various types of renewable energy source and explain working of photovoltaic device
- CO2 Demonstrate the use of basic principles to modal photovoltaic device
- CO3 Identify challenges and supply strategies to optimize performance of various type of solar cells
- CO4 Analyze solar PV module, mismatch parameters and rating of PV module
- CO5 Evaluate the performance of various stand alone PV systems with battery and AC and DC load

Note: Attempt all the questions

- Q 1 (a)** What is abbedo of earth? How does it affect the solar energy at the earth surface? [1x5, CO1]
- (b) A photovoltaic array of 10 KW receives an 5 KWh/m²/day from sun. How much energy it will produce per day?
- (c) What is the maximum possible wavelength of sunlight, which can be absorbed by Si (1.12 ev) and Ge (0.76 eV) ?
- (d) "For High light generated current, the recombination rate of charge particle should be high". True or False? Justify your answer.
- (e) At room temperature a p-type semiconductor has mobility $\mu_n = 1500 \text{ cm}^2/\text{V-s}$ and life time $\tau_n = 10^{-6} \text{ s}$. Calculate the electron diffusion length.
- Q 2** Explain the application of direct and indirect band gap semiconductor material in solar cell with proper diagrams. [3, CO2]
- Q 3** With the help of diode equation & IV curve of a solar cell, obtain the V_{oc} , I_{sc} , fill factor and efficiency. [3, CO2]
- Q 4** A semiconductor sample having $n_i = 1.5 \times 10^{10} \text{ atoms/cm}^3$, is doped with $5 \times 10^{16} \text{ P atoms/cm}^3$. Its e⁻ and h⁺ mobility is $1500 \text{ cm}^2/\text{V-s}$ and $500 \text{ cm}^2/\text{V-s}$ respectively. Find n_0 , P_0 , σ and p . Also discuss the role of diffusion length in light generated current. [3, CO3]
- Q 5** A solar cell is operating 27°C with $J_{sc} = 50 \text{ mA/cm}^2$ under AM1.5G. Calculate the efficiency of the cell if $J_0 = 10^{-9} \text{ mA/cm}^2$ and $FF = 0.75$. [3, CO3]
- Q 6** A solar cell under an illumination of AM 1.5G has $I_{sc} = 100 \text{ mA}$ and $V_{oc} = 0.5 \text{ V}$. What are the V_{oc} and I_{sc} at half of the sun light intensity. [3, CO3]

Given: $h = 6.62 \times 10^{-34} \text{ J.s}$, $\text{AM1.5G} = 1000 \text{ W/m}^2$, $K_b = 1.38 \times 10^{-23} \text{ J/K}$, $q = 1.6 \times 10^{-19} \text{ C}$

POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE

Name..... *Yashasvi*

Enrollment No. *19102106*

Jaypee Institute of Information Technology, Noida

Test-1 Examination, Even 2022

B.Tech 6th semester

Course Name: Machine Learning for Signal Processing

Maximum Time: 1hr

Course Code: 18B12EC314

Maximum Marks: 20

After pursuing this course students must be able to :

CO1: Illustrate various Machine Learning approaches.

CO2: Experiment with the different techniques for feature extraction and feature selection.

CO3: Apply and analyze various classifier models for typical Machine learning applications.

CO4: Make use of Deep Learning techniques in real life problems.

Note : Attempt all questions

Q1. A ball is drawn from a bag containing 10 red, 4 blue and 6 black balls what is the probability of drawing one red ball and one blue ball but not a black ball? [CO1, 4Marks]

Q2. In a orange country 51% of adults are males, One adult is randomly selected for a survey involving credit card usage. It is later learned that the selected survey subject was smoking a cigar. Also, 9.5% of males smoke cigars, where as 1.7% of female smoke cigars(based on the data from the Substance Abuse and Mental health Services Administration). Use this additional information to find the probability that the selected subject is a male. [CO2, 4Marks]

Q3. Find the Eigen values and Eigen vectors of the given matrix A. [CO1, 4Marks]

$$A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$$

[CO1, 4Marks]

Q4. Find the Singular Value Decomposition of the given Matrix B.

$$B = \begin{bmatrix} 3 & 3 & 2 \\ 2 & 3 & -2 \end{bmatrix}$$

Q5. Let us consider an example where six weeks sales data (in lakhs) of a grocery shop is given in the below table. Apply linear regression technique to predict the 10th and 12th week sales .

[CO2, 4Marks]

X _i (Week)	Y _i (Sales data in lakhs)
1	0.8
2	1.25
3	1.56
4	2.1
5	2.4
6	2.2

POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE.

Name Yashwant

Enrollment No. 19104100

Jaypee Institute of Information Technology, Noida
T1 Examination, EVEN Semester 2022
B.Tech. 6th Semester

Course Name: Telecommunication Networks
Course Code: 15B11EC611

Maximum Time: 1 hr
Maximum Marks: 20

After pursuing this course, the student will be able to:

- CO1** Understand the basic concepts of Telecommunication Networks models, Traffic Engineering, and switching technologies.
- CO2** Understand the concept of OSI Model and analyze the various error and flow control mechanism introduced by data link layer.
- CO3** Understand the TCP/IP protocol, routing algorithms and apply the concepts of subnetting to allocate and distribute the logical addresses in a network.
- CO4** Understand the concepts of LAN access protocols, ISDN, B-ISDN and ATM, their implementation and performance issues.

Note: attempt all the questions.

- Q.1** (a) For a 3-stage space switching network with N inlets and N outlets, derive [3, CO1] the blocking probability expression, if ' α ' is the probability that an inlet at the first stage is busy.
(b) A 3-stage network with 128 inlets and 128 outlets is having 16 first and [2, CO1] third stage switching matrices and 10 switching matrices at the second stage. If an inlet at the first stage is busy with the probability of 0.1. Find the blocking probability of the network.
- Q.2** (a) For a 3-stage space switching network with N -inlets and N -outlets, derive [3, CO1] the condition which makes the network non-blocking.
(b) For a 3-stage non-blocking space switching network with N inlets and N [3, CO1] outlets, considering $N \gg$ number of switches at any stage. Find the minimum number of switching element required. Also compare it with a single stage non-blocking network for $N = 128$.
- Q.3** Define the following terms with respect to the Traffic engineering [2, CO1]
(1) Busy Hour Call Attempt (2) Busy Hour Calling Ratio
(3) Call Completion Rate (4) Time Consistent Busy Hour
- Q.4** A call processor in an exchange requires 180 ms to service a complete call. [2, CO1] What is the BHCA rating for the processor? If the exchange is capable of carrying 600 erlangs of traffic, what is call completion rate? Assume an average call holding time of two minutes.
- Q.5** Define the Grade of Service and Blocking probability of the network. Also [3, CO1] differentiate between them.
- Q.6** In an exchange, the calls arrive at rate of 1200 calls per hour, with each call [2, CO1] holding for a duration of three minutes. If the demand is serviced by a trunk group of 55 lines, determine the GOS?

Name: Yashasvi

Enrollment No.: 19102106

Jaypee Institute of Information Technology, Noida
End Term Examination, Even Semester, 2022
B.Tech.VI Semester

Course Name: Machine Learning for signal processing
Course Code: 18B13EC314

Maximum Marks: 35
Maximum Time: 2 hr

After pursuing this course, students will be able to:

- CO1: Illustrate Various Machine Learning approaches.
- CO2: Experiment with the different techniques for feature extraction and feature selection.
- CO3: Apply and analyze various classifier models for typical Machine Learning Applications.
- CO4: Make use of Deep Learning Techniques in real life problems.

Note: Attempt all questions

[5M, CO4]

Q1. Implement the XOR-gate using Radial Basis Neural Network.

[5M, CO3]

Q2. Plot the hyper plain of following point using support vector machine.

(1,1) (2,1) (1,-1) (2,-1) (4,0) (5,1) (5,-1) (6,0)

Q3. What are the advantages of Multilayer Neural Network over the Single layer Neural Network.

[5M, CO1]

Q4. Implement Logical AND-gate using MC-Culloch-Pitts Neuron Model. [5M, CO4]

Q5. Let ' x ' be a continuous random variable with the following PDF. [5M, CO1]

$$f_x(x) = \begin{cases} Ce^{-x} & x \geq 0 \\ 0 & \text{Otherwise} \end{cases}$$

Where 'C' is a positive constant

- Find 'C' .
- Find CDF of x , $F_x(x)$.
- Find $P(1 < x < 3)$.