Total No. of Questions : 4]

SEAT No. :

PA-10005

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[6008]-261

S.E. (Artificial Intelligence & Data Science)(Insem)

STATISTICS

(2019 Pattern) (Semester - II) (217528)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Make suitable assumption whenever necessary.***

Q1) a) What are the limitations and importance of Statistics. **[5]**

b) What are the methods of estimation? Give brief on testing of hypothesis. **[5]**

c) Explain the Scope of Statistics in engineering & Technology. **[5]**

OR

Q2) a) What is population and sample? Explain the type of sampling in brief. **[5]**

b) What are random sample? Explain lottery method and random numbers in detail. **[5]**

c) What is Statistics? Explain the scope of statistics in medical and biological fields. **[5]**

Q3) a) Draw a frequency polygon for the following data. **[5]**

Marks	0-20	20-40	40-60	60-80	80-100
No. of students	2	18	42	28	5

Also state the advantages of graphical representation of data (any four).

P.T.O.

b) Calculate the mean for the following frequency distribution. **[5]**

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	12	18	27	20	17	6

Also state merits of Mean (any four).

c) Age distribution of hundred life insurance policy holders is as follows : **[5]**

Age	17-19	20-22	23-25	26-28	29-31	32-34	35-37	38-40
Number	9	16	12	26	14	12	6	5

Calculate mode

OR

Q4) a) What is histogram? Draw the histogram for the following data. **[5]**

Age group (in years)	0-20	21-40	41-60	61-80	81-100	101-120
Population	500	2100	2200	2000	1600	400

b) Calculate median for the following distribution. **[5]**

Class	0-10	10-20	20-30	30-40	40-50
Frequency	5	14	29	21	25

Also write merits of median (any 2).

c) What are the merits and demerits of Harmonic mean (2 each). Also calculate Harmonic mean of the following series. **[5]**

Values	2	6	10	14	18
Frequency	4	12	20	9	5

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Total No. of Questions : 4]

SEAT No. : ____

PA-4976

[Total No. of Pages : 2

[6008] - 228

S.E. (Computer /A.I. & D.S.) (Insem)

DATA STRUCTURES AND ALGORITHMS

(2019 Pattern) (Semester - II) (210252)

Time : 1 Hour] ***[Max. Marks : 30***

Instructions to the candidates:

1) ***Solve Q.1 or Q.2, Q.3 or Q.4.***
2) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) We have a hash table of size 10 to store integer keys, with hash function h(x) = x mod 10. Construct a hash table step by step using linear probing without replacement strategy and insert elements in the order 31,3,4,21,61,6,71,8,9,25. Calculate average number of comparisons required to search given data from hash table using linear probing without replacement. **[6]**

b) Explain the concept of quadratic probing using example. What are the advantages and disadvantages of quadratic probing over linear probing? **[5]**

c) What is hashing? Explain the properties of good hash function with examples. **[4]**

OR

Q2) a) Insert the following data in the hash table of size 10 using linear probing with chaining by applying with replacement : 11, 33, 20, 88, 79, 98, 68, 44, 66, 24. Calculate average number of comparisons required to search given data from hash table. **[6]**

b) Add following keys in hash table by applying extendible hashing mechanism. Assume capacity of each directory to store buckets is 3. Keys are 10, 20, 15, 12, 25, 30, 7, 11, 08. **[5]**

c) Write short note on skip list. **[4]**

P.T.O.

Q3) a) Write an algorithm to delete a node from Threaded binary Search Tree. **[6]**

b) The following numbers are inserted into an empty binary search tree in the given order : G, C, B, A , D, E, F, I, H. Construct tree step by step. Represent the constructed tree using static memory allocation. **[5]**

c) Let characters a, b, c, d, e, f has probabilities 0.07, 0.09, 0.12, 0.22, 0.23, 0.27 respectively. Find an optimal Huffman code and draw Huffman tree. **[4]**

OR

Q4) a) Construct threaded binary tree step by step if the preorder traversal is G, B, D, C, A, K, Q, P, R & in-order traversal is B, A, C, D, G, K, P, Q, R. Delete G and redraw a tree. **[6]**

b) Write a non-recursive function to display data in Binary Search Tree in descending order. **[5]**

c) Explain how to convert general tree to binary tree with example. **[4]**

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Total No. of Questions : 4]

SEAT No. : ____

PA-10006

[Total No. of Pages : 1

[6008]-262
S.E. (AI & DS) (Insem)
INTERNET OF THINGS
(2019 Pattern) (Semester - II) (217529)

Time : 1 Hour] ***[Max. Marks : 30***

Instructions to the candidates:

1) ***Attempt Q.1 or Q.2, Q.3 or Q.4.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Assume suitable data if necessary and mention it clearly.***

Q1) a) Draw a block diagram of basic components of a computer system. Explain each component in detail. **[10]**

b) With an example, write the steps to subtract a large number from a smaller number using 2's complement method. **[5]**

OR

Q2) a) Explain the instruction cycle in detail. **[7]**

b) Difference between microprocessor and microcontroller. **[8]**

Q3) a) Explain about the Stepper Motor System. **[5]**

b) Explain in detail the interfacing I/O Ports-PIO-8255. **[10]**

OR

Q4) a) Explain Peripherals and interfacing with 8086. **[7]**

b) Explain in details modes of operation-interfacing Analog-Digital Data Converter. **[8]**

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Total No. of Questions : 4]

SEAT No. : ____

PA-4977

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[6008]-229

S.E. (Computer /Artificial Intelligence & DataScience)(Insem)
SOFTWARE ENGINEERING
(2019 Pattern) (Semester-II) (210253)

Time : 1 Hour] ***[Max. Marks : 30***

Instructions to the candidates:

1) ***Solve Q.1 or Q.2, Q.3 or Q.4.***
2) ***Neat Diagram must be drawn wherever necessary.***
3) ***Assume Suitable data if necessary.***

Q1) a) List and explain the activities in software process frame work. **[6]**

b) Explain with neat diagram incremental model and state its disadvantages. **[5]**

c) Compare Plan driven and agile approach. **[4]**

OR

Q2) a) Elaborate how software engineering is a layered technology. **[6]**

b) Describe the Unified process. **[5]**

c) What is agility? List any three principles of agility. **[4]**

Q3) a) List all the tasks in requirement engineering. Explain it in brief. **[6]**

b) Define QFD. Explain the types of requirements defined by QFD. **[5]**

c) Design use case diagram for user interaction with ATM system. **[4]**

OR

Q4) a) Explain the importance of Requirement engineering. **[6]**

b) Explain the requirement Elicitation. **[5]**

c) What are the components of use case diagram? Explain usage of it with example. **[4]**

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Total No. of Questions : 4]

SEAT No. : [ ]

PA-10326

[Total No. of Pages : 1

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S.E. (Artificial Intelligence and Data Science) (Insem.)

217530: MANAGEMENT INFORMATION SYSTEMS

(2019 Pattern) (Semester - II)

Time : 1 Hour] ***[Max. Marks : 30***

Instructions to the candidates :

1) ***Answer Q.1 or Q.2, Q.3 or Q.4.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) Define MIS? Explain the Role of MIS. **[5]**

b) What are the different functions of Management? Explain it. **[5]**

c) Explain how the MIS is related with user? **[5]**

OR

Q2) a) Explain the different Levels of Management with suitable example. **[5]**

b) Discuss how MIS is useful to take Decision making with suitable example? **[5]**

c) How the Business Intelligence is used for MIS? **[5]**

Q3) a) Discuss the different types of Information System. **[5]**

b) Explain Tools and technologies for collaboration and team work. **[5]**

c) Describe Perspectives on Information System. **[5]**

OR

Q4) a) Describe the Ethical and social issues in information system. **[5]**

b) Explain Information system organization and their strategies. **[5]**

c) Discuss Internet based Collaboration Environments. **[5]**

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