Course Title: Laplace, Fourier Series and Complex Variables   Class Test-2   Course Code.: Math-2211

Time: 40 Minutes

Marks: 25

1.	Define Fourier Series. Derive Complex representation of a Fourier's Series.	10
2.	Expand the Fourier Series of $F(x) = x + x^2, -\pi < x < \pi$.	5
3.	Find the Fourier Complex transformation of $F(x) = \begin{cases} 1 - x^2, & |x| < 1 \\ 0, & |x| > 1 \end{cases}$	5

Dept. of ICE, Noakhali Science and Technology University

Code: ICE-2203, Class Test 02   Date: September 23, 2019 Year: 2, Term: 2,   Session: 2017-2018 (6th Batch)

30 mins

Answer all of the following questions.   **Marks: 12.5**

		Marks
1.	What is composite signal? Illustrate how distortion can affect composite signal.	3
2.	Define SNR. What are the main components of PCM?	3
3.	Why do we need line coding? Classify line coding schemes.	2.5
4.	What are the formulas to calculate theoretical maximum bit rate for noiseless and noisy channel.	2
5.	If a periodic signal is decomposed into five sine waves with frequencies of 100, 300, 500, 700 and 900 Hz, what is its bandwidth? Draw the spectrum, assuming all components have a maximum amplitude of 10 V.	2

Dept. of ICE, Noakhali Science and Technology University

Course Code: ICE-2203, Class Test 01   Date: July 29, 2019   Year: 2, Term: 2, Session: 2017-2018 (6th Batch)

Time: 30 mins

Answer all of the following questions.   **Marks: 12.5**

		Marks
1.	What do you mean by protocol? Why do we need protocol layering?	1+3
2.	What is the difference between a port address, a logical address, and a physical address?	3
3.	Differentiate between TCP/IP and OSI model.	3
4.	What are headers and trailers, and how do they get added and removed?	2.5

3.   All a...

AA

Department of Information and Communication Engineering

Course Code: ICE 2203, Time: 40 min, CT 1, Marks: 12.5

Answer all the following questions

Marks

1. What is data communication? Explain the components of a data communication system. 2

2. What are the differences among simplex, half-duplex and full-duplex mode? 2

3. An analog signal has a bit rate of 8000 bps and a baud rate of 1000 baud. How many data elements are carried by each signal element? How many signal elements do we need? 2

4. You need to send data 3 bits at a time at a bit rate of 3 Mbps. The carrier frequency is 10 MHz. Calculate the number of levels, the baud rate and the bandwidth. Draw the figure of the allocation of frequencies and bandwidth. 3.5

5. What are the types of digital to analog conversion? Explain ASK with proper diagram. 3

or adjacent...

se Code: ICE-2207   **Course Title: Database Management Systems**   Class Test-02, 2019
e: 20 Minute   Marks: 12.5
                    Course Title: Database Management Systems
                                Set: B   Class Test-02, 2019
                                                                Marks: 12.5

a. Explain the difference between partial and total constraints.
b. Explain specialization with example.   3
c. How can we represent entity sets with multivalued attributes? Explain with an example.   3
d. List all departments along with the number of instructors in each department.   3.5
                                                                                            3

What is primary key? Explain about the natural

Code: ICE-2207   Course Title: Database Management Systems   Class Test-02, 2019
e: 20 Minute   Set: A   Marks: 12.5

a. Explain the difference between a weak and strong entity set.   3
b. Explain generalization with example.   3
c. How can we represent entity sets with composite attributes? Explain with an example.   3.5
d. Delete all instructors whose salary is less than the average salary of instructors.   3

Department of Information and Communication Engineering
Noakhali Science and Technology University
Class Test-01, 2019 A

Course Code: ICE-2207   **Course Title: Database Management Systems**
Time: 30 Minute   **Marks: 25**

a.   Define instance and schema. Describe about the drawbacks of using file systems to store data.   5
b.   Define query processing. Why do we need transaction management in DMBS?   5
c.   What is primary key? Explain about the natural join with example.   5
d.   i.   Retrieve all employees in department ICE whose salary is between Tk. 20000 and 40000.   3
     ii. Find the names and average salaries of all departments whose average salary is greater   3
          than Tk. 30000
     iii. Find the total number of (distinct) students who have taken course sections taught by   4
          the instructor with *ID 180120M*.

1.	Prove that the emf induced in the close circuit equals the negative time –rate of change of the magnetic flux linking a circuit applies to a stationary circuit as well as a moving one.	7
2.	Explain Stokes's Theorem and Divergence Theorem .	5
3.	Drive the expression for retarded scalar potential.	8
4.	What do you mean by Poynting vector? Find out the differential form of Faraday's law from its integral form using Stokes's theorem.	5

1.	Define Reluctance, Eddy current, Displacement current, Electromagnetic Induction.	6
2.	Explain the fundamental Maxwell's equations.	5
3.	Drive the nonhomogeneous wave equation for scalar potential V.	8
4.	What do you mean by Poynting vector? Derive the expression of Poynting theorem.	6

ICE
Set-A

Dept. of ICE, Noakhali Science and Technology University
Course Code: ICE 2209, Course Title: Electromagnetic fields and waves
Class Test 01   Date: Sep 16, 2019   Year: 2, Term: 2,   Session: 2017-2018   (6th Batch)

Marks: 12.5

Time: **35 mins**

| | Marks |

Answer all of the following questions.

1. Define magnetostatic field. Write down the fundamental postulates of magnetostatics in free space   1+3

2. An infinitely long, straight conductor with a circular cross section of radius b carries a steady current I. Determine the magnetic flux density both inside and outside the conductor. Ex 6.1   3.5

3. Show that the magnetic field at the end of a long solenoid is just one half of that at the center.   5

matrix? r

What do you understand by order of growth of an algorithm?   3

Define Θ notation. Which one of the following has Θ notation and which has not? *Algorithm*   6

i) Selection sort   ii) Insertion sort   iii) Merge sort
Explain your answer.

③ Explain the followings with example: 3+5

i) Recurrence relation   ii) Amortized analysis $\Theta(n \log n)$

4. Write any algorithm of your choice and do its worst case, best case and average case analysis.   6

⑤ Define space complexity with example.   2

CT-2

① Suppose that you are given an array of n elements. Now write two alg to create heap from this array in ⓘ $n\log n$ time ⓘ linear time. → MakeHeap

Show that analysis of both of the Algorithms. ── ②

↳ Heapsort.

② Explain how elements are sorted using Radix sort.

Department of Information and Communication Engineering
Class Test, Session: 2016-2017
Course Code: ICE 2205 , Course Title: Algorithm design and analysis
Duration: 50 minutes, Marks: 19   SET: B

Answer all the following questions.

1. How does the name dynamic programming introduced although it's not a programming language?	2
2. What are the elements of DP? Explain Briefly with an example.	4
3. For 4 matrices how many of parenthesize is possible? Deduce it.	2
4. Find out LCS for the subsequences $X = BACDB$ and $Y = BDCB$. Place X as row and Y as column.	3
5. Define Knapsack problem. Which algorithm's application is it? Justify your answer.	5
6. Which one is better to represent a matrix: adjacency lists or adjacency matrix? Justify your answer.	3

Department of Information and Communication Engineering
Class Test, Session: 2016-2017
Course Code: ICE 2205, Course Title: Algorithm design and analysis
Duration: 50 minutes, Marks: 19   SET: A

Answer all the following questions.

1. Compare between dynamic programming and greedy algorithm.   3
2. What is MCM? Why it is required?   2
3. Write down the LCS algorithm.   4
4. What are the 4 steps of DP? Briefly explain.   4
5. What are the difference between ST and MST?   2
6. Solve the MST using Prim's algorithm.   4