Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)

Institute Level Elective
(Common for All Branches)

Academic Year 2023-2024

Continuous Assessment: Term Test – I
B.E. (Semester VII)

Duration: 1 hour **Maximum Marks: 25**

Personal Finance Management (DJ19ILO7015)

Instructions:
1. Read the questions carefully.
2. All questions are compulsory except for the internal options.

Q.No.	Question	Bloom's Level	CO Mapped	Max. Marks
1.	What different types of financial instruments that are traded in the capital markets?	Understanding	CO1	6
2.	State difference between Cooperative and Commercial Banks? **OR** What is the role of SEBI in capital market?	Understanding	CO1	6
3.	What is meant by Loan against Jewellery? Explain in Brief. **OR** What are different types of loan? Explain in Brief.	Apply	CO2	6
4.	"Darshana Auto Components" is selling Automobile spare parts. The firm purchased spare parts worth Rs.8,000 (inclusive of GST) form wholesaler and sold it to customer, for Rs.10,000(inclusive of GST). Rate of GST is 28%. Find i)Input Tax and Output Tax ii) What amount of bill the company paid at the time of purchase iii) Hence find the payable CGST and SGST	Apply	CO3	7

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Department of Computer Engineering
Academic Year 2023-2024
Term Test – I

Course Name: Digital Signal Processing and Applications **Course Code: DJ19CEC701**
Class: BTech (A & B) **Sem:** VII
Date:16.10.23 **Time**: 1 Hour (3.00-4.00pm)
Maximum Marks: 25

Instructions:

1. Please solve questions in order with clear and dark ink pens
2. Assume data wherever needed

Q. No	Questions	COs	Bloom	Marks
1 a	**Sketch** following signals if x(n)= {1,2, -1,5,0,4} ↑ i) x(n)u(n-1) ii) x(2n) iii)x(-n-2) iv)x(n-2)δ(n-2) v)x(n+3)	1	3	5
1 b	Examine whether given system is **Linear or Nonlinear, Variant or Invariant, Causal or Non-casual, Static or Dynamic**: $y(n)=[x^2(-n)]$	1	3	4
	OR			
1 c	Examine whether given signal is **Energy or Power, Periodic or Aperiodic, Even or Odd**: $x(n)=\cos[\frac{\pi}{6}n]$			4
2 a	State **Time Shift & Frequency Shift** Properties of DFT	2	1	1
2 b	Find Circular Convolution using **DFT IDFT** x1(n)= δ(n)+ 2δ(n-1)+ δ(n-2)+ δ(n-3) x2(n)=2δ(n)- δ(n-1)+2δ(n-2)	2	3	5
2 c	Find **IDFT** if X[K]=[7,-2-j,1,-2+j] using **DIT Flow-graph**	2	3	5
	OR			
2d	Develop **DIT FFT** flow-graph for **N=4** using Radix 2			5
3	Solve convolution of given two sequences using **Overlap & Save Algorithm** x(n)={1,2,3,4,5,6,7,8,9,10,11} and h(n)={1,1}	3	2	5

ALL THE BEST

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Department of Computer Engineering
A.Y. 2023-24 (Odd Semester)
Continuous Assessment: Term Test – I

Max. Marks: 25	**Duration: 1 Hr.**
Class: Final Year B.Tech	**Semester: VII**
Course: Deep Learning (C1 and C2)	**Course Code: DJ19CEEC7011**
Program: Computer Engineering	**Date: 17/10/2023**

Instructions: (If any)

(1) Please solve questions in order with clear and dark ink pens

(2) Draw figures wherever required

Q.No.	Question Description	CO	Blooms Taxonomy	Marks
Q.1 (a)	Explain any five regularization techniques.	CO1	Understand	**05**
Q.1 (b)	Describe batch normalization. What are the advantages of applying batch normalization?	CO1	Understand	**05**
Q.2 (a)	What is forward propagation in neural networks? Derive the equations used by EBPTA algorithm for updating weights.	CO2	Evaluate	**07**
	OR			
Q.2 (b)	Describe applications of deep learning. What are the reasons behind taking off of deep learning?	CO4	Understand	**07**
Q.3 (a)	Perform full convolution of 5x5 input image (I) with 3x3 kernel (k) by considering Padding=1 and Stride=1. What will be the size of resultant image? Image (I): 2 4 9 1 4 / 2 1 4 4 6 / 1 1 2 9 2 / 7 3 5 1 3 / 2 3 4 8 5 Kernel (k): 1 2 3 / -4 7 4 / 2 -5 1	CO2	Evaluate	**08**
	OR			
Q.3 (b)	Derive the equations of backpropagation in convolution layer of CNN for updating kernel, bias and the error to be back propagated to previous layer.	CO2	Evaluate	**08**

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Department of Computer Engineering
A.Y. 2023-24 (Odd Semester)
Continuous Assessment: Term Test – I

Max. Marks: 25	**Duration: 1 Hr.**
Class: FY B Tech. A and B	**Semester: VII**
Course: Distributed Computing	**Course Code: DJ19CEC702**
Program: Final Year B.Tech. in Computer Engineering	**Date:**

Instructions:

1. **Attempt any 5 questions from Q.1 to Q.7**
2. **Assume suitable data wherever required, but justify it.**
3. **Figures to the right indicate full marks.**
4. **Draw neat-labelled diagrams wherever necessary**

Q.No.	Question Description	CO	Blooms Taxonomy	Marks
Q.1	Explain different issues and goal related to design of Distributed System.	CO 1	understand	[5]
Q.2	Explain different types of Failure Models.	CO 1	understand	[5]
Q.3	What are the different models of middleware ?	CO 2	apply	[5]
Q.4	Define Remote Procedure Call (RPC). Explain the working of RPC in detail.	CO 2	remember	[5]
Q.5	Differentiate between Message oriented and Stream oriented communications.	CO 2	analyze	[5]
Q.6	Explain Berkeley Physical Clock Algorithm.	CO 3	understand	[5]
Q.7	Discuss Raymond's Tree based algorithm of token based distributed mutual exclusion.	CO 3	remember	[5]

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Department of Computer Engineering
A.Y. 2023-24 (Odd Semester)
Continuous Assessment: Term Test – I

Max. Marks: 25	**Duration: 1 Hr.**
Class: Final Year B. Tech.	**Semester: VII**
Course: Bayesian Computing	**Course Code: DJ19CEHN1C3**
Program: B. Tech. in Computer Engineering	**Date: 18/10/2023 (3:00 – 4:00 PM)**

Instructions:

(1) All questions are compulsory.

(2) Assume suitable data wherever required, but clearly state it.

Q. No.	Question Description	CO	Blooms Taxonomy	Marks
Q.1	The incidence of a disease in the population is 1%. A medical test for the disease is 90% accurate in the sense that it produces a false reading 10% of the time, both: (a) when the test is applied to a person with the disease; and (b) when the test is applied to a person without the disease. A person is randomly selected from the population and given the test. The test result is positive (i.e. it indicates that the person has the disease). What is the probability that the person actually has the disease? **OR** Consider six loaded dice with the following properties. Die A has probability 0.1 of coming up 6, each of Dice B and C has probability 0.2 of coming up 6, and each of Dice D, E and F has probability 0.3 of coming up 6. A die is chosen randomly from the six dice and rolled twice. On both occasions, 6 comes up. What is the posterior probability distribution of θ, the probability of 6 coming up on the chosen die?	CO1	Apply	05
Q.2	A credit card company wants to determine the mean income of its card holders. It also wants to find out if there are any differences in mean income between males and females. A random sample of 225 male card holders and 190 female card holders was drawn, and the following results were obtained:	CO1	Apply	~~10~~ 5

	Mean	Standard Deviation
Males	$ 16450	$3675
Females	$ 13220	$ 3050

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	Calculate the 95% confidence intervals for the mean income for males and females. Is there any evidence to suggest that, on average, males' and females' income differ? If so, describe the difference.			
Q.3	For Beta distribution with shape parameter α, scale parameter β, mean μ and standard deviation σ, prove that $\boldsymbol{\alpha = \frac{\mu^2 - \mu^3}{\sigma^2} - \mu.}$	CO1	Analyze	**05**
Q.4 (a)	Describe properties of Discrete Markov Chains. Briefly explain what burn-in is for MCMC. **OR** Derive formula of Acceptance Probability A for sampling from normal distribution using Metropolis Hastings algorithm.	CO1	Understand, Apply	**05**
Q.4 (b)	Describe the overall Gibbs sampling algorithm briefly, Suggest a few pros and cons of Gibbs sampling vs Metropolis-Hastings.	CO1	Understand, Analyze	**05**

********** All the best **********

Z-Table

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817

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Department of Computer Engineering
Academic Year 2023-2024
Term Test – II

Course Name: Digital Signal Processing and Applications **Course Code: DJ19CEC701**
Class: BTech (A & B) **Sem:** VII
Date: 23 Nov 2023 **Time**: 1 Hour
Maximum Marks: 25

Instructions:

1. Please solve questions in order with clear and dark ink pens
2. Assume data wherever needed

Q. No	Questions	COs	Bloom	Marks
1a	Discuss Digitization of an Image using Sampling & Quantization, also elaborate importance of it with respect to Image Quality	4	2	4
	OR			
1b	Illustrate how contrast stretching increases dynamic range of an Image	4	2	4
2	Perform Histogram Equalisation, Sketch input & output Histogram.	5	3	8
3	Calculate 2D DFT of an Image	5	3	5
4	Justify/Contradict: High Boost Filter is preferred over High Pass Filter	5	3	5
5	Discuss first order derivative filters (Names & Mask for each)	6	2	3

N	0	1	2	3	4	5	6	7
Nk	220	140	50	60	70	170	130	160

16	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

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Department of Computer Engineering
A.Y. 2023-24 (Odd Semester)
Continuous Assessment: Term Test – II

Max. Marks: 25	**Duration: 1 Hr.**
Class: Final Year B.Tech	**Semester: VII**
Course: Deep Learning (C1 and C2)	**Course Code: DJ19CEEC7011**
Program: Computer Engineering	

Instructions: (If any)

(1) Please solve questions in order with clear and dark ink pens
(2) Draw figures wherever required

Q.No.	Question Description	CO	Blooms Taxonomy	Marks
Q.1 (a)	Identify which deep learning model is suitable for Face Frontal View Generation application. Explain why it is suitable and how it can be applied.	CO4	Understand	**05**
Q.1 (b)	Write a short note on deep learning for speech recognition.	CO4	Understand	**05**
Q.2 (a)	Describe how selective read, selective write and selective forget is achieved in LSTM.	CO2	Understand	**07**
	OR			
Q.2 (b)	Describe back propagation through time for RNN with the help of mathematical equation.	CO2	Understand	**07**
Q.3 (a)	Prove mathematically that global minimum of virtual training criterion V(G)=max V(G,D) is obtained for Generative adversarial network if and only if PG=PData	CO2	Evaluate	**08**
	OR			
Q.3 (b)	Explain the following types of auto encoders. 1) Denoising auto encoders 2) Contractive auto encoders	CO2	Understand	**08**

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Department of Computer Engineering

A.Y. 2023-24 (Odd Semester)

Continuous Assessment: Term Test – II

Max. Marks: 25	**Duration: 1 Hr.**
Class: FY B Tech. A and B	**Semester: VII**
Course: Distributed Computing	**Course Code: DJ19CEC702**
Program: Final Year B.Tech. in Computer Engineering	**Date:**

Instructions:

1. **Attempt any 5 questions from Q.1 to Q.7**
2. **Assume suitable data wherever required, but justify it.**
3. **Figures to the right indicate full marks.**
4. **Draw neat-labelled diagrams wherever necessary**

Q.No.	Question Description	CO	Blooms Taxonomy	Marks
Q.1	Explain desirable features of global scheduling algorithm.	CO 4	Understand	[5]
Q.2	Discuss the different issues and steps involved in developing a good load-balancing algorithm.	CO 5	Remember	[5]
Q.3	Describe code migration issues in detail.	CO 4	Understand	[5]
Q.4	What are different consistency models? (Any five)	CO 5	Analyze	[5]
Q.5	Explain different types of ordering of the messages in group communication..	CO 5	Understand	[5]
Q.6	What are the desirable features of good distributed file systems?	CO 6	Analyze	[5]
Q.7	Write short note on File Caching Schemes.	CO 6	Evaluate	[5]

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Department of Computer Engineering
A.Y. 2023-24 (Odd Semester)
Continuous Assessment: Term Test – II

Max. Marks: 25	**Duration: 1 Hr.**
Class: Final Year B. Tech.	**Semester: VII**
Course: Bayesian Computing	**Course Code: DJ19CEHN1C3**
Program: B. Tech. in Computer Engineering	**Date: 25/11/2023 (12:30 – 1:30 PM)**

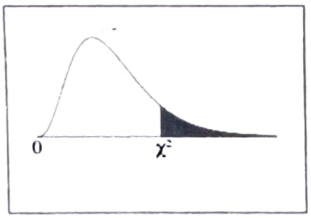
Instructions:
(1) All questions are compulsory.
(2) Assume suitable data wherever required, but clearly state it.

Q.No.	Question Description	CO	Blooms Taxonomy	Marks
Q.1	A random sample of 500 U.S. adults is questioned regarding their political affiliation and opinion on a tax reform bill. The results of this survey are summarized in the following contingency table: Favor / Indifferent / Opposed / Total Democrat: 138 / 83 / 64 / 285 Republican: 64 / 67 / 84 / 215 Total: 202 / 150 / 148 / 500 Test if the political affiliation and their opinion on a tax reform bill are dependent at a 5% level of significance using Chi-Square test.	CO1	Apply	**07**
Q.2 (a)	What is Gibs Sampling? Give Algorithm for Markov Chain Monte Carlo (MCMC) Technique. How the problem of Estimating Candy Colors is solved using MCMC.	CO2	Understand, Apply	**08**
	OR			
Q.2(b)	Suppose you have a dataset of exam scores for a class of students: 85,91,94,85,92,100,98,87,89,400,85,90,92,86,91,100,98,87,83,300 Notice that there is an outlier in the dataset (400). Compute 1) Traditional Mean 2) Robust Median	CO2	Understand, Apply	**04**
Q.2(c)	Explain how Markov Chain Monte Carlo (MCMC) Technique is applied to solve the problem of Estimating Average Flower Height.	CO2	Understand	**04**
Q.3	The NCHS reported that the mean total cholesterol level in 2002 for all adults was 203. Total cholesterol levels in participants who attended the seventh examination of the Offspring in the Framingham Heart Study are summarized as follows: **n=3310,**	CO1	Analyze	**04**

	$\bar{X}$=200.3, and s=36.8. Is there statistical evidence of a difference in mean cholesterol levels in the Framingham Offspring? Use 5% level of significance and given that $Z_{\frac{\alpha}{2}} = 1.96$			
Q.4	The sales of a company (in million dollars) for each year are shown in the table below. X (years after 2005): 0, 1, 2, 3, 4 Y (Sales): 12, 19, 29, 37, 45 a) Find the least square regression line y = a x + b. b) Find coefficient of determination c) Use the least squares regression line as a model to estimate the sales of the company in 2012.	CO1	Apply	**06**

********** All the best **********

Chi-Square Distribution Table



The shaded area is equal to α for $\chi^2 = \chi^2_\alpha$.

df	$\chi^2_{.995}$	$\chi^2_{.990}$	$\chi^2_{.975}$	$\chi^2_{.950}$	$\chi^2_{.900}$	$\chi^2_{.100}$	$\chi^2_{.050}$	$\chi^2_{.025}$	$\chi^2_{.010}$	$\chi^2_{.005}$
1	0.000	0.000	0.001	0.004	0.016	2.706	3.841	5.024	6.635	7.879
2	0.010	0.020	0.051	0.103	0.211	4.605	5.991	7.378	9.210	10.597
3	0.072	0.115	0.216	0.352	0.584	6.251	7.815	9.348	11.345	12.838
4	0.207	0.297	0.484	0.711	1.064	7.779	9.488	11.143	13.277	14.860
5	0.412	0.554	0.831	1.145	1.610	9.236	11.070	12.833	15.086	16.750
6	0.676	0.872	1.237	1.635	2.204	10.645	12.592	14.449	16.812	18.548
7	0.989	1.239	1.690	2.167	2.833	12.017	14.067	16.013	18.475	20.278
8	1.344	1.646	2.180	2.733	3.490	13.362	15.507	17.535	20.090	21.955
9	1.735	2.088	2.700	3.325	4.168	14.684	16.919	19.023	21.666	23.589
10	2.156	2.558	3.247	3.940	4.865	15.987	18.307	20.483	23.209	25.188
11	2.603	3.053	3.816	4.575	5.578	17.275	19.675	21.920	24.725	26.757
12	3.074	3.571	4.404	5.226	6.304	18.549	21.026	23.337	26.217	28.300
13	3.565	4.107	5.009	5.892	7.042	19.812	22.362	24.736	27.688	29.819
14	4.075	4.660	5.629	6.571	7.790	21.064	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	8.547	22.307	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	9.312	23.542	26.296	28.845	32.000	34.267
17	5.697	6.408	7.564	8.672	10.085	24.769	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	10.865	25.989	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	11.651	27.204	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	12.443	28.412	31.410	34.170	37.566	39.997