Name..... Roll No.....

National Institute of Technology Delhi

Name of the Examination: B.Tech. ECE
Bachelor of Technology (4th Year/Semester VIII)
(Mid Semester Examination March 2023)

Course Code: HML 451 Time: 1 hour 30 minutes

Course Title: Industrial Management Total Marks: 25

Note: Attempt all questions.

1. Describe about the evolution of management thought. **(6)**

2. Define the term 'Management'. Explain briefly about the various functions of Management. **(6)**

3. What is meant by Market Segmentations? What are the criteria of successful Market segmentation? **(6)**

4. Explain the principles of management given by Henry Fayol. **(7)**

Roll No.:.....

National Institute of Technology Delhi

B. Tech Examination March 2023

Branch	**: Electrical Engineering**	**Semester**	**:VIII**
Title of the Course	**: Computer Application in Power Systems**	**Course Code**	**: EEL 461**
Maximum Marks	**: 25**	**Time**	**: 1.5 Hours**

Note: **Attempt all questions.** Symbols used in the questions are having their usual meaning. Assume if any data is missing.

Q.1 **Define the following term:**

(a) Element **(1)**

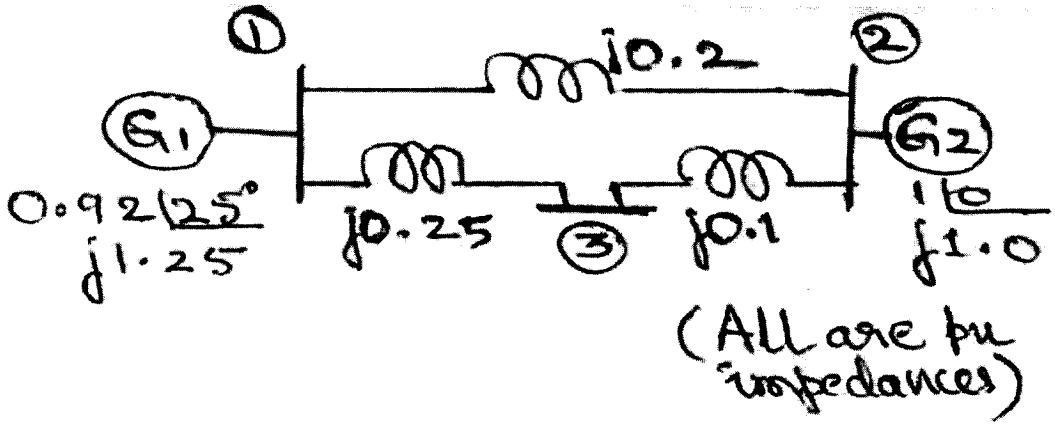
(b) Graph **(1)**

(c) Tree **(1)**

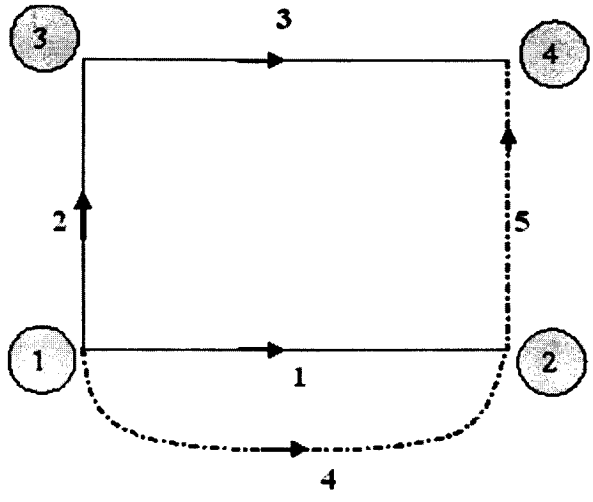
(d) Basic Cut Set **(1)**

(e) Basic Loop **(1)**

Q.2 Obtain Y_{bus} for the impedance network shown below by the rule of inspection. Also, determine Ybus for the reduced network after eliminating the eligible unwanted node. Draw the resulting reduced system diagram. **(6)**



Q.3 For the network of below figure, form the primitive matrices [z] & [y] and obtain the bus admittance matrix by singular transformation. Choose a Tree T (1, 2, 3). The data is given in Table. **(6)**



Elements	Self Inductance	Mutual Inductance
1	j 0.6	-
2	j 0.5	j 0.1 (with element 1)
3	j 0.5	-
4	j 0.4	j 0.2 (with element 1)
5	j 0.2	-

Q.4 Explain the working of On-Load Tap Changing (OLTC) Transformer. Write the advantage of OLTC. **(3)**

Q.5 Explain the representation of transformers where off-nominal turn ratio is real. Also draw the Π-equivalent circuit. **(5)**

****

Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B. Tech

Branch	**: EE**	**Semester**	**: 8**
Title of the Course	**: HVDC & Flexible AC Transmission Systems**	**Course Code**	**: EEL 451**

Time: 1.5hr **Maximum Marks: 25**

Note: ***Attempt all questions.***

Mark

Q. [1] What is the need of static converter in HVDC systems? 2

Q. [2] What is meant by firing angle control? 2

Q. [3] What is the role of FACTS devices in reactive power compensation? How are FACTS controllers make transmission flexible? 3

Q. [4] Compare A.C. and D.C. transmission system based on economic aspects. 4

Q. [5] List the advantages of HVDC transmission line. 4

Q. [6] A load P = 1000 kW with power factor 0.5 lagging is fed by a 5 kV source. A capacitor is added in parallel such that the power factor is improved to 0.8 lagging. Find the percentage reduction in current drawn from the generator. 5

Q. [7] Two loads $Z_1 = 100 + j\,0\ \Omega$ and $Z_2 = 10 + j\,20\ \Omega$ are connected across a 200 V rms, 60 Hz. (i) Find the real and reactive power, power factor and current. (ii) Find the capacitance of the capacitor connected across the load to improve the power factor to 0.8 lagging. 5

Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B. Tech. (ECE)

Mid-Semester Examination, Mar.- 2023

Branch : ECE **Semester** : VIII

Title of the Course : Pattern Recognition and Machine Learning **Course Code** : ECLB 477

Time: 1:30 Hours **Maximum Marks: 25**

Note: Attempt ***all*** sections. Be precise in your answer.

Assume any missing data. Marks are mentioned on the right side.

---

1. Attempt ***all*** questions. [1 × 10]
   (a). What is Kurtosis?
   (b). Explain Central limit theorem.
   (c). Write significance of Rayleigh distribution?
   (d). Write conditions for a dummy variable to be a random variable.
   (e). Explain Bayes theorem.
   (f). Define Artificial Intelligence.
   (g). Write significance of the data mining.
   (h). What is feature space?
   (i). Explain drawbacks of KL transform.
   (j). Why do we use Fisher Linear Discriminant?

2. (a) Write difference between mutually exclusive and independent events.
   (b) Explain distinct designing Pattern Recognition approaches.
   (c) Write short note on a differential chain code.

   [2 + 2 + 2]

3. Explain different types of Unsupervised learning. Also, write its advantages and disadvantages. [3]

4. Explain different types of spatial domain features of the Texture.

   [3]

5. Explain PCA transform. also explain its advantages. [3]

Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B. Tech

Branch : CSE **Semester** : VIII

Title of the Course : Information Security **Course Code** : CSL 466

Time: 1.5 Hours **Maximum Marks: 25**

Q. No.	1	2	3	4	5	6
CO	1	1	1	2	2	2
PO						

Note: Please attempt all questions

---

1. Explain the following terms with respect to information security:
   (a) Access control (b) Risk assessment (c) Non-Repudiation (d) Authorization
   (e) Confidentiality (f) Integrity (g) Encryption (h) Decryption.

   (8 Marks)

2. Use Transposition cipher to encrypt and decrypt the message "MEET ME AT BOAT CLUB CANTEEN" using the key "EXAMPLE". **(3Marks)**

3. Explain the playfair cipher with example. **(2 Marks)**

4. What type of security is provided by CBC mode of operation in DES? **(3 Marks)**

5. During the transmission of C4 (the fourth cipher block) an error in the 3rd bit occurred. How many plaintext blocks will be affected, if we are using: 16bit CFB mode for DES? Explain why? **(4 Marks)**

6. Which were the criteria used for the analysis of AES.
   (a) Compare AES with DES.
   (b) Compare AES with triple DES.

   (5 Marks)

Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B. Tech

Branch	**: CSE**	**Semester**	**: VIII**
Title of the Course	**: Network Security and Cryptography**	**Course Code**	**: CSB 451**

Time: 1.5 Hours **Maximum Marks: 25**

Q. No.	1	2	3	4	5
CO	1	1	1	2	2
PO					

Note: Please attempt all questions

---

1. Use Hill Cipher to encrypt and decrypt the message "ESSENTIAL". The key for encryption. **(5 Marks)**
   Key: "ANOTHERBZ"
2. Apply cryptanalysis on the following cipher-text which was encrypted using single columnar transpositions.

   Ciphertext: EOCXMTUEALEXECTXTAAXMTNXEBBN

   (5 Marks)
3. Let the message be M = COMPITDT and the key be K = COEPPUNE. Use DES algorithm to encrypt and decrypt the message.

   (5 Marks)
4. Generate the subkey for the first round of the AES algorithm. The key in hexadecimal is:

   64 46 5A 65 82 AB 7C 73 4E 5B 47 8D 9A 12 35 57
   w[0] = (64 46 5A 65);
   w[1] = (82 AB 7C 73);
   w[2] = (4E 5B 47 8D);
   w[3] = (9A 12 35 57);

   Find out g(w[3]):
   W[3] = (9A 12 35 57)

   (5 Marks)
5. Generate the key for decryption from the following encryption key.

   Key: 10101001110111110110010111000011

   (5 Marks)