(Time: 3 hrs.) **Maximum Marks = 80**

NB:

1. Question No. 1 is compulsory and solve any THREE questions from remaining questions
2. Assume suitable data if necessary
3. Draw clean and neat diagrams

Q1. Attempt any four. [20 Marks]

a. Differentiate between direct and indirect manipulation. [5 Marks]
b. Explain Ergonomics. [5 Marks]
c. Draw and explain Mobile Ecosystem [5 Marks]
d. Describe Deductive Reasoning [5 Marks]
e. Elaborate HMI in software process [5 Marks]
f. Explain types of Mobile Applications [5 Marks]

Q2. a. Explain seven stages of action with each phase in detail [10 Marks]

b. Design a user interface for 'Blood Donation' awareness campaign. Assume appropriate data required for it. [10 Marks]

Q 3. a. Discuss types of windows with examples. [10 Marks]

b. Design a user interface of an online grocery shop. Assume suitable data and draw interfaces neatly. [10 Marks]

Q 4. a. Discuss different types of statistical graphs. [10 Marks]

b. What is Mobile 2.0? Explain the principles of Mobile 2.0. [10 Marks]

Q 5. a. Differentiate between Graphical User Interface and Web User Interface. [10 Marks]

b. Discuss different phases of the goal directed design process. [10 Marks]

Q .6. Write short notes on any four [20 Marks]

a. Icons [5 Marks]
b. Colors [5 Marks]
c. Multimedia [5 Marks]
d. Paradigms [5 Marks]
e. Screen navigation and flow [5 Marks]
f. Windows presentation styles [5 Marks]

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(3 Hours) **[Total Marks: 80]**

Instructions:

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

Q1. **Attempt any 4 questions out of 6. Each question carries** **5 marks.**

a) Compare between DOS, NOS and Middleware.
b) Explain with the diagram Dispatcher-Worker thread model.
c) Explain happens before relation with its features.
d) Explain naming in a distributed system.
e) Compare caching and replication.
f) Explain stream - oriented communication.

Q2. **Each question carries** **10 marks.**

i. Explain in detail Raymond's Tree-Based algorithm (Token-based algorithm).
ii. Write a note on the Network File System (NFS) .

Q3. **Each question carries** **10 marks.**

i. Write note on Andrew File System (AFS) .
ii. Explain steps involved in the RMI execution process in detail.

Q4. **Each question carries** **10 marks.**

i. What is Remote Procedure Call?Explain the working of RPC in detail.
ii. Explain different types of distributed systems with diagrams.

Q5. **Each question carries** **10 marks.**

i. Explain with diagrams various client-centric consistency models.
ii. Compare static and dynamic load balancing algorithms.

Q6. **Each question carries** **10 marks.**

i. Explain with an example load sharing approach.
ii. Explain any one election algorithm in detail with suitable example.

Time: 3Hours **Marks: 80**

N.B. Attempt any Four
Assume suitable data wherever necessary

Q.1

A. Explain lexicon, lexeme and the different types of relations that hold between lexemes 10

B. What is a language model? Write a note on the N-Gram language model. 10

Q2

A. What do you mean by word sense disambiguation (WSD)? Discuss knowledge-based WSD. 10

B. Why is POS tagging hard? Discuss possible challenges while performing POS tagging. 10

Q3

A. Explain Natural Language Understanding and Natural Language Generation 10

B. Explain regular expression in Natural language processing 10

Q4

A. What is the role of FSA in morphological analysis? Explain FST in detail 10

B. Explain the generic NLP system and the ambiguities of NLP 10

Q5

A. What is the need for preprocessing text data in natural language? Explain the steps of preprocessing with an example. 10

B. Explain information retrieval versus Information extraction systems 10

Q6

A. Define discourse & pragmatic analysis. Discuss reference resolution problem in detail. 10

B. Explain derivational and inflectional morphology in detail with suitable example 10