(Time: $2\frac{1}{2}$ hours)

[Total Marks: 60]

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculator is **allowed**.

1. Attempt *any two* of the following: 12

a. Enlist and explain the seven stages of Donald Norman's model in detail
b. What is design? Explain the process of design with the help of a diagram for human computer interaction
c. With the help of a diagram, explain the life cycle for interactive system
d. Write short note on Iterative design and prototyping

2. Attempt *any two* of the following: 12

a. Explain Shneiderman's eight Golden Rules of design rules
b. Write short note on User Interface Management Systems (UIMS)
c. Explain Heuristic Evaluation and Review-based evaluation in detail
d. Write short notes on Principles to support usability and Principles of learnability related to design rules.

3. Attempt *any two* of the following: 12

a. Explain Multi-Sensory Systems and Speech Synthesis in detail.
b. Write short notes on Techniques for knowledge representation and the Problems with knowledge representation and modelling
c. Write short notes on Goals, Operators, Methods and Selection (GOMS)
d. Explain Backus–Naur Form (BNF) and Task–Action Grammar (TAG) in detail

4. Attempt *any two* of the following: 12

a. Explain soft systems methodology in detail
b. Write short note on
   1. Conversations for action (CFA)
   2. Text-based communication
c. Explain Knowledge Based Analyses in detail
d. What is Task analysis? Enlist and explain the Approaches to task analysis in task models

5. Attempt *any two* of the following: 12

a. Explain State transition networks (STN) in detail.
b. Write short notes on Petri nets. Explain petri nets with an example
c. What do you mean by Interaction model? Explain PIE model in detail.
d. Explain Groupware Task Analysis in detail.

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