

F.Y.B.Sc.(D.S.) – Semester I
BASICS OF INDIAN KNOWLEDGE SYSTEM

(Time: 60 min)

Total Marks: 30

Instructions:

17/10/2025

1. **Q.1** is Compulsory.
2. Attempt **any 2** from Q. 2 to Q.4.
3. Figures to the right indicate full marks.

1. Read the passage and answer the following questions given below: -

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PASSAGE: -

The introduction of metals, especially iron, marked an important phase in the history of deforestation in India. In the early Vedic period, the Aryans probably did not know iron, using the word *ayas* for metals in general. Archaeological findings suggest that iron appeared in India between 1000 and 800 B.C., and its tools made the cutting of large trees much easier. This innovation allowed agricultural groups to settle in forested regions, particularly as the Aryans moved eastward into the Gangetic plains.

When the Aryans arrived in north-west India, described in the Rigveda as *Sapta Sindhas* or the land of seven rivers, they began settling around 1400 B.C., first in Punjab and later across wider regions. Being both pastoral and agricultural, they required land for crops and grazing. To meet these needs, forests were cleared using fire, stone axes, and eventually iron implements. The burning of the Khandava forest in the Mahabharata symbolically represents such destruction through fire and deforestation.

During the early Vedic phase, forests were not destroyed for city building, as India had no major urban centers after the fall of the Harappan culture. Between this decline and the rise of the “second urbanization” around the 6th century B.C., historians note a thousand-year “Dark Age.” Throughout this period, the Aryans lived amidst forests, mainly along riverbanks, clearing areas for villages and farmlands. Wood was central to their lives, used for cottages, carts, chariots, and fuel. Clearing of forest tracts also became necessary for creating roads and pathways to connect settlements.

Thus, Aryan expansion steadily accelerated deforestation, driven by agriculture, animal rearing, and communication needs. From ancient times, human survival and progress in India relied heavily on forest exploitation, laying the roots of deforestation deep in its early history.

Questions: -

1. What role did iron play in the history of deforestation in India?
2. How did the Aryans clear forests before the use of iron implements?
3. What does the burning of the Khandava forest in the Mahabharata symbolize?
4. Why were forests cleared during the early Vedic phase?
5. How was wood important in the lives of the Aryans?

2. Answer the following:

- a. Explain wastewater management practices in Ancient India.
- b. Describe the historical perspective of ancient tourism in India.

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3. Answer the following:

- a. Explain the significance of town planning in Ancient India with suitable examples.
- b. Explain how Ancient Indian Stone masonry techniques influence other civilizations?

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4. Answer the following:

- a. Explain the features of town planning during the Indus Valley Civilization.
- b. Discuss the role of early trade routes of the world in promoting tourism and cultural exchanges in Ancient India.

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F.Y.B.Sc.(D.S.) – Semester I
COMPUTATIONAL MATHEMATICS
 (Time: 1 hour)

Total Marks: 30

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 calculators is allowed.

1. Attempt any three of the following: 15

a. List the elements of the following sets if the universal set is $U = \{a, b, c, \dots, y, z\}$. Furthermore, identify which of the set, if any, are equal.
 $A = \{x|x \text{ is a vowel}\}$, $B = \{x|x \text{ is a letter in the word 'little'}\}$,
 $C = \{x|x \text{ precedes } f \text{ in the alphabet}\}$,
 $D = \{x|x \text{ is a letter in the word 'little'}\}$

b. In a survey of 120 people, it was found that:
 65 read Newsweek magazine, 20 read both Newsweek and Time,
 45 read Time, 25 read both Newsweek and Fortune,
 42 read Fortune, 15 read both Time and Fortune,
 8 read all three magazines.
 Find the number of people who read at least one of the three magazines.
 Find the number of people who read exactly one magazine.

c. Given $A = \{x, y\}$, $B = \{1, 2, 3\}$ and $C = \{3, 4\}$. Find $A \times B \times C$.
 Find x and y given that $(2x, x + y) = (6, 2)$.

d. Given $A = \{1, 2, 3, 4\}$ and $B = \{x, y, z\}$. Let R be the following relation from A to B :

$$R = \{(1, y), (1, z), (3, y), (4, x), (4, z)\}$$

 Determine the matrix of the relation.
 Draw the arrow diagram of R .
 Find the inverse relation R^{-1} of R .
 Determine the domain and range of R .

e. Consider the following relations on the set $A = \{1, 2, 3\}$:
 $R = \{(1, 1), (1, 2), (1, 3), (3, 3)\}$, $S = \{(1, 1), (1, 2), (2, 1), (2, 2), (3, 3)\}$, $T = \{(1, 1), (1, 2), (2, 2), (2, 3)\}$, ϕ , $A \times A$.

Determine Whether or not each of the above relations on A is Reflexive, Symmetric, Transitive.

f. Sketch the graph of $f(x) = x^2 + x - 6$.
 Let $A = \{a, b, c\}$, $B = \{x, y, z\}$, $C = \{r, s, t\}$. Let $f: A \rightarrow B$ and $g: B \rightarrow C$ be defined by: $f = \{(a, y), (b, x), (c, y)\}$ and $g = \{(x, s), (y, t), (z, r)\}$.
 Find Composition function $g \circ f: A \rightarrow C$

2. Attempt any three of the following: 15

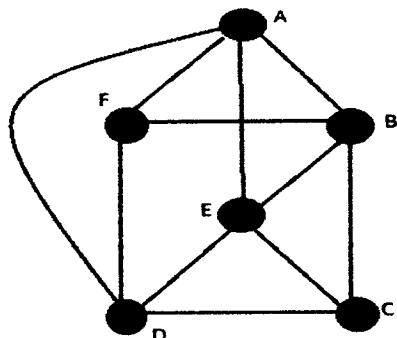
a. Suppose a college has 3 different history courses, 5 different literature courses and 2 different English courses. Find the number of ways a student can choose one of the each kind of courses and number of ways a student can choose just one of the courses.
 Find the number of permutations of six objects say A, B, C, D, E and F taken three at a time.

b. Solve the Recurrence relation $a_n = -2a_{n-1}; n \geq 2, a_1 = 3$ using Backtracking method.

c. Solve the Recurrence relation $h_n = 4h_{n-1} + 5h_{n-2}; h_0 = 2, h_1 = 6$ using Characteristic roots.

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COMPUTATIONAL MATHEMATICS

d.



Calculate Degree of each vertex,

List down all isolated and pendent vertex if any.

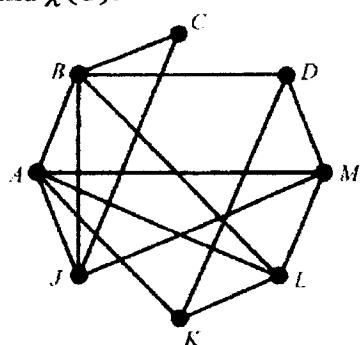
Justify whether the following graph is connected or not?

Justify whether $\alpha = (A, E, D, F, A, C)$, $\beta = (B, E, S, C, B, A, F)$ is a Path or not.

e.

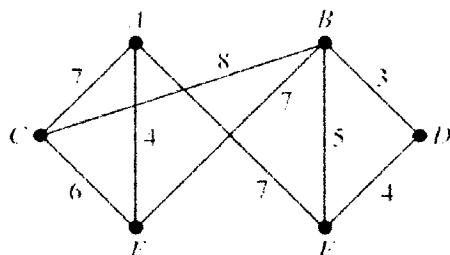
Draw K_4 , $K_{2,3}$,

From the following diagram obtain coloring of graph G using Powell's algorithm and find $\chi(G)$.

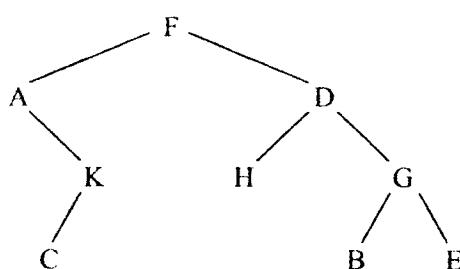


f.

Find minimal spanning tree of the following weighted graph using Kruskal's algorithm.



Consider the binary tree. Traverse T using the Preorder, Inorder and Postorder algorithm.



F.Y. (D.S.) NEP – Semester I
PRINCIPLES OF MANAGEMENT

(Time: 1 hour)

11/10/2025
Total Marks: 30

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 calculators is allowed.

1. Attempt any three of the following:

- a. Explain the 6M's of management.
- b. Enumerate the skills required of a manager.
- c. Distinguish between Traditional v/s Modern management.
- d. Explain the concept of green management.
- e. Explain any 5 out of 14 Principles of management.
- f. What are the disadvantages of controlling.

15

2. Attempt any three of the following:

- a. Explain the advantages of planning.
- b. Explain the techniques of decision making.
- c. Explain the disadvantages of organizing.
- d. What are the factors affecting span of control.
- e. Enumerate the barriers in delegation.
- f. What is the importance of coordinating function.

15

F.Y.B.Sc.(D.S) – Semester I
Effective Communication Skills I
(Time: 1 hour)

Date 13/10/2025

Total Marks: 30

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 calculators is allowed.

1. Attempt any three of the following: 15

- a. Explain importance of communication in human life.
- b. What are the benefits of Upward Communication?
- c. Explain seven Cs of communication.
- d. Elaborate preparation process of interview for interviewee.
- e. Explain important factors involved in Body Language.

2. Attempt any three of the following: 15

- a. What are the principles of Effective Presentation?
- b. Write a short note on Organizational Chart with diagram.
- c. Explain Telephone Etiquettes.
- d. What are the important key factors in Debate Skill?
- e. Explain Cultural Barriers with appropriate examples.

F.Y.B.Sc.(D.S.) – Semester I
Green Innovations
(Time: 1 hour)

Total Marks: 30

15/10/2025

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 calculators is allowed.

1. **Attempt any three of the following:** 15

- a. What are the problems addressed while applying green computing?
- b. What effects on climate change are being seen due to carbon footprint?
- c. Write down the typical functions that green IT based applications perform..
- d. Write a short note on REACH.
- e. Write a short note on non-regulatory Government initiatives.

2. **Attempt any three of the following:** 15

- a. How virtualization can reduce power consumption?
- b. Write a short note on any two low power computers.
- c. Explain MAID and RAID.
- d. Which things are necessary for evaluating suppliers for their level of environmental responsibility?
- e. Explain the planning process in outsourcing.