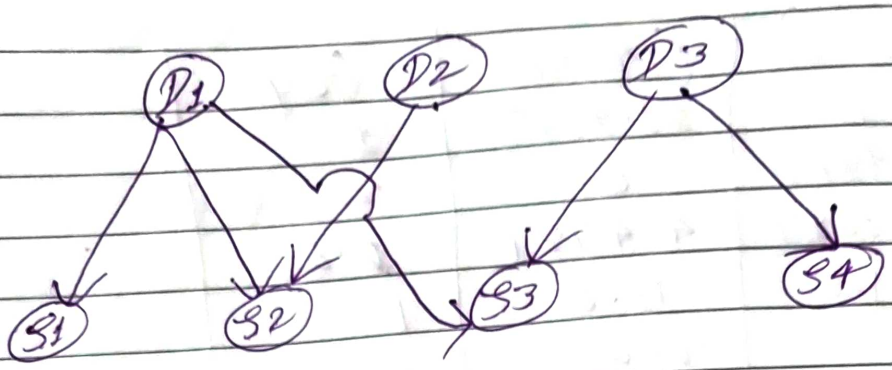
Date
Page No.

2022-S2

1) i)



ii) $P(D_1, D_2, D_3, S_1, S_2, S_3, S_4) =$

$$P(D_1) \cdot P(D_2) \cdot P(D_3) \cdot P(S_1|D_1) \cdot P(S_2|D_1, D_2) \cdot P(S_3|D_1, D_3) \cdot P(S_4|D_4)$$

Ans

2) i) Principle of Density Based Clustering:-

- A cluster in a data space is a contiguous region of high point density, separated from other such clusters by contiguous regions of low point density.

ii) Difference:-

- OPTICS does not assign cluster memberships but stores the order in which the points are processed.

Date
Page No.

3) Centroids = (185, 72), (170, 56)

	A (185,72)	B (170,56)	Group
(185, 72)	0	21.9317	1
(170, 56)	21.9317	0	2
(168, 60)	20.8087	4.4721	2
(179, 68)	7.2111	15.0	1
(182, 72)	3.0	20.0	1
(188, 77)	5.831	27.6586	1
(180, 71)	5.099	18.0278	1
(180, 70)	5.3852	17.2047	1
(183, 84)	12.1655	30.8707	1
(180, 88)	16.7631	33.5261	1
(180, 67)	7.0711	14.8661	1
(177, 76)	8.9443	21.1896	1

After 1st ground:-

Cluster 1 = (185, 72), (179, 68), (182, 72), (188, 77), (180, 71), (180, 70), (183, 84), (180, 88), (180, 67), (177, 76)

Cluster 2 = (170, 56), (168, 60)

New centroids = (181.4, 74.5), (169, 58)

Date
Page No.

	(181.4, 74.5)	(169, 58)	Group
(185, 72)	4.3829	21.2603	1
(170, 56)	21.7304	2.2361	2
(168, 60)	19.7436	2.2361	2
(179, 68)	6.[illegible]9289	14.1421	1
(182, 72)	2.571	19.105	1
(188, 77)	7.0576	26.8701	1
(180, 71)	3.7696	17.0294	1
(180, 70)	4.7127	16.2788	1
(183, 84)	9.6338	29.5296	1
(180, 88)	13.5724	31.9531	1
(180, 67)	7.6295	14.2127	1
(177, 76)	4.6487	19.6977	1

Clusters formed after 2nd iteration:-

Cluster 1 = (185, 72), (179, 68), (182, 72), (188, 77), (180, 71), (180, 70), (183, 84), (180, 88), (180, 67), (177, 76)

Cluster 2 = (170, 56), (168, 60).

Ans