

Factors That Influence High Scores in Institute of Banking Personnel Selection Examination

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Abstract— Topology is one of the great unifying ideas of mathematics. In this paper, nano topological approach is made use of to reduce attributes in order to analyze the factors influencing high scores in Institute of Banking Personnel Selection examination. We have already introduce a new topology called nano topology. The tactic applied here is in terms of basis of nano topology.

Index Terms— Set valued information system, Core, Maximal tolerant, Minimal reduct, Lower approximation, Upper approximation, Boundary region, Nano topology, Basis.

INTRODUCTION

General Topology is vast and has many different inventions and interaction with other fields of Mathematics and Sciences. Topology based methods are of increasing importance in the analysis and visualization of all forms of field data.

In the present scenario high scores in the institute of banking Personnel Selection Examinations have become the high order priority in the academic life of a person, as it is the main factor which decides the pupil's career. Many pupil's perform upto the expectations. Application of mathematical concepts facilitates the authorities concerned to analyze the issues scientifically and arrive at the most reliable decision. Here we analyze the factors contributing selection in Institute of banking Personnel Selection examination. By collecting the real time data from pupil's who attend the examination and use nano topology to identify the key factor that influence the pupil's score.

In this paper, we have used a new topology in set valued ordered information systems in finding the key factors necessary for getting selection in the examination.

PRELIMINARIES

Definition 2.1. Let U be the universe. Let R be an equivalence relations on U named as the indiscernibility relation. Elements belonging to the same equivalence class are said to be indiscernible with

one another. Let $X \subseteq U$.

(i)The lower approximation of X with respect to R is the set of all objects, which can be for certain classified as X with respect to R and it is denoted by $L_R(X)$. That is, $L_R(X) = \bigcup_{x \in U} \{[x] : R(x) \subseteq X\}$ where $R(x)$ denote the equivalence class determined by x .

(ii)The upper approximation of X with respect to R is the set of all objects which can be possibly classified as X with respect to R and it is denoted by $U_R(X)$. That is, $U_R(X) = \bigcup_{x \in U} \{[x] : R(x) \cap X \neq \emptyset\}$, where $R(x)$ denote the equivalence class determined by x .

(iii)The boundary region of X with respect to R is the set of all objects which can be classified neither as X nor as not X with respect to R and it is denoted by $B_R(X)$. That is, $B_R(X) = U_R(X) - L_R(X)$.

Definition 2.2. Let U be the universe, R be an equivalence relation on U and $\tau_R(X) = \{U, \emptyset, L_R(X), U_R(X), B_R(X)\}$ where $X \subseteq U$. Then, by the properties of approximation spaces, $\tau_R(X)$ satisfies the following axioms:

(i) U and $\emptyset \in \tau_R(X)$.

(ii)The union of the elements of any subcollection of $\tau_R(X)$ is in $\tau_R(X)$.

(iii)The intersection of the elements of any finite subcollection of $\tau_R(X)$ is in $\tau_R(X)$.

That is, $\tau_R(X)$ is a topology on U called the nano topology on U with respect to X . We call $(U, \tau_R(X))$ as the nano topological space. The elements of $\tau_R(X)$ are called as nano-open sets. The elements of $[\tau_R(X)]^c$ are called as nano-closed sets.

Definition 2.4. If the domain of a condition attribute is ordered according to a decreasing or increasing preference, then the attribute is a criterion. If, in a set valued information system, every condition attribute is a criterion, then it is said to be a set valued ordered information system

Definition 2.5. If E is a minimal set of attributes

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which discerns all the objects in S discernible by the whole set A, and which cannot be further reduced. All the reducts (family of reducts) of A are denoted by $RED^F(A)$.

Definition 2.6. In terms of basis of a nano topological space, $CORE(A) = \{a \in A : \beta_A \neq \beta_{A-\{a\}}\}$.

Definition 2.7. Two classes are said to be maximum tolerant to each other if their attribute values are the same.

ALGORITHM

The algorithm to detect the core factors that influence high scores in Institute of Banking Personnel Selection examination:

Step 1 :

Find the maximum tolerance classes of U corresponding to C, Lower and Upper approximation, Boundary region, Nano topology and its basis from the Case 1.

Step 2 :

Remove an attribute x from C and find lower and upper approximations and the boundary region of X corresponding to C - x, Generate the nano topology $\tau_{C-x}(X)$ on U and its basis $\beta_{C-x}(X)$.

Step 3 :

Set $M = \{x \in C / \beta_{C-x}(X) \neq \beta_C(X)\}$

Step 4 :

Repeat steps 2 and 3 for all attributes in C.

Step 5 :

Those attributes in C for which $\beta_{C-x}(X) \neq \beta_C(X)$ form the core

Step 6 :

Find the maximal tolerance classes lower, upper approximation, boundary region, Nano topology and its Basis from the Case 2.

Step 7 :

Repeat Step 1 to 5.

Step 8 :

Core value from Steps 5 and 7.

HIGH SCORES IN INSTITUTE OF BANKING PERSONNEL SELECTION EXAMINATION

$U = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{13}, B_{14}, B_{15}, B_{16}, B_{17}\}$

$A = \{I \text{ (Inspiration), } M \text{ (Motivation), } E \text{ (Exposure to scoring techniques), } G \text{ (Proper guidance and counselling), } P \text{ (Planned Preparation), } S \text{ (Special coaching), } O \text{ (Online coaching/materials)}\}$

$C = \{I, M, E, G, P, S, O\}$.

Here U is the universe, A is the set of attributes namely Condition attributes (C) and Decision attributes (D).

To analyze the factors influencing the selection of Bank coaching and bank employees opinion of seventeen pupil's from different category was collected. A study was conducted to determine the factors influencing

selection in Institute of Banking Personnel selection examinations.

I (Inspiration),

M (Motivation),

E (Exposure to scoring techniques),

G (Proper guidance and counselling),

P (Planned Preparation),

S (Special coaching),

O (Online coaching / materials)

Each pupil was asked to give their opinion for each factor. Using the data, a tabular column is framed and the calculation are done. Here R, instead of equivalence class it is the maximum tolerance class.

Pupil	I	M	E	G	P	S	O	Decision
B ₁	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
B ₂	No	Yes	Yes	Yes	Yes	Yes	No	Yes
B ₃	Yes	No	Yes	No	Yes	Yes	Yes	Yes
B ₄	Yes	No	No	No	Yes	Yes	Yes	Yes
B ₅	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
B ₆	No	Yes	No	Yes	No	Yes	No	No
B ₇	Yes	No	No	Yes	Yes	Yes	No	Yes
B ₈	Yes	Yes	Yes	Yes	Yes	Yes	No	No
B ₉	No	No	Yes	Yes	No	Yes	No	Yes
B ₁₀	No	No	No	Yes	Yes	No	Yes	Yes
B ₁₁	No	No	Yes	Yes	Yes	Yes	No	No
B ₁₂	Yes	Yes	Yes	Yes	Yes	Yes	No	No
B ₁₃	No	No	No	No	No	No	No	No
B ₁₄	Yes	No	Yes	Yes	No	Yes	Yes	No
B ₁₅	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
B ₁₆	No	No	No	Yes	No	Yes	Yes	Yes
B ₁₇	Yes	Yes	Yes	Yes	No	Yes	No	No

Case 1: {SELECTED PUPIL}

Let X be the set of selected pupil's.

That is, $X = \{B_1, B_2, B_3, B_4, B_5, B_7, B_9, B_{10}, B_{15}, B_{16}\}$.

$U/R(C) = \{\{B_1, B_5, B_8, B_{12}, B_{15}\}, \{B_2, B_3, B_{14}, B_{17}\}, \{B_4, B_7, B_{11}\}, \{B_6, B_9, B_{10}, B_{16}\}, \{B_{13}\}\}$.

Then, the lower and upper approximation of X corresponding to C are given by

$L_C(X) = \emptyset,$

$U_C(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\},$ and

$B_C(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$ Then, the nano topology of U is given

by $\tau_C(X) = \{U, \emptyset, L_C(X), U_C(X), B_C(X)\}$ and its base is given by $\beta_C(X) = \{U, B_C(X)\}.$

The problem is to find key attributes i.e.,

factors that influence passed in the Institute of Banking Personnel Selection examination.

Step 1:

When the attribute “Inspiration” is removed from C, the lower and upper approximations are given by

$$L_{C-I}(X) = \emptyset,$$

$$U_{C-I}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$$

The corresponding boundary region is

$$B_{C-I}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$$

Therefore, the corresponding Nano topology and its basis is given by

$$\tau_{C-I} = \{U, \emptyset, U_{C-I}, B_{C-I}\} \text{ and } \beta_{C-I}(X) = \beta_C(X).$$

When the attribute “Motivation” is omitted from C, the lower and boundary region is given by

$$L_{C-M}(X) = \{B_1, B_5, B_{16}\},$$

$$B_{C-M} = \{B_2, B_3, B_4, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{17}\}.$$

Then, its basis is given by $\beta_{C-M}(X) \neq \beta_C(X)$.

When the attribute “Exposure to scoring technique” is omitted from C, the lower and boundary region is given by

$$L_{C-E}(X) = \{B_9\},$$

$$B_{C-E} = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$$

Then, its basis is given by $\beta_{C-E}(X) \neq \beta_C(X)$.

When the attribute “proper Guidance and counselling” is removed from C, the lower and boundary region are given by

$$L_{C-G}(X) = \emptyset,$$

$$B_{C-G}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$$

Then, its basis is given by $\beta_{C-G}(X) = \beta_C(X)$.

When the attribute “Planned preparation” is removed from C, the lower and boundary region are given by

$$L_{C-P}(X) = \{B_2, B_3, B_{10}\},$$

$$B_{C-P}(X) = \{B_1, B_4, B_5, B_6, B_7, B_8, B_9, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$$

Then, its basis is given by $\beta_{C-P}(X) \neq \beta_C(X)$.

When the attribute “Special coaching” is removed from C, the lower approximation and boundary region are given by

$$L_{C-S}(X) = \{B_{15}\},$$

$$B_{C-S}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{16}, B_{17}\}.$$

Then, its basis is given by $\beta_{C-S}(X) \neq \beta_C(X)$.

When the attribute “Online coaching/materials” is removed from C, the lower and boundary region are given by

$$L_{C-O}(X) = \{B_{10}, B_{16}\},$$

$$B_{C-O}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{11}, B_{12}, B_{14}, B_{15}, B_{17}\}.$$

Then, its basis is given by $\beta_{C-O}(X) \neq \beta_C(X)$.

Since, $\beta_{C-M}(X) = \beta_C(X)$ and $\beta_{C-G}(X) = \beta_C(X)$.

$C - I = \{M, E, G, P, S, O\}$ and $C - G = \{M, I, E, P, S, O\}$ are the two reducts. But our problem is to find the minimal reduct which is given by the core and which corresponds to the key factors that influence passed in Institute of Banking Personnel Selection examination.

Step 2:

Let $K = C - I = \{M, E, G, P, S, O\}$, then

$$\beta_K(X) = \beta_C(X).$$

Consider,

$$U/R(K-M) = \{\{B_1, B_5\}, \{B_2, B_3, B_8, B_{11}, B_{12}, B_{14}, B_{15}\}, \{B_4, B_6, B_7, B_9, B_{10}, B_{16}, B_{17}\}, \{B_{13}\}\}.$$

Then, $L_{K-M}(X) = \{B_1, B_5\}$,

$$U_{K-M}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}$$

$$\text{and } B_{K-M}(X) = \{B_2, B_3, B_4, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$$

Hence, the base of the corresponding nano topology is $\beta_{K-M}(X) \neq \beta_C(X)$.

When “Exposure to scoring technique” is removed from K, the base of the nano topology is given by

$$\beta_{K-E}(X) \neq \beta_C(X).$$

When “proper Guidance and counselling” is removed from K, the base of the nano topology is given by

$$\beta_{K-G}(X) = \beta_C(X).$$

When “Planned preparation” is removed from K, the base of the nano topology is given by

$$\beta_{K-P}(X) \neq \beta_C(X).$$

When “Special coaching” and “Online coaching” are removed from K, the base of the nano topology are given by $\beta_{K-S}(X) \neq \beta_C(X)$ and $\beta_{K-O}(X) \neq \beta_C(X)$.

Step 3:

Let $Y = K - G = \{M, E, P, S, O\}$ then,

$$\beta_Y(X) = \beta_C(X).$$

Consider,

$$U/R(Y-M) = \{\{B_1, B_3, B_5\}, \{B_2, B_4, B_8, B_{11}, B_{12}, B_{14}, B_{15}\}, \{B_6, B_7, B_9, B_{10}, B_{16}, B_{17}\}, \{B_{13}\}\}.$$

Then, $L_{Y-M}(X) = \{B_1, B_3, B_5\}$,

$$U_{Y-M}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}$$

$$\text{and } B_{Y-M}(X) = \{B_2, B_4, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$$

Hence, the base of the corresponding nano topology is $\beta_{Y-M}(X) \neq \beta_C(X)$.

When “Exposure to scoring technique” is removed from Y, the base of the nano topology is given by

$$\beta_{Y-E}(X) \neq \beta_C(X).$$

When “Planned preparation” is removed from Y, the base of the nano topology is given by $\beta_{Y-P}(X) \neq \beta_C(X)$.

When “Special coaching” and “Online coaching” are removed from Y, the base of the nano topology are given by $\beta_{Y-S}(X) \neq \beta_C(X)$ and $\beta_{Y-O}(X) \neq \beta_C(X)$.

Therefore, $Y = \{M, E, P, S, O\}$ is a minimal reduct.

Step 4:

When $Q = C - G = \{I, M, E, P, S, O\}$, $\beta_Q(X) = \beta_C(X)$.

Consider,

$U/R(Q-I) = \{\{B_1, B_2, B_3, B_5, B_8, B_{12}, B_{15}\}, \{B_4, B_{11}, B_{14}, B_{17}\}, \{B_6, B_7, B_9, B_{10}, B_{16}\}, \{B_{13}\}\}.$

Then, $L_{Q-I}(X) = \emptyset,$

$U_{Q-I}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}$ and $B_{Q-I}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$

Hence, the base of the corresponding nano topology is $\beta_{Q-I}(X) = \beta_C(X).$

When "Motivation" is removed from Q, the base of the nano topology is given by $\beta_{Q-M}(X) \neq \beta_C(X).$

When "Exposure" is removed from Q, the base of the nano topology is given by $\beta_{Q-E}(X) \neq \beta_C(X).$

When "Planned preparation" is removed from Q, the base of the nano topology is given by $\beta_{Q-P}(X) \neq \beta_C(X).$

When "Special coaching" and "Online coaching" are removed from Q, the base of the nano topology are given by $\beta_{Q-S}(X) \neq \beta_C(X)$ and $\beta_{Q-O}(X) \neq \beta_C(X).$

Step 5:

Let $R = Q - I = \{M, E, P, S, O\}$, then $\beta_R(X) = \beta_C(X).$ Consider,

$U/R(R-M) = \{\{B_1, B_3, B_5\}, \{B_2, B_4, B_8, B_{11}, B_{12}, B_{14}, B_{15}\}, \{B_7, B_9, B_{10}, B_{16}, B_{17}\}, \{B_6\}, \{B_{13}\}\}.$

Then, $L_{R-M}(X) = \{B_1, B_3, B_5\},$

$U_{R-M}(X) = \{B_1, B_2, B_3, B_4, B_5, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}$ and $B_{R-M}(X) = \{B_2, B_4, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$ Hence, the base of the corresponding nano topology is $\beta_{R-M}(X) \neq \beta_C(X).$

When "Exposure" is removed from R, the base of the nano topology is given by $\beta_{R-E}(X) \neq \beta_C(X).$

When "Planned preparation" is removed from R, the base of the nano topology is given by $\beta_{R-P}(X) \neq \beta_C(X).$

When "Special coaching" and "Online coaching" are removed from R, the base of the nano topology are given by $\beta_{R-S}(X) \neq \beta_C(X)$ and $\beta_{R-O}(X) \neq \beta_C(X).$

Therefore, $R = \{M, E, P, S, O\}$ is a minimal reduct. Thus, **Core = {M, E, P, S, O}.**

CASE 2 : {NON-SELECTED PUPIL}

Let X be the set of non-selected pupils.

That is, $X = \{B_6, B_8, B_{11}, B_{12}, B_{13}, B_{14}, B_{17}\}.$

$U/R(C) = \{\{B_1, B_5, B_8, B_{12}, B_{15}\}, \{B_2, B_3, B_{14}, B_{17}\}, \{B_4, B_7, B_{11}\}, \{B_6, B_9, B_{10}, B_{16}\}, \{B_{13}\}\}.$

Then, the lower and upper approximation of X corresponding to C are given by $L_C(X) = \{B_{13}\},$
 $U_C(X) = U,$ and

$B_C(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$ Then, the nano topology of U is given by $\tau_C(X) = \{U, \emptyset, L_C(X), B_C(X)\}$ and its base is given by $\beta_C(X) = \{U, L_C(X), B_C(X)\}.$

When we remove the attributes in C we get the following:

$U/R(C-I) = \{\{B_1, B_2, B_5, B_8, B_{12}, B_{15}\}, \{B_3, B_{11}, B_{14}, B_{17}\}, \{B_4, B_6, B_7, B_9, B_{10}, B_{16}\}, \{B_{13}\}\}.$

Then, the lower and upper approximation of X corresponding to C are given by $L_{C-I}(X) = \{B_{13}\},$
 $U_{C-I}(X) = U,$ and

$B_{C-I}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$ Then, the nano topology of U is given by $\tau_{C-I}(X) = \{U, \emptyset, L_{C-I}(X), B_{C-I}(X)\}$ and its base is given by $\beta_{C-I}(X) = \beta_C(X).$

$U/R(C-M) = \{\{B_1, B_5\}, \{B_3, B_8, B_{12}, B_{14}, B_{15}\}, \{B_2, B_4, B_7, B_{11}, B_{17}\}, \{B_6, B_9, B_{10}, B_{16}\}, \{B_{13}\}\}.$

$L_{C-M}(X) = \{B_{13}\},$

$U_{C-M}(X) = \{B_2, B_3, B_4, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\},$ and $B_{C-M}(X) = \{B_2, B_3, B_4, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$ Then, the base is given by $\beta_{C-M}(X) \neq \beta_C(X).$

$U/R(C-E) = \{\{B_1, B_5, B_8, B_{12}, B_{15}\}, \{B_2, B_3, B_4, B_7, B_{14}, B_{17}\}, \{B_6, B_{11}, B_{10}, B_{16}\}, \{B_9\}, \{B_{13}\}\}.$

$L_{C-E}(X) = \{B_{13}\},$

$U_{C-E}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\},$ and $B_{C-E}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$ Then, the base is given by $\beta_{C-E}(X) \neq \beta_C(X).$

$U/R(C-G) = \{\{B_1, B_3, B_5, B_8, B_{12}, B_{15}\}, \{B_2, B_4, B_{14}, B_{17}\}, \{B_7, B_{11}\}, \{B_6, B_9, B_{10}, B_{16}\}, \{B_{13}\}\}.$

$L_{C-G}(X) = \{B_{13}\}, U_{C-G}(X) = U,$ and

$B_{C-G}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$ Then, the base is given by $\beta_{C-G}(X) = \beta_C(X).$

$U/R(C-P) = \{\{B_1, B_5, B_8, B_{12}, B_{14}, B_{15}, B_{17}\}, \{B_2, B_3\}, \{B_4, B_6, B_7, B_9, B_{11}, B_{16}\}, \{B_{10}\}, \{B_{13}\}\}.$

$L_{C-P}(X) = \{B_{13}\}, U_{C-P}(X) = \{B_1, B_4, B_5, B_6, B_7, B_8, B_9, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\},$ and $B_{C-P}(X) = \{B_1, B_4, B_5, B_6, B_7, B_8, B_9, B_{11}, B_{12}, B_{14}, B_{15}, B_{16}, B_{17}\}.$

Then, the base is given by $\beta_{C-P}(X) \neq \beta_C(X).$

$U/R(C-S) = \{\{B_{15}\}, \{B_1, B_5, B_8, B_{12}\}, \{B_2, B_3, B_{14}, B_{17}\}, \{B_4, B_7, B_{10}, B_{11}\}, \{B_6, B_9, B_{16}\}, \{B_{13}\}\}.$

$L_{C-S}(X) = \{B_{13}\},$

$U_{C-S}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{16}, B_{17}\},$ and $B_{C-S}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{10}, B_{11}, B_{12}, B_{14}, B_{16}, B_{17}\}.$ Then, the base is given by $\beta_{C-S}(X) \neq \beta_C(X).$

$U/R(C-O) = \{\{B_8, B_{12}\}, \{B_1, B_2, B_5, B_{15}, B_{17}\}, \{B_3, B_7, B_{14}\}, \{B_4, B_6, B_9, B_{11}\}, \{B_{10}, B_{16}\}, \{B_{13}\}\}.$

$L_{C-O}(X) = \{B_{13}\},$

$U_{C-O}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{11}, B_{12}, B_{14}, B_{15}, B_{17}\},$ and $B_{C-O}(X) = \{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9, B_{11}, B_{12}, B_{14}, B_{15}, B_{17}\}.$ Then, the base is given by $\beta_{C-O}(X) \neq \beta_C(X).$

Thus $C-I = \{M, E, G, P, S, O\}$ and $C-G = \{I, M, E, P, S, O\}$ are the reducts. As in the previous case, it can be shown that

$(C-I) \cap (C-G) = \{M, E, P, S, O\} = CORE.$

OBSERVATION

Since from the two cases, **CORE={M,E,P, S, O}**.
We conclude that “**MOTIVATION**”, “**EXPOSURE TO SCORING TECHNIQUES**”, “**PLANNED PREPARATION**”, “**SPECIAL COACHING**” and “**ONLINE COACHING/ MATERIALS**” are the key factors that influence selection in Institute of Banking Personnel Selection examination.

CONCLUSION

In this paper, attribute reduction is done using the basis of nano topology in real life situation. Here we show by means of topological reduction that “**MOTIVATION**”, “**EXPOSURE TO SCORING TECHNIQUES**”, “**PLANNED PREPARATION**”, “**SPECIAL COACHING**” and “**ONLINE COACHING/MATERIALS**” are the key factors that influence selection in Institute of Banking Personnel Selection examination. Thus , the basis of nano topology can be applied in many real life situation.

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