UNIT 12 BIOLOGICAL SCIENCES

Structure

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12.2 Biology, Botany and Zoology
12.3 Geology and Mining
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12.0 OBJECTIVES

In the previous Unit, you have learnt the usage of Colon Classification scheme for classification of documents in Humanities and Social Sciences.

In this Unit we introduce you to the schedules of some of the Main Classes of Biological Sciences.

After reading this Unit, you will be able to:

- explain the facet formula for each of the Main Classes discussed in this Unit, and
- construct Class Number for books with subjects belonging to these Main Classes.

12.1 INTRODUCTION

In this Unit we will discuss some of the Main Classes belonging to the group of 'Bio-Sciences'. There are a few things common to some of these Main Classes. The problem facets for Biology, Botany and Zoology are common. Many isolates enumerated in the Main Class Medicine can be used wherever instructed, specially in the case of the isolate '4 Disease' in facet [E] and '4 Pathology' in facet [2E].

In the Main Class Agriculture, we will try to understand the concept of differential facets.

We will also try to understand the use of Superimposition Device and Systems and Specials facet in the Main Class Medicine.

12.2 BIOLOGY, BOTANY AND ZOOLOGY

Biology is the branch of Science which studies living things. It is not restricted to the study of a particular form but life in general. When there is a combined study of plants, animals and human beings, then Main Class Biology should be used.

The facet formula for the Main Class Biology is:

\[ G[P];[E] [2P] \]

Where, Foci in [P] = Organ and special grouping
Foci in [E] [2P] = Problem

In the Organ Facet [P] only Organ Numbers '1' '91' and '95' are enumerated in schedule. Organ Number '1' deals with the general account of life as a biological phenomenon. Other divisions would be same as that of Main Class 'L Medicine' and 'I Botany', as the case may be.

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Examples

Title: Respiratory System in Living Organisms
Class Number: G4

Where, G \quad = \quad \text{Biology (M.C.)}
G4 \quad = \quad \text{Biology (M.C.), Respiratory System [P] (Taken from Main Class 'L Medicine')}

Title: Studies in Marine Biology
Class Number: G9555

Where, G \quad = \quad \text{Biology (M.C.)}
G9555 \quad = \quad \text{Biology (M.C.), Marine [P]}

Problem facet [E] cum [2P], enumerated in the Schedule, under the Isolate '4 Pathology' is to be subdivided as the Main Class 'L Medicine'. If you turn to the schedule of Main Class 'L Medicine', you will find the subdivisions of isolate, Pathology under Foci in [2E] cum [3P].

Title: Chemical Examination of Cell Membrane
Class Number: G111:403

Where, G \quad = \quad \text{Biology (M.C.)}
G111 \quad = \quad \text{Biology (M.C.), Cell Membrane [P]}
G111:4 \quad = \quad \text{Biology (M.C.), Cell Membrane [P], Pathology [E]}
G111:403 \quad = \quad \text{Biology (M.C.), Cell Membrane [P], Pathology [E], Chemical Examination (Subdivision of Pathology taken from Main Class 'L Medicine')} \]

In the case of Isolates '33 Metabolism', '341 Inanition', '345 Water Fasting', '346 Fasting' and their subdivisions in Foci in [E] [2P], there is a provision to add [2M] the Substance Facet. The Foci in [2M] would be same as that of Substance Facet [P] of Main Class 'E Chemistry'. The addition of the Substance Facet [2M] should be done by Subject Device (See Rule G233 and G25, page 1.79 of CC).

Examples

Title: Chemical Effect of Enzymes
Class Number: G:33E; (E 982)

Where, G \quad = \quad \text{Biology (M.C.)}
G:33 \quad = \quad \text{Biology (M.C.) Metabolism [E]}
G:33E \quad = \quad \text{Biology (M.C.), Metabolism [E], Chemical Effect [2P]}
G:33E;(E982) \quad = \quad \text{Biology (M.C.), Metabolism [E], Chemical Effect [2P], Enzymes [2M] (Taken from Main Class 'E Chemistry')}

Further expansion of the Matter Facet:

(E982)

Where, E \quad = \quad \text{Chemistry (M.C.)}
E982 \quad = \quad \text{Chemistry (M.C.) Enzymes [P]}
Note: Brackets are used for Subject Device.

Title: Alkaline Metabolism of Tissues

Class Number: G12:33;(E92)

Where, G = Biology (M.C.)
G12 = Biology (M.C.), Tissue [P]
G12:33 = Biology (M.C.), Tissue [P], Metabolism [E]
G12:33;(E92) = Biology (M.C.), Tissue [P], Metabolism [E], Alkaloid [2M]

Further expansion of the Matter Facet:

(E92)

Where, E = Chemistry (M.C.)
E92 = Chemistry (M.C.), Alkaloid [P]

Rule Number G25 (Page 1.79) states that when the focus in [E] is '12 to 19' or '5 Ecology' or any of its subdivision then Space Facet [S] may have to be added.

Example

Title: Ecology of Living Organism in Mountain Regions in India

Class Number: G9518:5.44

Where, G = Biology (M.C.)
G9518 = Biology (M.C.), Mountain [P]
G9518:5 = Biology (M.C.), Mountain [P], Ecology [E]
G9518:5.44 = Biology (M.C.), Mountain [P], Ecology [E], India [S] (Taken from Space Isolate Schedule)

Botany is the subject dealing with the scientific study of plants.

The facet formula for the Main Class Botany is:

I[P], [P2]:[E][2P]

Where, Foci in [P] = Natural group
Foci in [P2] = Organ
Foci in [E][2P] = Problem

Foci in [P] and [P2] have been enumerated. In the Natural group facet [P] the divisions '2 Thallophyta' '3 Bryophyta' and '4 Pteridophyta' are subdivisions of the division '1 Cryptogamia' are provided. Similarly the divisions '6 Gymnosperms, 7 Monocotyledons' and '8 Dicotyledon' are subdivisions of the division '5 Phanerogamia'.

The divisions of Isolate Number '95 Ecological Groups' would be same as that of Main Class 'G Biology' with the following additions.

952 Creeper
953 Climber
9597 Insectivorous plant

Under Foci in [P2] for the functional system of organ the Foci '2' to '8' in [P] of Main Class 'L Medicine' are to be used as far as applicable.

Foci in [E] cum [2P] is same as that in Main Class 'G Biology' with the addition of '8 Paleobotany'.
At the end of the schedule for Main Class ‘I Botany’ there is an “Index to Natural Groups” which may help you in locating a particular natural group isolate in the Schedule.

Examples

Title: Physiology of Fern Leaves

Class Number: I42,15:3

Where, I        = Botany (M.C.)
    I42        = Botany (M.C.), Filicineae (Fern) [P]
    I42,15      = Botany (M.C.), Filicineae (Fern) [P], Leaf [P2]
    I42, 15:3   = Botany (M.C.), Filicineae (Fern) [P], Leaf [P2], Physiology [E] (Taken from the Main Class ‘G Biology’)

Title: Microscopic Study of Protophyta

Class Number: I21 : 19

Where, I        = Botany (M.C.)
    I21        = Botany (M.C.), Protophyta [P]
    I21:19      = Botany (M.C.), Protophyta [P], Microscopy [E] (Taken from the Main Class ‘G Biology’)

Title: Classification of Desert Plants

Class Number: I95121:11

Where, I        = Botany (M.C.)
    I95121      = Botany (M.C.), Desert [P] (Taken from the Main Class ‘G Biology’)
    I95121:11    = Botany (M.C.), Desert [P], Classification [E] (Taken from the Main Class ‘G Biology’)

Title: Fossils of Mountain Plants

Class Number: I9518:8

Where, I        = Botany (M.C.)
    I9518       = Botany (M.C.), Mountain Plants [P] (Taken from Main Class ‘G Biology’)
    I9518:8     = Botany (M.C.), Mountain Plants [P], Paleobotany [E]

Zoology is the scientific study of different kinds of animals and of where and how they live.

The facet formula for the Main Class Zoology is:

K[P]:[E] [2P]

Where, Foci in [P] = Natural group

Foci in [E] [2P] = Problem

Foci in [P] is enumerated in the schedule. Divisions ‘2’ to ‘8’ are in the Natural Group of Animals. These Facets are subdivisions of the Isolate ‘I Invertebrates’.

At the end of the Schedule for Main Class ‘K Zoology’, there is an Index to Natural Groups which may help in locating the natural group isolates in the Schedule.
Foci in [E] cum [2P] is same as that of Main Class ‘G Biology’ with the addition of the following two isolates.

591  Relation to young ones

595  Courting

Examples

**Title**: Physiology of Aves

Class Number: K96:3

<table>
<thead>
<tr>
<th>Where, K</th>
<th>=</th>
<th>Zoology (M.C.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K96</td>
<td>=</td>
<td>Zoology (M.C.), Aves [P]</td>
</tr>
<tr>
<td>K96:3</td>
<td>=</td>
<td>Zoology (M.C.), Aves [P], Physiology [E] (Taken from Main Class ‘G Biology’)</td>
</tr>
</tbody>
</table>

**Title**: Natural History of Carnivora Animals

Class Number: K9791:12

<table>
<thead>
<tr>
<th>Where, K</th>
<th>=</th>
<th>Zoology (M.C.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K9791</td>
<td>=</td>
<td>Zoology (M.C.), Carnivora [P]</td>
</tr>
<tr>
<td>K9791:12</td>
<td>=</td>
<td>Zoology (M.C.), Carnivora [P], Natural History [E] ( Taken from Main Class ‘G Biology’)</td>
</tr>
</tbody>
</table>

**Title**: Genetic Study of the Primates

Class Number: K92:33;(E92Z2)

<table>
<thead>
<tr>
<th>Where, K</th>
<th>=</th>
<th>Zoology (M.C.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K92</td>
<td>=</td>
<td>Zoology (M.C.), Pisces [P]</td>
</tr>
<tr>
<td>K92:33</td>
<td>=</td>
<td>Zoology(M.C.), Pisces [P], Metabolism [E] (Taken from Main Class ‘G Biology’)</td>
</tr>
<tr>
<td>K92:33;(E92Z2)</td>
<td>=</td>
<td>Zoology(M.C.),Pisces[P],Metabolism[E],Protein[2M] (Taken from Main Class ‘E Chemistry’)</td>
</tr>
</tbody>
</table>

**Further expansion of Matter Facet:**

(E92Z2)

<table>
<thead>
<tr>
<th>E</th>
<th>=</th>
<th>Chemistry (M.C.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E92Z2</td>
<td>=</td>
<td>Chemistry (M.C.), Protein [P]</td>
</tr>
</tbody>
</table>

**Note:** In the above example you must have noticed that Matter Facet is used, even though it is not provided for in the facet formula. This is so because the Foci in [E] is taken from Main Class ‘G Biology’ where, for isolate ‘33 Metabolism’ in [E] there is provision for Matter Facet [2M] to be used.

**Self Check Exercise**

1) Construct the Class Numbers for the following titles:
   a) Natural History of Living Creatures in Coastal Regions of India
   b) Microscopic Study of Genes
   c) Oxygen Metabolism of Coniferæ Leaves
12.3 GEOLOGY AND MINING

Geology is the Science of study of the materials, viz., Rocks, soils, etc., which make up the earth, and their changes in the history of the World.

The Main Class Geology is divided into the following Canonical Classes:

H1  Mineralogy
H2  Petrology
H3  Structural geology
H4  Dynamic geology
H5  Stratigraphy
H6  Palaeontology
H7  Economic geology
H8  Cosmic hypothesis

Facet formula is given individually for most of the Canonical Classes. Canonical Class ‘H3 Structural geology’, ‘H4 Dynamic geology’ and ‘H5 Stratigraphy’ have been further divided into canonical divisions.

Now let us discuss these Canonical Classes one by one.

H1 Mineralogy: It deals with scientific study of minerals. The facet formula for the Canonical Class H1 Mineralogy is:

\[ H1 \{P\} : \{E\} \{2P\} \]

Where, Foci in \{P\} = Substance
Foci in \{E\}\{2P\} = Problem

Isolates of Foci in \{P\} are the same as that of Main Class ‘E Chemistry’, except that amplification by valency number is not necessary. Apart from that, some additional isolates are enumerated under Foci in \{P\} in Canonical Class ‘H1 Mineralogy’. The subdivisions of the Isolate ‘I Preliminaries’ under Foci in \{E\} cum \{2P\} are to be taken from Main Class ‘G Biology’, with some additional isolates enumerated under Canonical Class ‘H1 Mineralogy’.
Examples

Title: Crystallography of Topaz
Class Number: H195:8

<table>
<thead>
<tr>
<th>Where, H</th>
<th>= Geology (M.C.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>= Geology (M.C.), Mineralogy (C.C.)</td>
</tr>
<tr>
<td>H195</td>
<td>= Geology (M.C.), Mineralogy (C.C.), Topaz [P]</td>
</tr>
<tr>
<td>H195:8</td>
<td>= Geology (M.C.), Mineralogy (C.C.), Topaz [P], Crystallography [E]</td>
</tr>
</tbody>
</table>

Title: Method of Gold Prospecting
Class Number: H1118:15

<table>
<thead>
<tr>
<th>Where, H</th>
<th>= Geology (M.C.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>= Geology (M.C.), Mineralogy (C.C.)</td>
</tr>
<tr>
<td>H1118</td>
<td>= Geology (M.C.), Mineralogy (C.C.), Gold [P]</td>
</tr>
<tr>
<td>H1118:15</td>
<td>= Geology (M.C.), Mineralogy (C.C.), Gold [P], Prospecting [E]</td>
</tr>
</tbody>
</table>

H2 Petrology: It is the branch of scientific study of rocks. The facet formula for the Canonical Class Petrology is:

\[ H2[P]:[E][2P] \]

Where, Foci in [P] = Substance
Foci in [E] [2P] = Problem
Foci in [P] has been enumerated and Foci in [E] cum [2P] is same as that of H1 Mineralogy, except '8 Crystallography' and its subdivisions:

Example

Title: Genesis of Metamorphic Rock
Class Number: H22:16

<table>
<thead>
<tr>
<th>Where, H</th>
<th>= Geology (M.C.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2</td>
<td>= Geology (M.C.), Petrology (C.C.)</td>
</tr>
<tr>
<td>H22</td>
<td>= Geology (M.C.), Petrology (C.C.), Metamorphic Rock [P]</td>
</tr>
<tr>
<td>H22:16</td>
<td>= Geology (M.C.), Petrology (C.C.), Metamorphic Rock [P], Genesis [E] (Taken from Foci [E] cum [2] of Canonical Class 'H1 Mineralogy')</td>
</tr>
</tbody>
</table>

Canonical Classes ‘H3 Structural Geology’, ‘H4 Dynamic Geology’ and ‘H5 Stratigraphy’ have been further divided into Canonical Divisions.

H6 Palaeontology: Science of study of fossils. Palaeontology is further divided into two branches:

- Palaeobotany, i.e., the study of plant fossils
- Palaeozoology, i.e., the study of animal fossils

Palaeobotany is covered by Main Class '1 Botany'. Canonical Class ‘H6 Palaeontology’ is to be used for Palaeozoology only. It should be further sharpened by Natural Group Facet [P] of Main Class ‘K Zoology’. If the study involves specific period, then the focus in Time Facet [T] should be the one for the appropriate stratigraphical age, given as subdivisions of ‘H5 Stratigraphy’ and not the one taken from Chronological Table. ‘A’ should replace H5 (Rules Number. H68u, Page Number.1.80)
Example

Title: Mammal Fossils of Mesozoic Age

Class Number: H697'A3

Where, 

\[ H6 = \text{Geology (M.C.), Palaeontology (C.C.)} \]

\[ H697 = \text{Geology (M.C.), Palaeontology (C.C.), Mammalia [P] (Taken from Natural Group Facet [P] of Main Class 'K Zoology') } \]

\[ H697'A3 = \text{Geology (M.C.), Palaeontology (C.C.), Mammalia, [P], Mesozoic (Taken from Canonical Class H5 Stratigraphy, 'H5' has been replaced by the Rule Number H68u, p.1.80 of CC, 6th edition)} \]

H7 Economic Geology: This Canonical Class is meant for books on ore deposits, underground water and non-metallic and organic deposits.

The facet formula for the Canonical Class 'H7 Economic Geology' is

\[ H7[P]: [E][2P] \]

Where, Foci in [P] = Substance

Foci in [E][2P] = Problem. Same as for H1 Mineralogy (see rule H72, p.1.81)

The Foci in [P] and [E][2P] are the same as that of Canonical Class H1 Mineralogy.

Example

Title: Prospecting of Zinc Ore Deposits in Bihar

Class Number: H7123:15.4473

Where, 

\[ H = \text{Geology (M.C.)} \]

\[ H7 = \text{Geology (M.C.), Economic Geology (C.C.)} \]

\[ H7123 = \text{Geology (M.C.), Economic Geology (C.C.), Zinc [P] (Taken from [P] of 'E Chemistry') } \]

\[ H7123:15 = \text{Geology (M.C.), Economic Geology (C.C.), Zinc [P], Prospecting [E] (Taken from [E] of H1 Mineralogy)} \]

\[ H7123:15.4473 = \text{Geology (M.C.), Economic Geology (C.C.), Zinc [P], Prospecting [E], Bihar [S] (Taken from Space, Isolate Schedule)} \]

Canonical Class 'H8 Cosmic Hypothesis' has not been enumerated. Rule provides that, specific hypothesis should be individualised by Chronological Device.

Mining is that branch of science which deals with the methods of excavation of ores and minerals from the earth.

The facet formula for the Main Class 'HZ Mining' is:

\[ HZ[P], [P2];[E][2P] \]

Where, Foci in [P] = Substance

Foci in [P2] = Work

Foci in [E][2P] = Problem

Foci in [P] is same as that of Canonical Class 'H1 Mineralogy' which means the isolates under Substance Facet [P] of Main Class 'E Chemistry' are to be used. Foci in [P2] and [E][2P] are enumerated in the Schedule.
Examples

Title: Dangers of Underground Transport in the Copper Mines
Class Number: HZ113,5:4

Where, HZ = Mining (M.C.)
HZ113 = Mining (M.C.), Copper [P] (Taken from Main Class ‘E Chemistry’)
HZ113,5 = Mining (M.C.), Copper [P], Underground Vehicle [P2]
HZ113,5:4 = Mining (M.C.), Copper [P], Underground Vehicle [P2], Danger [E]

Title: Lighting facility in the Tunnels of Coal Mines
Class Number: HZ551,3:55

Where, HZ = Mining (M.C.)
HZ551 = Mining (M.C.), Coal [P] (Taken from Main Class ‘F Technology’)
HZ551,3 = Mining (M.C.), Coal [P], Tunnels [P2]
HZ551,3:55 = Mining (M.C.), Coal [P], Tunnels [P2], Lighting [E]

Self Check Exercise

2) Construct Class Numbers for the following titles:
   a) Artificial Production of Pearls
   b) Cretaceous Fish Fossils
   c) Occurrence of Iron Ore Deposits
   d) Problems of Deep Boring in Petroleum Mines
   e) Excavation of Pit in a Coal Mine

Note: i) Write your answers in the space given below.
   ii) Check your answers with the answers given at the end of this Unit.


12.4 AGRICULTURE

Agriculture is an art or practice of farming especially of growing crops. It is concerned with the study of economic plants, their plantation, harvesting, etc.
The facet formula for Main Class ‘J Agriculture’

J[P]:[E][2P]:[2E]

Where, Foci in [P] = Plant
Foci in [E][2P] = Problem
Foci in [2E] = Operation

Foci in [P] is divided into 3 parts. The first digit of a Plant Number [P] is Utility Number, the second is Part Number, the third is either Genus Number or Species Number. If the third digit represents Genus, the fourth digit will represent Species. The later digits of a Plant Number represent a Cultivar.

Examples

Tomato = 37943

Where, 3 = Utility number for food
7 = Part number for fruit
9 = Genus number
43 = Species number

Cultivar Number is to be got by Alphabetical Device (AD)

Parnal Rice = 381P

Where, 3 = Utility number for food
8 = Part number for seed
1 = Genus and species number for rice
P = Cultivar number for Parnal variety (got by Alphabetical Device)

Foci in [E] is enumerated in the schedule.

For some of the isolates in [E], isolates for Foci in [2P] and [2E] are enumerated separately. This is known as ‘differential’ facets.

For isolate ‘1 Soil’, Foci in [2E] has been enumerated.

Example

Title: Tillage of Soil for Wheat Cultivation

Class Number: J382:1:2

Where, J = Agriculture (M.C.)
J382 = Agriculture (M.C.), Wheat [P]
J382:1 = Agriculture (M.C.), Wheat [P], Soil [E]
J382:1:2 = Agriculture (M.C.), Wheat [P], Soil [E], Tillage [2E]

For isolate ‘2 Manure’ of [E], Foci in [2P] and [2E] is enumerated.

Example

Title: Application of Municipal Refuse for Carrot Cultivation

Class Number: J333:23:3
Where, J = Agriculture (M.C.)
J333 = Agriculture (M.C.), Carrot [P]
J333:2 = Agriculture (M.C.), Carrot [P], Manure [E]
J333:23 = Agriculture (M.C.), Carrot [P], Manure [E], Municipal Refuse [2P]
J333:23:3 = Agriculture (M.C.), Carrot [P], Manure [E], Municipal Refuse [2P], Application [2E]

For isolate ‘3 Propagation’ of [E], there is provision for a Foci in [2P] which is same as that of part array of [P] Foci in [2E].

Example

Title: Sowing of Bulb for Lily Propagation
Class Number: J16911:32:3

Where, J = Agriculture (M.C.)
J16911 = Agriculture (M.C.), Lily [P]
J16911:3 = Agriculture (M.C.), Lily [P], Propagation [E]
J16911:32 = Agriculture (M.C.), Lily [P], Propagation [E], Bulb [2P]
J16911:32:3 = Agriculture (M.C.), Lily [P], Propagation [E], Bulb [2P], Sowing [2E]

For isolate ‘4 Disease’ of [E], Foci [2P] and [2E] are same as that of Main Class ‘L. Medicine’.

Example

Title: Prevention of Bacterial Disease of Grape Plants
Class Number: J374:424:5

Where, J = Agriculture (M.C.)
J374 = Agriculture (M.C.), Grape Plant [P]
J374:4 = Agriculture (M.C.), Grape Plant [P], Disease [E]
J374:424 = Agriculture (M.C.), Grape Plant [P], Disease [E], Bacteria [2P] (Taken from Main Class ‘L Medicine’)
J374:424:5 = Agriculture (M.C.), Grape Plant [P], Disease [E], Bacteria [2P], Preventive Step [2E] (Taken from Main Class ‘L Medicine’)


Example

Title: Threshing of Corn Seed
Class Number: J385:78:4

Where, J = Agriculture (M.C.)
J385 = Agriculture (M.C.), Corn [P]
J385:7 = Agriculture (M.C.), Corn [P], Harvesting [E]
J385:78 = Agriculture (M.C.), Corn [P], Harvesting [E], Seed [2P]
J385:78:4 = Agriculture (M.C.), Corn [P], Harvesting [E], Seed [2P], Threshing [2E]
Self Check Exercise

3) Construct Class Numbers for the following titles:
   a) Improvement of Soil for Cashewnut Plantation
   b) Green Manure Application for Feed Crops
   c) Physiology of Saffron Flower
   d) Storing of Tomato Seeds for Propagation
   e) Fungus Disease of Vegetable Plants
   f) Cold Storage of Potatoes
   g) Transplantation of Rose Stems

Note: i) Write your answers in the space given below.
    ii) Check your answers with the answers given at the end of this Unit.

12.5 MEDICINE

Medicine is the science of treating and understanding diseases of human beings.

The facet formula for the Main Class Medicine is:

\[ L[PN:EN][2P] \]

Where, Foci in [P] = Organ

Foci in [E] = Problem

Foci in [2P] = Cause (for Disease of [E])

There is also provision for [2E] [3P] for Isolate '4 Disease of [E] which stands for Handling'.

In the organ facet [P], isolate number '1' is devoted to the regional divisions of the human body. The organ numbers '2' to '8' are devoted to the functional divisions. The parts of the functional organ within a regional organ is to be indicated by adding the regional organ number by Superimposition Device.

The Superimposition Device involves connecting of two isolate numbers of the same facet by '-' (hyphen).

Examples

Shoulder Bone = 161-82

Shoulder (regional organ) ~ Bone (functional organ)
Toe Nail = 131-883

Toe (regional organ) → Nail (functional organ)

Note: In the above examples, hyphen is used as a connecting symbol for Superimposition Device.

The problem facet [E] is enumerated. The subdivision of the isolate ‘3 Physiology’ would be same as that of Main Class ‘G Biology’. In the case of special class L9F Female Medicine, the isolate ‘3 Physiology’ should be replaced by ‘3 Obstetrics’ and its subdivisions.

In the case of isolate ‘4 Disease’ in [E], [2P] is enumerated separately.

An illustrative list of specific diseases with their Class Numbers is given after the subdivisions of [2P].

Example

Title: Treatment of Whooping Cough

Class Number: L4:4242:6

Where, L = Medicine (M.C.)
L4 = Medicine (M.C.), Respiratory System [P]
L4:4 = Medicine (M.C.), Respiratory System [P], Disease [E]
L4:424 = Medicine (M.C.), Respiratory System [P], Disease [E], Bacteria [2P]
L4:4242 = Medicine (M.C.), Respiratory System [P], Disease [E], Bacteria [2P], Whooping Cough
L4:4242:6 = Medicine (M.C.), Respiratory System [P], Disease [E], Bacteria [2P], Whooping Cough, Treatment [E]

Note: The Class Number for whooping cough is already given in the schedule under specific disease.

Foci in [2E] cum [3P] is also enumerated in the schedule. At the end of the schedule for Main Class ‘L Medicine’, Specials and Systems are enumerated.

Examples

Title: Treatment of Tropical Diseases

Class Number: L9H:4:6

Where, L = Medicine (M.C.)
L9H = Medicine (M.C.), Tropical (Special Facet)
L9H:4 = Medicine (M.C.), Tropical (Special Facet), Disease [E]
L9H:4:6 = Medicine (M.C.), Tropical (Special Facet), Disease [E], Treatment [2E1]

Title: Homeopathic Treatment of Diabetes in Old Age

Class Number: LL,9E,293:46:6
| Where, L | = Medicine (M.C.) |
| LL | = Medicine (M.C.), Homeopathy (System Facet) |
| LL,9E | = Medicine (M.C.), Homeopathy (System Facet), Old age (Special Facet) |
| LL,9E,293 | = Medicine (M.C.), Homeopathy (System Facet), Old age (Special Facet), Pancreas [P] |
| LL,9E,293:4 | = Medicine (M.C.), Homeopathy (System Facet), Old age (Special Facet), Pancreas [P], Disease [E] |
| LL,9E,293:46 | = Medicine (M.C.), Homeopathy (System Facet), Old age (Special Facet), Pancreas [P], Disease [E], Nutrition [2P] |
| LL,9E,293:46:6 | = Medicine (M.C.), Homeopathy (System Facet), Old age (Special Facet), Pancreas [P], Disease [E], Nutrition [2P], Treatment [2E] |

Note: i) The Class Number for Diabetes is already enumerated in the Schedule, i.e., L293:46 under specific disease.

ii) As discussed earlier in Unit 11, when both system and special facets are there, the special facet succeeds the system facet and precedes all other facets and should be separated by commas.

Self Check Exercise

4) Construct Class Numbers for the following titles:
   a) Physiology of Digestive Systems in Human Beings
   b) Prevention of the Diseases of the Foetus
   c) Physiotherapy for Bone Diseases
   d) Homeopathic Treatment of Amoebic Dysentery
   e) Prevention of Measles in Children through Vaccination
   f) Nature Cure of Asthma in Old Age

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.
12.6 SUMMARY

In this Unit, we have discussed some of the Main Classes belonging to the Biological Sciences. The following main points were discussed:

- The substance facet [P] of Main Class 'E Chemistry' can be used in the Main Classes - Biology, Geology, Mining, Botany and Zoology.
- Division of the facet [P] into the Utility Array and Part Array in Main Classes Agriculture.
- Facet formula for Main Classes Botany and Zoology are same.
- The problem facet for Main Classes Biology, Botany and Zoology are common.
- The concept of differential facets introduced in Main Class 'J Agriculture'.
- Main Class Geology is further divided into Canonical Classes.
- In the Main Class Medicine, the superimposition device would be used to indicated the parts of the functional organ within a regional organ.

12.7 ANSWERS TO SELF CHECK EXERCISES

1) a) G95531:12.44
   G = Biology (M.C.)
   G95531 = Biology (M.C.), Living Organisms in Coastal Regions [P]
   G95531:12 = Biology (M.C.), Living Organisms in Coastal Regions [P], Natural History [E]
   G95531:12.44 = Biology (M.C.), Living Organisms in Coastal Regions [P], Natural History [E], India [S] (Taken from Space Isolate Schedule)

b) G116:19
   G = Biology (M.C.)
   G116 = Biology (M.C.), Gene [P]
   G116:19 = Biology (M.C.), Gene [P], Microscopy [E]

c) I65,15:33,(E160)
   I = Botany (M.C.)
   I65 = Botany (M.C.), Coniferae [P]
   I65,15 = Botany (M.C.), Coniferae [P], Leaf [P2]
   I65,15:33 = Botany (M.C.), Coniferae [P], Leaf [P2], Metabolism [E](Taken for Main Class 'G Biology')
   I65,15:33,(E160) = Botany (M.C.), Coniferae [P], Leaf [P2], Metabolism [E], Oxygen [2M] (Taken from Main Class 'E Chemistry')

Further expansion of the Matter Facet:
(E160)
E = Chemistry (M.C.)
E160 = Chemistry (M.C.), Oxygen [P]

Note: In the Main Class 'G Biology' we have discussed how matter facet could be used for the isolate 33 Metabolism in [E].

d) I2375:2
   I = Botany (M.C.)
   I2375 = Botany (M.C.), Mushroom [P]
   I2375:2 = Botany (M.C), Mushroom [P], Morphology [E] (Taken from Main Class 'G Biology')
e) K92,4:3
   K = Zoology (M.C.)
   K92 = Zoology (M.C.), Pisces [P]
   K92,4 = Zoology (M.C.), Pisces [P], Respiratory System [P2] (Taken from Main Class 'L Medicine')
   K92,4:3 = Zoology (M.C.), Pisces [P], Respiratory System [P2], Physiology [E] (Taken from Main Class 'L Medicine')

Note: Here we have used the [P2] facet even though it is not provided for in the facet formula for Main Class 'K Zoology'. If you turn to the Rules section of Main Class 'K Zoology' (P 1.86) Rule Number K0 states that facets are same as that of Main Class 'l Botany'. In Main Class 'l Botany' there is provision for [P2]. Hence we have used [P2] here.

f) K1:66
   K = Zoology (M.C.)
   K1 = Zoology (M.C.), Invertebrata [P]
   K1:66 = Zoology (M.C.), Invertebrata [P], Evolution [E] (Taken from Main Class 'G Biology')

2) a) H198:164
   H = Geology (M.C.)
   H1 = Geology (M.C.), Mineralogy (C.C.)
   H198 = Geology (M.C.), Mineralogy (C.C.), Pearl [P]
   H198:164 = Geology (M.C.), Meneralogy (C.C.), Pearl [P], Artificial Production [E]

b) H692'A34
   H = Geology (M.C.)
   H6 = Geology (M.C.), Paleontology (C.C.)
   H692 = Geology (M.C.), Paleontology (C.C.), Pisces (Taken from Natural group [P] of Main Class 'K Zoology')
   H692'A34 = Geology (M.C.), Paleontology (C.C.), Pisces [P], Cretaceous [T] (Taken from Cannonical Class 'H5 Stratigraphy'. H5 has been replaced by A)

c) H7182:155
   H = Geology (M.C.)
   H7 = Geology (M.C.), Economic Geology (C.C.)
   H7182 = Geology (M.C.), Economic Geology (C.C.), Iron [P] (Taken from Main Class 'E Chemistry')
   H7182:155 = Geology (M.C.), Economic Geology (C.C.), Iron [P], Occurrence [E] (Taken from Canonical Class 'H1 Mineralogy')

d) HZ555:14
   HZ = Mining (M.C.)
   HZ555 = Mining (M.C.), Petroleum [P] (Taken from Main Class 'F Technology')
   HZ555:14 = Mining (M.C.), Petroleum [P], Deep Boring [E]

e) HZ551,1:11
   HZ = Mining (M.C.)
   HZ551 = Mining (M.C.), Coal [P] (Taken from Main Class 'F Technology')
3) a) J3896:1:6
   J = Agriculture (M.C.)
   J3896 = Agriculture (M.C.), Cashewnut [P]
   J3896:1 = Agriculture (M.C.), Cashewnut [P], Soil [E]
   J3896:1:6 = Agriculture (M.C.), Cashewnut [P], Soil [E], Improvement [2E]

b) J2:21:3
   J = Agriculture (M.C.)
   J2 = Agriculture (M.C.), Feed Crops [P]
   J2:2 = Agriculture (M.C.), Feed Crops [P], Manure [E]
   J2:21 = Agriculture (M.C.), Feed Crops [P], Manure [E], Green [2P]
   J2:21:3 = Agriculture (M.C.), Feed Crops [P], Manure [E], Green [2P], Application [2E]

c) J662:93
   J = Agriculture (M.C.)
   J662 = Agriculture (M.C.), Saffron Flower [P]
   J662:93 = Agriculture (M.C.), Saffron Flower [P], Physiology [E]

d) J37943:38:8
   J = Agriculture (M.C.)
   J37943 = Agriculture (M.C.), Tomato [P]
   J37943:3 = Agriculture (M.C.), Tomato [P], Propagation [E]
   J37943:38 = Agriculture(M.C.), Tomato [P], Propagation [E], Seed[2P] (Taken from Part Array of [P])
   J37943:38:8 = Agriculture (M.C.), Tomato [P], Propagation [E], Seed [2P], Storing [2E]

e) J9397:433
   J = Agriculture (M.C.)
   J93 = Agriculture (M.C.), Vegetable (Utility Array) of [P]
   J9397 = Agriculture (M.C.), Vegetable (Utility Array) [P], Whole Plant (Part Array) [P]
   J9397:4 = Agriculture (M.C.), Vegetable Plants [P], Disease [E]
   J9397:433 = Agriculture (M.C.), Vegetable Plants [P], Disease [E], Fungus [2P] (Taken from Main Class ‘L Medicine’)

f) J341:7:84
   J = Agriculture (M.C.)
   J341 = Agriculture (M.C.), Potato [P]
   J341:7 = Agriculture (M.C.), Potato [P], Harvesting [E]
   J341:7:84 = Agriculture (M.C.), Potato [P], Harvesting [E], Cold Storage [2E]

4) a) L2:3
   L = Medicine (M.C.)
   L2 = Medicine (M.C.), Digestive System [P]
   L2:3 = Medicine (M.C.), Digestive System [P], Physiology [E]

b) L9F:324:5
   L = Medicine (M.C.)
   L9F = Medicine (M.C.), Female Medicine (Special Facet)
   L9F:3 = Medicine (M.C.), Female Medicine (Special Facet), Obstetrics [E]
   L9F:324 = Medicine (M.C.), Female Medicine (Special Facet), Diseases of the Foetus [E]
   L9F:324:5 = Medicine (M.C.), Female Medicine (Special Facet), Disease of the Foetus [E], Preventive Step [2E]

c) L82:4:62
   L = Medicine (M.C.)
   L82 = Medicine (M.C.), Bone [P]
   L82:4 = Medicine (M.C.), Bone [P], Disease [E]
   L82:4:62 = Medicine (M.C.), Bone [P], Disease [E], Physiotherapy [2E]

d) LL,25:4262:6
   L = Medicine (M.C.)
   LL = Medicine (M.C.), Homeopathy (System Facet)
   LL,25 = Medicine (M.C.), Homeopathy (System Facet), Intestine [P]
   LL,25:4 = Medicine (M.C.), Homeopathy (System Facet), Intestine [P], Disease [E]
   LL,25:426 = Medicine (M.C.), Homeopathy (System Facet), Intestine [P], Disease [E], Protozoa [2P]
   LL,25:4262 = Medicine (M.C.), Homeopathy (System Facet), Intestine [P], Disease [E], Protozoa [2P], Amoebic Dysentery
   LL,25:4:4262:6 = Medicine (M.C.), Homeopathy (System Facet), Intestine [P], Disease [E], Protozoa [2P], Amoebic Dysentery, Therapeutics [2E]

Note: The Class number for the disease Amoebic dysentery is given in the illustrative list of Specific Disease.
e) L9C:4233:56
L = Medicine (M.C.)
L9C = Medicine (M.C.), Child (Special Facet)
L9C:4 = Medicine (M.C.), Child (Special Facet), Disease [E]
L9C:423 = Medicine (M.C.), Child (Special Facet), Disease [E], Virus [2P]
L9C:4233 = Medicine (M.C.), Child (Special Facet), Disease [E], Virus [2P], Measles
L9C:4233:56 = Medicine (M.C.), Child (Special Facet), Disease [E], Virus [2P], Measles, Immunology [2E]

Note: The Class Number for the disease Measles is given in the illustrative list of Specific Disease.

f) LM,9E,44:453
L = Medicine (M.C.)
LM = Medicine (M.C.), Naturopathy (System Facet)
LM,9E = Medicine (M.C.), Naturopathy (System Facet), Old Age (Special Facet)
LM,9E,44 = Medicine (M.C.), Naturopathy (System Facet), Old Age (Special Facet), Bronchi [P]
LM,9E,44:4 = Medicine (M.C.), Naturopathy (System Facet), Old Age (Special Facet), Bronchi [P], Disease [E]
LM,9E,44:4:453 = Medicine (M.C.), Naturopathy (System Facet), Old Age (Special Facet), Bronchi [P], Disease [E], Complicated Functioning [2P]

Note: The Class Number for the disease Asthma is given in the illustrative list of Specific Disease.

12.8 KEY WORDS

Array : The set of mutually exclusive coordinate subclasses.
Differential Facet : Different foci in a facet having different facet to qualify them.
Facet : A generic term to denote any component--be it a basic subject or an isolate idea.
Isolate : A generic term denoting an isolate concept or isolate number.

12.9 REFERENCES AND FURTHER READING
