UNIT 6: PRESERVATION AND CONSERVATION OF LIBRARY MATERIALS

UNIT STRUCTURE

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6.1 LEARNING OBJECTIVES

After going through this unit you will be able to

- Know about preservation and conservation;
- Explain the procedure of print material preservation and conservation;
- Find out the ways as to how digital document can be preserved;
- Know about the biological agents that create threat to documents;
- Define microfilming and digitization.

6.2 INTRODUCTION

The library houses the document by considering the long-term preservation of the items while still allowing the end user to access the material easily. But all library collections experience damage from use and decay from the aging. So there is a need of preservation and conservation of library materials.

Books and other materials suffer damage or deterioration because of several groups of factors, some inherent in the materials and others beyond the control of the library. Library holdings may begin to deteriorate because of the organic materials from which they are made. Each type of material - paper, glue, plastic, etc - that goes into the manufacture of a book, recording or optical media has its own combination of physical and chemical properties, and a life span. The other factors include all of the conditions surrounding the processing, storage and use of the materials.

6.3 PRESERVATION AND CONSERVATION

Preservation is the task of minimizing or reducing the physical and chemical deterioration of documents. Conservation is the maintenance of documents in a usable condition through treatment and repairs of individual items to slow the process of decay or to restore them to a usable state. Conservation includes study, diagnosis, preventive care, examination, treatment, documentation using any methods that may prove effective in keeping that property in as close to its original condition as possible and for as long as possible. The conservation actions are carried out for a variety of reasons including; aesthetic choices, stabilization, needs for structural integrity or for cultural requirements for intangible continuity.

a) Need of Preservation and Conservation: When an important, often used book is found in a poor physical condition that restricts its future use and denies the borrowerthe pleasure of its reading, then the need arises for its preservation and conservation. The need of preservation and conservation are-

i) Compendium of Information: Books, journals, newspapers are the sources of information. They reflect social, economic, political and cultural life. They also depict the latest trend on all subjects or topics and, as such, they are a valuable asset of our society.

ii) Raw Materials of History: The old reading material constitutes the raw materials of our history and provides background information about an event in history. Nostalgia for such works is another point of consideration.

iii) Wide Range of Users: Everyone from a child to an old man, from layman to researchers, turns to information even after hundred years of the publication of the material.

iv) Future and Heavy Use: Hard copies of the old as well as new materials are prone to decay. So, to provide continuous and wider access to the collection preservation is a must.

v) Rare Materials: Manuscripts and other materials are of immense value from the cultural and historical point of view and therefore they need to be preserved. Priority should be given to high-value, at-risk materials of national interest. The purpose shall be to serve preventive preservation, as well as security, goals by reducing the handling of the originals.

b) Strategies in Preservation and Conservation

i) Document Selection: If preservation and conservation practices will be followed then the goal should be to bring as many worthy collections as possible for the document at risk to improve access.

ii) Options: Choosing the options that will be followed to meet the requirements of the custodial function of the library as well as its current use.

iii) Budget: Preparing a budget for the preservation and conservation of the reading materials, including cost in procuring equipments, and others.

iv) Procuring Necessary Infrastructure: According to the option chosen for preservation necessary infrastructure should be developed. In case of digital preservation necessary hardware and software should be procured. If possible the archive or library can go for automated management systems that will manage digital resources for acquisition, use, and archiving automatically.

v) The Conservation Laboratory: Conservators routinely use chemical and scientific analysis for the examination and treatment of the works. The modern conservation lab uses equipment such as microscopes, spectrometers, and x-ray machines to understand

better the objects and their components. The data thus collected help in deciding the conservation treatments to be provided to the object.

c) Types of Preservation and Conservation Techniques

i) Preventive Conservation: Many cultural works are sensitive to environmental conditions such as temperature, humidity and exposure to light and ultraviolet light. Taking sufficient measures to protect materials in a controlled environment where such variables are maintained within a range of damage-limiting levels is called preventive conservation.

ii) Interventive Conservation: Interventive Conservation refers to any act by a conservator that involves a direct interaction between the conservator and the cultural material. These interventive treatments could involve cleaning, stabilizing, repair, or even replacement of parts of the original object or consolidation such as securing flaking paint.

d) Ethics in Conservation: The conservator applies some simple ethical guidelines, such as:

i) Minimal Intervention: It is essential that the conservator should fully justify the intervention for conservation if necessary before the work is undertaken and if necessary after the work is over.

ii) Reversible Methods: Using appropriate materials and methods that aim to be reversible to reduce the possible problems with future treatment, investigation, and use is one of the guiding principles of conservation. It means, that all interventions with the object should be fully reversibl, and the object should be able to be returned to the state in which it was prior to the conservator's intervention. This principle nowadays has been widely criticized within the conservation profession itself.

iii) Complete Documentation: Complete documentation of the work carried out before, during, and after the treatment is necessary. It is a must for all kinds of documents as it will provide what was done with the document in the past and accordingly it helps in taking the right decision in future treatment process.

6.4 PRINT MATERIAL PRESERVATION AND CONSERVATION TECHNIQUES

a) Environmental Remedies: Poor qualities of building where books are stored and extreme climatie conditions create damage and decay of the library materials. The key environmental factors include temperature, relative humidity, pollutants, and light exposure. Books stored in cool, dry, dark areas generally have a much longer life span than those housed in hot, humid, brightly lighted areas. Constant or stabilized levels of temperature and humidity are less harmful than the fluctuating levels.

Maintenance of suitable environmental condition is the base on which all other preservation and conservation activities rest. Each material has its own unique temperature and humidity factor. Thermometers, Hygrometers, Humidity indicator strips, Hygrothermometer (for monitoring temperature and relative humidity) are generally used to monitor the environmental factor. Light meter and ultraviolet meter can be used to measure the exposure of light to the documents. The use of climate-controlled storage facility is the best way to maintain a suitable environment. Let us discuss these factors in more details-

i) *Temperature:* Lower temperature is good for a collection in a library. However, since books and other materials are often housed in areas with people, a compromise must be struck to accommodate human comfort. A reasonable temperature to accomplish both goals is 65-68ÚF. However, if possible, film and photography collections should be kept in a segregated area at 55ÚF.

ii) *Humidity:* Books and other materials take up and give off moisture, making themselves sensitive to relative humidity. Very high humidity encourages ***mold*** and insect growth. Low humidity causes materials to lose their flexibility. Fluctuations in relative humidity are more damaging than a constant humidity in the middle or low range. Generally, the relative humidity should be between 30-50% with

as little variation as possible, however recommendations on specific levels to maintain vary depending on the type of material, i.e. paper-based, film, etc.



Mold: A fine, soft, green, grey or black substance like fur that grows on objects that are left in wet air.

iii) Light: Exposure to light also has a significant effect on library materials. It is not only the light visible to humans that can cause damage, but also ultraviolet light and infrared radiation. Light is measured in ***lux*** or the amount of lumens/m^2. The generally accepted level of illumination with sensitive materials is limited to 50 lux per day. Materials receiving more lux than recommended can be placed in dark storage periodically to prolong the original appearance of the object. Using ultraviolet filter on windows and light will also help.



Lux: Unit of illumination.

iv) Pollutants: Particulate and gaseous pollutants, such as ozone, sulfur dioxide, oxides of nitrogen, soot, can cause dust, soiling, and causing irreversible molecular damage to materials. Pollutants are exceedingly small and not easily detectable or removable. The introduction of the "Heating, Ventilating, and Air Conditioning" (HVAC) filtration system in the building will be helpful defence against the pollutants.

b) Controlling Biological Agents: Pests, such as insects and vermin, eat and destroy paper and the adhesive that secures book bindings. Food and drink in libraries, archives, and museums can increase the attraction of pests. They are most common in cool, damp, dark, and undisturbed areas of libraries, archives, and museums

In general, if materials are stored in a clean, cool, and dry environment, and looked at and dusted occasionally, the risk of damage by insects is greatly reduced, and problems will be detected before a lot of damage is done. An Integrated Pest Management system is one way to control pests in libraries.

Common Term (Family) [Scientific Name]	Type of Damage	Photographs
Beetles (Anobidae) [Xestobium rufovillosum, Dermestes lardarius, Attagenus unicolor, Stegobium paniceum]	Will tunnel through paper, attack leather-bound books	
Booklice (Psocoptera) [Liposcelis divinatorius, Trogium pulsatorium]	Feeds on microscopic molds and other organic matter found on book and its bindings.	
Cockroach (Blattaria) [Blattella germanica]	Degraded paper or the starch-based binding pastes	
Moths (Lepidoptera) [Hofmannophilia pseudospretella, Tineola bisselliella]	Attack cloth bindings	
Silverfish (Thysanura) [Lepisma saccharina]	Degraded paper or the starch-based binding pastes	
Spiders (order Araneae)	Live/dead ones provide nutrients for other pests	
Termites / White ants (Isoptera) [Cryptotermes cavifrons]	Damage paper, books,	

To kill the cockroach or black beetles, Gemmaxene or DDT powder may be used. These insects can also be repelled by camphor and naphthalene. Fumigation and naphthalene bricks are more effective to kill bookworms. To eliminate termites or white ants carbon bisulphide or carbon tetrachloride can be used. Solignum oil may also be used in stack rooms as a precaution. Boric acid and sodium floride and flour (12: 100) can be used against silver fish. Book lice, fish insects can be avoided by using ethylene, carbondioxide and formaldehyde vapours. A mixture of thymal crystal (100 gm), mercuric bichloride (4 gm), ether (200 cc) and benzene (400 cc) can be used to destroy the fungus layers.

c) **Mass Deacidification:** Acidic paper especially when exposed to light, air pollution, or high relative humidity, becomes yellow and brittle over time. Mass deacidification is a possible measure against the degradation of paper in old books. The purpose of deacidification is to neutralize acids and to deposit in paper a buffer that will protect the document from the formation of acid in future. During mass deacidification an alkaline agent is deposited in the paper to neutralize the existing acid and prevent further decay. The goal of the process is to increase the pH of acidic paper on a large scale. The deacidification may be aqueous and non acqueous in nature.

d) **Remedies for Poor Qualities of Paper / Binding:** Many reading materials that were published before 1950 were printed on very poor quality paper. Print materials in developing countries are often created using fragile, non-lasting paper product and ink. Creating and adopting a minimum standard of quality in terms of paper and ink, types of binding, etc is the only viable solution in this regard.

Library binding is the term used to describe the method of binding serials, and re-binding paperback or hardcover books, for use within libraries. Library binding increases the durability of books, as well as making the materials easier to use. It is a way to increase the life of the books and periodicals used in libraries. This is done by sewing the

pages in place and by reinforcing the spine for each volume. The goal of library binding is long-term preservation.

e) **Human Being as an Agent of Damaging Books:** No type of material which circulates is safe from possible destruction. The damage to the books and other reading material is also caused by human beings due to its over-use, neglect, and such factors. The kind of book-return facilities provided and even the procedures used by the staff members responsible for processing and shelving materials also cause the deterioration of library materials. Books which are tossed around, dropped in a puddle or gnawed by the dog are lost to the collection. Therefore, proper care in handling the material should be ensured while the reading materials are in the hands of the users. The user awareness can do a lot in this regard. Shelvers can be taught to shelve materials properly, avoiding packing shelves too tightly or placing books with fore-edges down. When processing new materials, librarians should be careful about their use of tape or paper clips or other suppliers which might react harmfully with the materials being added to the collection.

f) **Preservation Reformatting:** Preservation Reformatting is the task of complete conversion of the material into another format to preserve the library's collections and offer broad public access to at-risk materials. It means duplication of the material into another stable medium or format. **"**The goal of preservation reformatting is to permit ongoing access to that portion of the information embodied in source materials that has been identified as essential to their continued usefulness for articulated purposes". "The goal of preservation reformatting is not necessarily to create an exact replacement copy with the look, feel, and functionality of the original".

The goal of preservation reformatting is to make copies that have the features that are required to meet anticipated needs. This goal may be facilitated by:

i) Instituting a quality control programme using relevant standards and systems to ensure that copies are complete, legible, and free from artifacts;

ii) Confirming that systems are operating consistently at optimal levels;

iii) Inspecting systematically an appropriate number of samples (in some cases 100%);

iv) Documenting processes.

Different physical formats (photographs, negatives, and items with color) with different size, (bound and single-sheet paper materials) and with different characteristics are suitable for preservation reformatting and with the advent of new technologies this list of physical formats and characteristics are expanding day by day.

The archive can think of restricting the access to the analog version of the original item, paper facsimile, or microfilm copy after the reformatting is available for use.

i) Microfilming: Microfilm deals with the reduction of documents to such a small size that it can be read only with the help of optical assistance. It has slow rate of decay and so can be preserved for hundreds of years. But, microfilming has limited access possibilities (no searchable text) as compared to the high use and its competitor digitization. Again, many people consider microfilming as a dying technology taking consideration of the rare nature of microfilming equipment. Microfilming is governed by carefully crafted national standard; can be read by the naked eye provided light and magnification systems are there. These are some of the advantages. The microfilm documents will fulfil the need of creation of duplication from the Master Negative Collection. The master negative will be accompanied by the reel ID, title, date, S. No., etc. In all cases if microfilming is to be followed, then it must adhere to the standards for preservation of microfilming established by the American National Standard for Image and Information Management (ANSI), the Association for Information and Image

Management (AIIM), the Research Libraries Group (RLG), and the Library of Congress.

ii) *Digitization of Material / Digital Reformatting:* Digitization is the process by which analog items (that include books, journals, newspaper, etc) are converted into computer readable text consisting of a sequence of 0s and 1s as a surrogate of the original. It is very hard to retrieve specific kind of information from a huge volume of information as it needs manual scanning page by page and to use the computer for searching all the information together needs reformatting to digital copies. So for the creation of different digital access aids that will include guides, indices, and databases to search and browse the huge volume of information collection, digitization is a must. In short, it will speed up the process of finding relevant information and extend access and assist the preservation. The digital surrogates perform a preservation function by reducing or eliminating the use of the original.

Digital reformatting is guided by the best established practices to ensure that materials are being converted at the highest quality. Reformatting, or in any other way copying an item's contents, raises obvious copyright issues; so before accepting digitization proper attention should be given in this regard also.

A hybrid approach can also be used for preservation, combing the usefulness of both the options of microfilm and digitization at the same time. It addresses long term storage through microfilming while the current use is through digitization. It is the best preservation reformatting option to choose if fund is not a problem for the library.

g) Environmental Catastrophe: The unpredictable disasters like fires, floors, storms, or even broken pipes within the library building may lead to very extensive damage of the collection. These are generally beyond the control of the librarian but it is possible to develop emergency plans for handling the collection and in some cases for

preventing the disaster (fires). If a major catastrophe strikes the library, which actions will be taken first and who will take them? The responsibilities must be assigned well before the event.

h) Appointment of Preservation and Conservation Librarian: Some libraries in the world appoint a special preservation and conservation librarian to look after the works of preservation and conservation. Other bigger libraries can also think on the same line. Smaller libraries cannot afford such a full time staff member, but it is still possible for an interested and knowledgeable librarian to be assigned the responsibility on a part-time basis.

Political instability in some regions in the past led to the destruction of many libraries and collections. Libraries as an individual institution cannot do much in this regard.

6.5 DIGITAL MEDIA PRESERVATION AND CONSERVATION TECHNIQUES

Digital preservation is defined as a long-term, error-free storage and management of digital information, with means for retrieval and interpretation. Digital preservation requires more constant and ongoing attention than preservation of other media. This constant input of effort, time, and money to handle rapid technological and organizational advance is considered the main stumbling block for preserving digital information. Indeed, while we are still able to read our written heritage from several thousand years ago, the digital information created merely a decade ago is in serious danger of being lost, creating a digital Dark Age. The following two terminologies are used in conjunction with digital preservation

a) Digital Curation: Digital curation is the selection, preservation, maintenance, and collection and archiving of digital assets. It is the process of establishing and developing long term repositories of digital assets for current and future reference by researchers, scientists, and historians, and scholars generally.

b) Digital Obsolescence: Digital obsolescence is a situation where a digital resource is no longer readable because the physical media (modes of digital encoding, data –storage medium, standards for encoding images and films), the reader required to read the media, the hardware, or the software (operating systems and general or specialized software) that runs on it is no longer available.

Digital technology is developing extremely fast, and one retrieval and playback technology can become obsolete in a matter of years. When faster, more capable and cheaper storage and processing devices are developed, the older version gets replaced almost immediately. Even different computer "standards" are only for some time, and in the end are always replaced by new versions of the software or completely new hardware.



Obsolescence: The state of becoming out of fashion and no longer useful.

Only continual forward-migration of files and information to the latest data-storage standards can address the issue of digital obsolescence. File formats should be widespread, backward compatible, often upgraded, and, ideally, open format. The National Initiative for a Networked Cultural Heritage cites uncompressed Tagged Image File Format (TIFF) and Portable Document Format (PDF) (for images) and American Standard Code for Information Interchange (ASCII) and Rich Text Format (RTF) (for text) as "de facto" formats that are unlikely to be rendered obsolete in the near future.

The preservation of digital media includes the following techniques

a) Avoiding Physical Deterioration of Media: The media on which digital contents are stored are more vulnerable to deterioration and catastrophic loss than some analog media such as paper. While acid paper is prone to deterioration in terms of brittleness and yellowness, the deterioration does not become apparent for at least six decades; and when the deterioration begins, it progresses slowly. It is also highly possible to retrieve all information without loss after deterioration is spotted. The recording media for digital data deteriorate at a much

more rapid pace, and once the deterioration starts, in most cases there is already data loss. This characteristic of digital forms leaves a very short time frame for preservation decisions and actions. So it should be avoided as far as possible by maintaining an appropriate environmental condition.

b) Refreshing: Refreshing is the task of transferring contents between two types of the same storage medium. Sometimes transferring the data from one long term storage medium to another is also termed as refreshing. It addresses the issues related to media obsolescence. Examples include transferring contents from floppy to CD and then to DVD and then to Blue ray and so on. Transfersing census data from an old preservation CD to a new one is also one example of refreshing.

The refreshing strategy may need to be combined with migration when the software or hardware required to read the data is no longer available or is unable to understand the format of the data. Refreshing will always be necessary due to the deterioration of physical digital media.

c) Replication: Replication is the process of creating multiple copies of the digital document and keeping them in multiple locations. Sometimes it is the best means of preserving cultural resources by lowering the risk of loss. Data that exists as a single copy in only one location is highly vulnerable to software or hardware failure, intentional or accidental alteration, and environmental catastrophes like fire, flooding, earthquake, etc. Digital data is more likely to survive if it is replicated in several locations. This goal may be facilitated by following standards and guidelines that mandate producing a master copy for long-term storage and preservation, and producing used copies derived from the master copy in the format that best satisfies the users' needs.

d) Bit-stream Copying (Backing up data): Backing up data refers to the process of making an exact duplicate of the original digital object and it should be followed by remote storage so that the original and the copy document does not become victims of the same disastrous

event. This is an essential preservation strategy for data loss due to hardware and media failure, normal malfunction and decay, malicious destruction or natural disaster.

e) **Migration:** The biggest problem to the digital media preservation is the storage format evaluation and its obsolescence. Migration can address this issue. It is the transferring of data to newer system environments and the process of transferring information from one generation computer system to the next available computer generation that is advanced in nature. It also deals with the process of transferring information from one obsolete file format to a new standard file format. This may include conversion of resources from one file format to another (e.g. conversion of Microsoft Word to PDF or Open Document, from one operating system to another (e.g., Windows to Linux) or from one programming language to another (e.g., C to Java) so that the resources remain fully accessible and functional. Resources that are migrated face the risk of losing some type of functionality since newer formats may be incapable of capturing all the functionality of the original format, or the converter itself may be unable to interpret all the functionality of the original format. The latter is often a concern with proprietary data formats.

f) **Emulation:** Emulation uses emulator, a special kind of software that translates code and instructions from one computing environment (original obsolete software) to execute in a new platform so that the digital form can be viewed and used.

Emulation is the replicating of functionality of an obsolete system. Examples include emulating an Atari 2600 on a Windows system or emulating WordPerfect 1.0 on a Macintosh. Emulators may be built for applications, operating systems, or hardware platforms. Emulation has been a popular strategy for retaining the functionality of old video game systems, such as with the MAME project.

g) **Metadata Attachment:** Metadata is data on a digital file that includes information on creation, access rights, restrictions, preservation history,

and rights management. Metadata attached to digital files may be affected by file format obsolescence. ASCII is considered to be the most durable format for metadata because it is widespread, backwards compatible when used with Unicode, and utilizes human-readable character, not numeric codes. It retains information, but not the structure information it is presented in. For higher functionality, Standard Generalized Markup Language (SGML) or Extensible Markup Language (XML) should be used. Both markup languages are stored in ASCII format, but contain tags that denote structured format. The long term storage of digital information is assisted by the inclusion of preservation metadata.

h) **Analogue Backups:** It is the process of the conversion of digital objects into analogue format. It is useful to the document that deserves the highest level of merit and protection from being lost. The analogue backup of printed document can be created by taking a printout of the document and then binding it.

i) **Technology Preservation (Computer Museum):** It deals with the preservation of the technology in which the digital information was created and maintained. It deals with the issues of preserving the technology including hardware and software configuration. It is very helpful in extending access to media obsolescence and file formats.

j) **Digital Archaeology**: Digital archaeology includes methods and procedures to rescue the content from damaged media, hardware or software environments.

6.6 PRESERVATION OF SOME OTHER MATERIALS

a) **Web Resources Preservation:** According to a report by the US Library of Congress, 44% of the site available on the internet in 1998 had vanished one year later. Web archiving is the process of collecting portions of the World Wide Web and ensuring that the collection is preserved in an archive, such as an archive site, for future researchers, historians, and the public. The Internet Archive is a non-profit digital

library with the stated mission of universal access to all knowledge. It offers permanent storage and access to collections of digitized materials, including websites, music, moving images, and books. The Internet Archive was founded by Brewster Kahle in 1996.

b) Film Preservation: The film preservation, or film restoration, movement is an ongoing project among film historians, archivists, museums, cinematheques, and non-profit organizations to rescue decaying film stock and preserve the images contained therein. In the widest sense, its aim is to assure that a movie will continue to exist, as close to its original form as possible. Films are highly inflammable. So, necessary action should be taken so that in no case it comes in contact with high temperature.

Like print, digital media, and film, the paintings, photographs, phonograph also demand some special preservation techniques.

CHECK YOUR PROGRESS

A) Match the Following

a) Biological agents.	a) HVAC filtration system.
b) Pollutants.	b) Food and drinks in the library.
c) Preventive conservation.	c) Direct interaction between the conservator and the material.
d) Interventive Conservation	d) Maintenance of physical environment.

B) Fill in the Blanks

a) In mass deacidification an ..... agent is deposited in the paper to neutralize existing acid.

b) In mass deacidificaiotn ..... of acidic paper is increased.

c) Preservation reformatting is the task of complete conversion of the material into another .....

d) The hybrid approach of preservation reformatting address long term storage through ..... while current use through .....



6.7 LET US SUM UP

Prevention of deterioration measures significantly extends the usual life of all types of documents and must need to be implemented. In doing so, the person concerned should work with curators, recommending officers, and other preservation staff to make decisions about binding, housing, and related matters.

Remedies against environmental damage of reading material include shielding from sunlight, air conditioning and such others in all walk of the material such as in store, on display, or in transit.

The storage areas should be clean and clutter, dust, dirt etc should not be allowed to accumulate within the storage areas. When the books are in the shelf, safe storage or use of proper storage cabinet by way of keeping the valuable reading material in box and keeping documents in between metal supporters provide protection against mechanical damage. It also helps the document in being free from dust, dirt and direct exposure of light.

Insects, mold, rodents are dangerous for a document. Generally pests are attached by clutter and the food remnants. So, eating, drinking etc should be prohibited in a place where collections are kept. During cleanliness all necessary measures should be taken so that cleanliness itself does not damage the fragile materials. In the library, disaster recovery plan should be put in place.

Repairing of document includes use of adhesive, repairing tears etc. Tears in leaves can be carefully aligned and repaired with the strips of Japanese paper and a starch paste or other suitable adhesive that bears the quality of good conservative. This process should be followed by binding. Generally library binding is considered good for many kinds of documents. The special collection should be treated specially.

Because of the big volume of library material having chances of deteriorating widely, diverse material and methods for preserving them involves considerable cost. It will be therefore, if the libraries are turning to cooperative arrangements for preservation.



6.8 FURTHER READINGS

1) Das, S. R. (2008). *Manual of Library Information*. New Delhi: Arise Publishers & Distributors.
2) Hyde, James H. (2003). *Library collection management*. New Delhi: Dominant Publishers and Distributors.
3) John V. Richardson Jr. (1987). *Bookworms: The Most Common Insect Pests of Paper in Archives, Libraries, and Museums*, Available over web: http://jvrichardsonjr.net/insects/pests.htm



6.9 ANSWERS TO CHECK YOUR PROGRESS

A) Match the Following

a) Biological agents.	a) Food and drinks in the library.
b) Pollutants.	b) HVAC filtration system.
c) Preventive conservation.	c) Maintenance of physical environment.
d) Interventive Conservation	d) Direct interaction between the conservator and the material.

B) Fill in the Blanks

a) Alkaline.
b) pH.
c) Format.
d) Microfilming, Digitization.



6.10 POSSIBLE QUESTIONS

A) Short Answer Type Questions

a) What do you mean by preservation and conservation? Why are they needed?

b) What are the ethics of conservation?

c) What are the environmental remedies for the document to maintain in a usable condition?

d) How can we control the biological agent in the library?

e) What do you mean by “digitization”?

B) Essay Type Questions

a) Describe the print material preservation and conservation techniques.

b) Describe preservation reformatting in the library.

c) Describe the ways by which digital documents can be preserved.

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