



## Sri Lakshmi Narayana Institute of Medical Sciences

Date: 15-05-2020

From

Dr.G.SOMASUNDRAM  
Principal of Allied Health Sciences,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Chennai.

### **Sub: Permission to conduct value-added course: Disinfection**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Disinfection** from June to July 2020 . We solicit your kind permission for the same.

Kind Regards

Dr.G.Somasundram

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### **FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: **Dr. Balagurunathan. K**

The HOD: **Dr. Somasundram. G**

The Expert: **Dr.**

The committee has discussed about the course and is approved.

Dean

(Sign & Seal)

Subject Expert

(Sign & seal)

HOD

(Sign & Seal)





OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

31.05.2020

**Sub: Organizing Value-added Course: “Disinfection “.reg**

With reference to the above-mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing “**Disinfection**”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before June to July 2020. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTC.D., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villianur Commune, Puducherry - 605502.

Encl: Copy of Course content

## VALUE ADDED COURSE

### 1. Name of the programme & Code

“Disinfection” & VAC08/AHS/2020-15/06

### 2. Duration & Period

30 hrs. & June to July 2020

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Assessment - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 time June to July 2020

### 8. Year of discontinuation: 2021

### 9. Summary report of each program year-wise

Value Added Course- July to August 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	VAC08/AHS/2020-15/06	Disinfection	DR. JAIKUMAR	AHS	27 students June to July 2020

### 10. Course Feed Back

*Enclosed as Annexure- V*

**RESOURCE PERSON**



**COORDINATOR**

**DR.G.SOMASUNDARAM**

**PRINCIPAL**  
Allied Health Sciences  
Sri Lakshmi Narayana Institute of Allied Health Sciences  
Osudu, Aaram Post, Puducherry - 605 502.

## Course Proposal

Course Title: “Disinfection”

**Course Objective:**

1. To enhance the performance in Disinfection.
2. To assess the objectives and protocols in Disinfection.
3. To assess the reaction of target allied Health students towards the Disinfection by getting their feedback.

**Course Outcome:** Improvement in the “Disinfection”

**Course Audience:** Students of AHS Batch 2020

**Course Coordinator:** Dr.G.Somasundram

**Course Faculties with Qualification and Designation:**

**1.Course Curriculum/Topics with schedule (Min of 30 hours)**

SlNo	Date	Topic	Time	Hours
1.	15.06.2020	Introduction to disinfectants, Background, Objectives,	4-5p.m	1
2.	17.06.2020	Low level& high-level disinfectant	2-3p.m	1
3.	19.06.2020	Properties of disinfectant	4-6p.m	2
4.	20.06.2020	Types of disinfectant	4-6p.m	2
5.	22.06.2020	Alcohol	4-6p.m	2
6.	24.06.2020	Aldehyde	4-5p.m	2
7.	26.06.2020	conventional didactic lecture and video	4-5P.M	1
8.	29.06.2020	Quaternary amino compounds	4-5p.m	1
9.	30.06.2020	Inorganic compounds	4-6p.m	1
10.	1.07.2020	Non chemical method	4-6p.m	2
11.	3.07.2020	Home disinfectants	4-6p.m	1
12.	6.07.2020	Metals	4-6p.m	2
13.	9.07.2020	Pre course and Post Course evaluation, Feedback analysis from Likert scale	2-5p.m	3
		<b>Practical Class I</b>		
13.	10.07.2020	Steps model explanation and various performance assessment methods		1
14.	13.07.2020	Orientation of the students about the training program and assessment methodology by DOPS		1
15.	15.07.2020	Video demonstration of disinfectants		2

16.	17.07.2020	Disinfectants procedure by STEPS model		2
17.	18.07.2020	Assessment by DOPS procedure and giving feedback in weaker areas	2-6p.m	4
		<b>Total</b>		30 hrs

**REFERENCE BOOKS:**

1. Shakti Kumar Gupta & Sunil Kant, A Hand Book on Housekeeping and Disinfection Practices for Health care Facilities
2. Steve E Hruddy & Jeffrey WA Charrols, Disinfection by Products & Human Health
3. Joseph M. Ascenzi, Hand Book of Disinfectants and Antiseptics

# DISINFECTANTS

- A **disinfectant** is a [chemical](#) substance or compound used to inactivate or destroy [microorganisms](#) on inert surfaces.
- Disinfection does not necessarily kill all microorganisms, especially resistant [bacterial spores](#); it is less effective than [sterilization](#), which is an extreme physical or chemical process that kills all types of life.
- Disinfectants are generally distinguished from other antimicrobial agents such as [antibiotics](#), which destroy microorganisms within the body, and [antiseptics](#), which destroy microorganisms on living [tissue](#). Disinfectants are also different from [biocides](#)—the latter are intended to destroy all forms of life, not just microorganisms.
- Disinfectants work by destroying the cell wall of microbes or interfering with their metabolism.
- It is also a form of decontamination, and can be defined as the process whereby physical or chemical methods are used to reduce the amount of pathogenic microorganisms on a surface.
- Disinfectants can also be used to destroy microorganisms on the skin and mucous membrane, as in the medical dictionary historically the word simply meant that it destroys microbes.
- Sanitizers are substances that simultaneously clean and disinfect.
- Disinfectants kill more germs than sanitizers. Disinfectants are frequently used in hospitals, dental surgeries, kitchens, and bathrooms to kill infectious organisms.
- Sanitizers are mild compared to disinfectants and are used majorly to clean things that are in human contact whereas disinfectants are concentrated and are used to clean surfaces like floors and building premises
- Bacterial [endospores](#) are most resistant to disinfectants, but some [fungi](#), [viruses](#) and [bacteria](#) also possess some resistance.



## Definitions

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The Australian [Therapeutic Goods Order No. 54](#) defines several grades of disinfectant as will be used below.

### Sterilant

**Sterilant** means a chemical agent which is used to sterilize critical medical devices or medical instruments. A sterilant kills all micro-organisms with the result that the sterility assurance level of a microbial survivor is less than  $10^{-6}$ . Sterilant gases are not within this scope.

### Low level disinfectant

**Low level disinfectant** means a disinfectant that rapidly kills most [vegetative bacteria](#) as well as medium sized [lipid containing viruses](#), when used according to labelling. It cannot be relied upon to destroy, within a practical period, [bacterial endospores](#), [mycobacteria](#), [fungi](#), or all small [nonlipid viruses](#)

### Intermediate level disinfectant

**Intermediate level disinfectant** means a disinfectant that kills all microbial pathogens except bacterial endospores, when used as recommended by the manufacturer. It is [bactericidal](#), [tuberculocidal](#), [fungicidal](#) (against asexual spores but not necessarily dried [chlamydo spores](#) or [sexual spores](#)), and [virucidal](#).

### High level disinfectant



**High level disinfectant** means a disinfectant that kills all **microbial pathogens**, except large numbers of bacterial endospores when used as recommended by its manufacturer

## Instrument grade

Instrument grade disinfectant means:

1. a disinfectant which is used to reprocess reusable therapeutic devices; and
2. when associated with the words “low”, “intermediate” or “high” means “low”, “intermediate” or “high” level disinfectant respectively.

## Hospital grade

**Hospital grade disinfectant** means a disinfectant that is suitable for general purpose disinfection of building and fitting surfaces, and purposes not involving instruments or surfaces likely to come into contact with broken skin:

1. in premises used for:
  - - the investigation or treatment of a disease, ailment or injury; or
    - procedures that are carried out involving the penetration of the

human skin; or,

1. in connection with:
  - - the business of beauty therapy or hairdressing; or
    - the practice of podiatry;

but does not include :

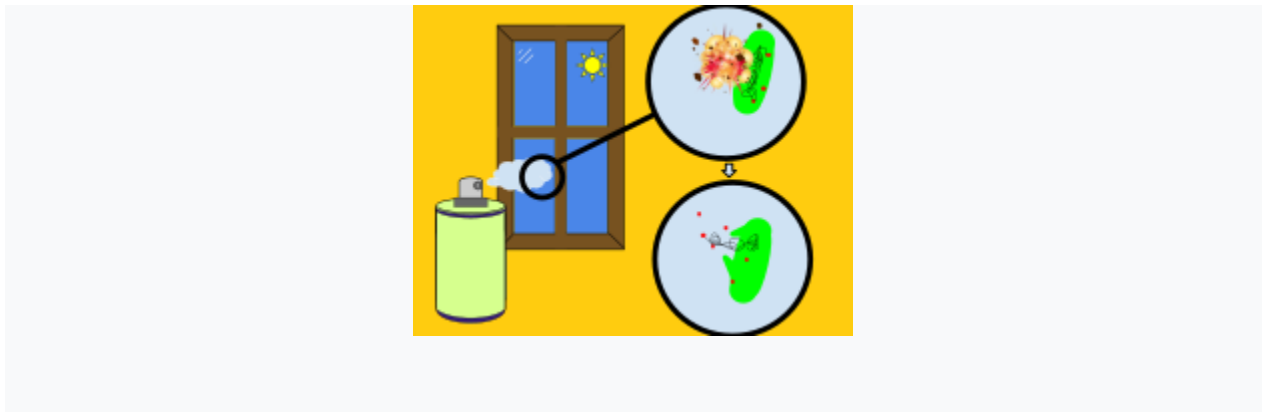
1. **Instrument grade disinfectants**; or
2. **sterilant**; or
3. an antibacterial clothes preparation; or
4. a sanitary fluid; or

5. a sanitary powder; or
6. a sanitizer

## Household/commercial grade

**Household/commercial grade disinfectant** means a disinfectant that is suitable for general purpose disinfection of building or fitting surfaces, and for other purposes, in premises or involving procedures other than those specified for a hospital-grade disinfectant, but is not:

1. an antibacterial clothes preparation; or
2. a sanitary fluid; or
3. a sanitary powder; or
4. a sanitizer



## Properties

- A perfect disinfectant would also offer complete and full microbiological [sterilization](#), without harming humans and useful form of life, be inexpensive, and noncorrosive.
- However, most disinfectants are also, by nature, potentially harmful (even [toxic](#)) to humans or animals.
- Most modern household disinfectants contain [denatonium](#), an exceptionally bitter substance added to discourage ingestion, as a safety measure.

- Those that are used indoors should never be mixed with other cleaning products as [chemical reactions](#) can occur. The choice of disinfectant to be used depends on the particular situation.
- Some disinfectants have a wide spectrum (kill many different types of microorganisms), while others kill a smaller range of disease-causing organisms but are preferred for other properties (they may be non-corrosive, non-toxic, or inexpensive).
- There are arguments for creating or maintaining conditions that are not conducive to bacterial survival and multiplication, rather than attempting to kill them with chemicals.
- Bacteria can increase in number very quickly, which enables them to [evolve](#) rapidly.
- Should some bacteria survive a chemical attack, they give rise to new generations composed completely of bacteria that have resistance to the particular chemical used.
- Under a sustained chemical attack, the surviving bacteria in successive generations are increasingly resistant to the chemical used, and ultimately the chemical is rendered ineffective.
- For this reason, some question the wisdom of impregnating cloths, [cutting boards](#) and worktops in the home with [bactericidal](#) chemicals

## Types

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### Air disinfectants

- Air disinfectants are typically chemical substances capable of disinfecting microorganisms suspended in the air.
- Disinfectants are generally assumed to be limited to use on surfaces, but that is not the case.
- In 1928, a study found that airborne microorganisms could be killed using mists of dilute bleach.
- An air disinfectant must be dispersed either as an [aerosol](#) or [vapour](#) at a sufficient concentration in the air to cause the number of viable infectious microorganisms to be significantly reduced.

- In the 1940s and early 1950s, further studies showed inactivation of diverse [bacteria](#), [influenza virus](#), and [Penicillium chrysogenum](#) (previously *P. notatum*) [mold fungus](#) using various glycols, principally [propylene glycol](#) and [triethylene glycol](#).
- In principle, these chemical substances are ideal air disinfectants because they have both high lethality to microorganisms and low mammalian toxicity.
- Although glycols are effective air disinfectants in controlled laboratory environments, it is more difficult to use them effectively in real-world environments because the disinfection of air is sensitive to continuous action.
- Continuous action in real-world environments with outside air exchanges at door, HVAC, and window interfaces, and in the presence of materials that adsorb and remove glycols from the air, poses engineering challenges that are not critical for surface disinfection.
- The engineering challenge associated with creating a sufficient concentration of the glycol vapours in the air have not to date been sufficiently addressed

## Alcohols

- Automatic hand sanitizer in [Tomaszów Mazowiecki](#), Poland
- : [Hand sanitizer](#)
- [Alcohol](#) and alcohol plus [Quaternary ammonium cation](#) based compounds comprise a class of proven surface sanitizers and disinfectants approved by the [EPA](#) and the [Centers for Disease Control](#) for use as a hospital grade disinfectant.
- Alcohols are most effective when combined with [distilled water](#) to facilitate diffusion through the cell membrane; 100% alcohol typically denatures only external membrane proteins.
- A mixture of 70% ethanol or [isopropanol](#) diluted in water is effective against a wide spectrum of bacteria, though higher concentrations are often needed to disinfect wet surfaces.
- Additionally, high-concentration mixtures (such as 80% ethanol + 5% isopropanol) are required to effectively inactivate lipid-enveloped viruses (such as [HIV](#), [hepatitis B](#), and [hepatitis C](#)).<sup>[26][27][28][29]</sup>

- The efficacy of alcohol is enhanced when in solution with the wetting agent [dodecanoic acid](#) (coconut soap).
- The synergistic effect of 29.4% ethanol with dodecanoic acid is effective against a broad spectrum of bacteria, fungi, and viruses. Further testing is being performed against [Clostridium difficile](#) (C.Diff) spores with higher concentrations of ethanol and dodecanoic acid, which proved effective with a contact time of ten minutes.



## Aldehydes

- [Aldehydes](#), such as [formaldehyde](#) and [glutaraldehyde](#), have a wide microbicidal activity and are [sporicidal](#) and [fungicidal](#).
- They are partly inactivated by organic matter and have slight residual activity.
- Some bacteria have developed resistance to glutaraldehyde, and it has been found that glutaraldehyde can cause asthma and other health hazards, hence [ortho-phthalaldehyde](#) is replacing glutaraldehyde

## Peroxy and peroxy acids

[Peroxydicarboxylic acids and inorganic peroxy acids](#) are strong oxidants and extremely effective disinfectants.

- [Peroxyformic acid](#)
- [Peracetic acid](#)
- [Peroxypropionic acid](#)
- [Monoperoxyglutaric acid](#)
- [Monoperoxy succinic acid](#)

- [Peroxybenzoic acid](#)
- [Peroxyanisic acid](#)
- [Chloroperbenzoic acid](#)
- [Monoperoxyphthalic acid](#)

## Phenolics

[Phenolics](#) are active ingredients in some household disinfectants. They are also found in some mouthwashes and in disinfectant soap and handwashes. Phenols are toxic to cats<sup>1</sup> and newborn humans

- [Phenol](#) is probably the oldest known disinfectant as it was first used by [Lister](#), when it was called carbolic acid. It is rather corrosive to the skin and sometimes toxic to sensitive people. Impure preparations of phenol were originally made from [coal tar](#), and these contained low concentrations of other [aromatic hydrocarbons](#) including [benzene](#), which is an [IARC Group 1 carcinogen](#).
- [o-Phenylphenol](#) is often used instead of [phenol](#), since it is somewhat less corrosive.
- [Chloroxylenol](#) is the principal ingredient in [Dettol](#), a household disinfectant and [antiseptic](#).
- [Hexachlorophene](#) is a phenolic that was once used as a germicidal additive to some household products but was banned due to suspected harmful effects.
- [Thymol](#), derived from the herb thyme, is the active ingredient in some "broad spectrum" disinfectants that often bear ecological claims. It is used as a stabilizer in pharmaceutical preparations. It has been used for its antiseptic, antibacterial, and antifungal actions, and was formerly used as a vermifuge.
- [Amylmetacresol](#) is found in [Strepsils](#), a throat disinfectant.
- Although not a phenol, [2,4-dichlorobenzyl alcohol](#) has similar effects as phenols, but it cannot inactivate viruses.

## Quaternary ammonium compounds

- [Quaternary ammonium compounds](#) ("quats"), such as [benzalkonium chloride](#), are a large group of related compounds.
- Some concentrated formulations have been shown to be effective low-level disinfectants.
- Quaternary ammonia at or above 200ppm plus alcohol solutions exhibit efficacy against difficult to kill non-enveloped viruses such as [norovirus](#), [rotavirus](#), or [polio virus](#).
- Newer synergous, low-alcohol formulations are highly effective broad-spectrum disinfectants with quick contact times (3–5 minutes) against bacteria, enveloped viruses, pathogenic fungi, and [mycobacteria](#).
- Quats are biocides that also kill algae and are used as an additive in large-scale industrial water systems to minimize undesired biological growth.

## Inorganic compounds

### Chlorine

This group comprises aqueous solution of [chlorine](#), [hypochlorite](#), or [hypochlorous acid](#). Occasionally, chlorine-releasing compounds and their salts are included in this group. Frequently, a concentration of < 1 ppm of available chlorine is sufficient to kill bacteria and viruses, spores and mycobacteria requiring higher concentrations. Chlorine has been used for applications, such as the deactivation of pathogens in drinking water, swimming pool water and wastewater, for the disinfection of household areas and for textile bleaching

- [Sodium hypochlorite](#)
- [Calcium hypochlorite](#)
- [Monochloramine](#)
- [Chloramine-T](#)
- [Trichloroisocyanuric acid](#)
- [Chlorine dioxide](#)
- [Hypochlorous acid](#)

### Iodine

- [Iodine](#)

- Iodophors

## Acids and bases

- Sodium hydroxide
- Potassium hydroxide
- Calcium hydroxide
- Magnesium hydroxide
- Sulfurous acid
- Sulfur dioxide
- phosphoric acid
- dodecylbenzenesulfonic acid

## Metals

Most metals, especially those with high atomic weights can inhibit the growth of pathogens by disrupting their metabolism.

## Terpenes

- Thymol
- Pine oil

## Other

- The **biguanide polymer polyaminopropyl biguanide** is specifically bactericidal at very low concentrations (10 mg/l).
- It has a unique method of action: The polymer strands are incorporated into the bacterial cell wall, which disrupts the membrane and reduces its permeability, which has a lethal effect to bacteria.
- It is also known to bind to bacterial DNA, alter its transcription, and cause lethal DNA damage.
- It has very low toxicity to higher organisms such as human cells, which have more complex and protective membranes.



- Common [sodium bicarbonate](#) (NaHCO<sub>3</sub>) has antifungal properties, and some antiviral and antibacterial properties, though those are too weak to be effective at a home environment.

## Non-chemical

- [Ultraviolet germicidal irradiation](#) is the use of high-intensity shortwave [ultraviolet light](#) for disinfecting smooth surfaces such as dental tools, but not porous materials that are opaque to the light such as wood or foam.
- Ultraviolet light is also used for municipal [water treatment](#). Ultraviolet light fixtures are often present in [microbiology](#) labs, and are activated only when there are no occupants in a room (e.g., at night).
- Heat treatment can be used for disinfection and sterilization.
- The phrase "sunlight is the best disinfectant" was [popularized in 1913](#) by [United States Supreme Court](#) Justice [Louis Brandeis](#) and later advocates of [government transparency](#). While sunlight's ultraviolet rays can act as a disinfectant, the Earth's [ozone layer](#) blocks the rays' most effective wavelengths.
- Ultraviolet light-emitting machines, such as those used to disinfect some hospital rooms, make for better disinfectants than sunlight

## Home disinfectants

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- The most cost-effective home disinfectant is [chlorine bleach](#) (typically a >10% solution of [sodium hypochlorite](#)), which is effective against most common [pathogens](#), including disinfectant-resistant organisms such as [tuberculosis](#) ([mycobacterium tuberculosis](#)), [hepatitis](#) B and C, [fungi](#), and antibiotic-resistant strains of [staphylococcus](#) and [enterococcus](#).
- It has disinfectant action against some [parasitic organisms](#).

- The benefits of chlorine bleach include its inexpensive and fast acting nature. However it is harmful to mucous membranes and skin upon contact, has a strong odour; is not effective against [Giardia lamblia](#) and [Cryptosporidium](#); and combination with other cleaning products such as ammonia and [vinegar](#) can generate noxious gases like [chlorine](#).
- The best practice is not to add anything to household bleach except water. As with most disinfectants, the area requiring disinfection should be cleaned before the application of the chlorine bleach, as the presence of organic materials may inactivate chlorine bleach.
- The use of some antimicrobials such as [triclosan](#), is controversial because it may lead to [antimicrobial resistance](#).
- The use of chlorine bleach and alcohol disinfectants does not cause [antimicrobial resistance](#) as it denatures the protein of the microbe upon contact





**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER  
EDUCATION AND RESEARCH**

Annexure III

**Assessment Form**

***Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry***

***COURSE CODE:VAC08/AHS/2020-15/06***

**Multiple choice questions**

**20x1=20**

1. .... Is a chemical substance or compound used to inactivate or destroy microorganisms on inert surfaces?
  - a) Sterilization
  - b) Disinfectant
  - c) Sanitizer
  - d) None of the above
2. Disinfection does not necessarily kill all microorganisms, especially resistant.....
  - a) Bacterial spores
  - b) Only spores
  - c) Viral
  - d) None of the above
3. ....are substances that simultaneously clean and disinfect.
  - a) Sanitizer
  - b) Disinfectant
  - c) Sterilization
  - d) All of the above
4. .... means a chemical agent which is used to sterilize critical medical devices or medical instruments
  - a) Sterility
  - b) Disinfectant
  - c) Sterilization
  - d) None of the above

5. .... means a disinfectant that rapidly kills most vegetative bacteria
- Low level disinfectant
  - High level disinfectant
  - Moderate level disinfectant
  - Medium level disinfectant
6. High level disinfectant means a disinfectant that kills all.....
- Bacterial pathogens
  - Microbial pathogens
  - Viral pathogens
  - None of the above
7. .... Are typically chemical substances capable of disinfecting microorganisms suspended in the air?
- Low level disinfectant
  - Commercial grade
  - Air disinfectant
  - High level disinfectant
8. The efficacy of alcohol is enhanced when in solution with the wetting agent.....
- dodecanoic acid
  - canonic acid
  - Canopic acid
  - decani acid
9. .... Are strong oxidants and extremely effective disinfectants.
- Peroxy-carboxylic acids and inorganic peroxy acids
  - Inorganic peroxy acids
  - Aldehydes
  - None of the above
- 10..... Are active ingredients in some household disinfectants?
- Aldehydes
  - Inorganic peroxy acids
  - Phenolic
  - All of the above
11. Chloroxylenol is the principal ingredient in.....
- Dettol
  - Phenyl

- c) Lysol
  - d) Sanitizer
- 12..... derived from the herb thyme
- a) Hexachlorophene
  - b) Thyme
  - c) Streusels
  - d) Benzene
13. Chlorine has been used for applications, such as the deactivation of pathogens in .....
- a) river water
  - b) Drinking water
  - c) Underground water
  - d) None of the above
- 14..... for disinfecting smooth surfaces such as dental tools, but not porous materials that are opaque to the light such as wood or foam
- a) Radiations
  - b) Ultraviolet light
  - c) X rays
  - d) None of the above
15. The most cost-effective home disinfectant is.....
- a) Dettol
  - b) Phenyl
  - c) Chlorine bleach
  - d) Lysol
- 16..... is the best disinfectant
- a) Sunlight
  - b) Aldehyde
  - c) Glutaraldehyde
  - d) Terpenes
17. Example for inorganic compound disinfectant.....
- a) Iodine
  - b) Chlorine
  - c) Aldehyde
  - d) Both a&b

18.....means a disinfectant that kills all microbial pathogens except bacterial endospores, when used as recommended by the manufacturer.

- a) Low level disinfectant
- b) Intermediate level
- c) High level
- d) None of the above

19.Alcohols are most effective when combined with.....

- a) Normal water
- b) Distilled water
- c) Drinking water
- d) Pool water

20.The use of chlorine bleach and alcohol disinfectants does not cause.....

- a) Antimicrobial resistance
- b) Antimonial resistance
- c) Antimicrobial resistance
- d) Antifungal resistance



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER  
EDUCATION AND RESEARCH

Annexure III

Assessment Form

*Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry*

*COURSE CODE:VAC08/AHS/2020-15/06*

Multiple choice questions

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1. .... Is a chemical substance or compound used to inactivate or destroy microorganisms on inert surfaces?
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3. ....are substances that simultaneously clean and disinfect.
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  - d) All of the above
4. .... means a chemical agent which is used to sterilize critical medical devices or medical instruments
  - a) Sterility
  - b) Disinfectant
  - c) Sterilization
  - d) None of the above

5. .... means a disinfectant that rapidly kills most vegetative bacteria
- a)  Low level disinfectant
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  - c)  Moderate level disinfectant
  - d)  Medium level disinfectant
6. High level disinfectant means a disinfectant that kills all.....
- a)  Bacterial pathogens
  - b)  Microbial pathogens
  - c)  Viral pathogens
  - d)  None of the above
7. .... Are typically chemical substances capable of disinfecting microorganisms suspended in the air?
- a)  Low level disinfectant
  - b)  Commercial grade
  - c)  Air disinfectant
  - d)  High level disinfectant
8. The efficacy of alcohol is enhanced when in solution with the wetting agent.....
- a)  dodecanoic acid
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- 10..... Are active ingredients in some household disinfectants?
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- c)  High level
- d)  None of the above

19. Alcohols are most effective when combined with.....

- a)  Normal water
- b)  Distilled water
- c)  Drinking water
- d)  Pool water

20. The use of chlorine bleach and alcohol disinfectants does not cause.....

- a)  Antimicrobial resistance
- b)  Antimonial resistance
- c)  Antimicrobial resistance
- d)  Antifungal resistance



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER  
EDUCATION AND RESEARCH

Annexure III

Assessment Form

*Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry*

*COURSE CODE:VAC08/AHS/2020-15/06*

Multiple choice questions

20x1=20

1. .... Is a chemical substance or compound used to inactivate or destroy microorganisms on inert surfaces?
  - a) Sterilization
  - b) Disinfectant
  - c) Sanitizer
  - d) None of the above
2. Disinfection does not necessarily kill all microorganisms, especially resistant.....
  - a) Bacterial spores
  - b) Only spores
  - c) Viral
  - d) None of the above
3. ....are substances that simultaneously clean and disinfect.
  - a) Sanitizer
  - b) Disinfectant
  - c) Sterilization
  - d) All of the above
4. .... means a chemical agent which is used to sterilize critical medical devices or medical instruments
  - a) Sterility
  - b) Disinfectant
  - c) Sterilization
  - d) None of the above

5. .... means a disinfectant that rapidly kills most vegetative bacteria
- a)  Low level disinfectant
  - b) High level disinfectant
  - c) Moderate level disinfectant
  - d) Medium level disinfectant
6. High level disinfectant means a disinfectant that kills all.....
- a)  Bacterial pathogens
  - b) Microbial pathogens
  - c) Viral pathogens
  - d) None of the above
7. .... Are typically chemical substances capable of disinfecting microorganisms suspended in the air?
- a) Low level disinfectant
  - b) Commercial grade
  - c) Air disinfectant
  - d) High level disinfectant
8. The efficacy of alcohol is enhanced when in solution with the wetting agent.....
- a)  dodecanoic acid
  - b) canonic acid
  - c) Canopic acid
  - d) decani acid
9. .... Are strong oxidants and extremely effective disinfectants.
- a) Peroxycarboxylic acids and inorganic proxy acids
  - b) Inorganic proxy acids
  - c) Aldehydes
  - d) None of the above
- 10..... Are active ingredients in some household disinfectants?
- a) Aldehydes
  - b) Inorganic peso acids
  - c)  Phenolic
  - d) All of the above
11. Chloroxylenol is the principal ingredient in.....
- a) Dettol
  - b) Phenyl

- c) Lysol
  - d) Sanitizer
- 12..... derived from the herb thyme
- a) Hexachlorophene
  - b) Thyme
  - c) Streusels
  - d) Benzene
13. Chlorine has been used for applications, such as the deactivation of pathogens in .....
- a) river water
  - b) Drinking water
  - c) Underground water
  - d) None of the above
- 14..... for disinfecting smooth surfaces such as dental tools, but not porous materials that are opaque to the light such as wood or foam
- a) Radiations
  - b) Ultraviolet light
  - c) X rays
  - d) None of the above
15. The most cost-effective home disinfectant is.....
- a) Dettol
  - b) Phenyl
  - c) Chlorine bleach
  - d) Lysol
- 16..... is the best disinfectant
- a) Sunlight
  - b) Aldehyde
  - c) Glutaraldehyde
  - d) Terpenes
17. Example for inorganic compound disinfectant.....
- a) Iodine
  - b) Chlorine
  - c) Aldehyde
  - d) Both a&b

18.....means a disinfectant that kills all microbial pathogens except bacterial endospores, when used as recommended by the manufacturer.

- a) Low level disinfectant
- b) Intermediate level
- c) High level
- d) None of the above

19. Alcohols are most effective when combined with.....

- a) Normal water
- b) Distilled water
- c) Drinking water
- d) Pool water

20. The use of chlorine bleach and alcohol disinfectants does not cause.....

- a) Antimicrobial resistance
- b) Antimonial resistance
- c) Antimicrobial resistance
- d) Antifungal resistance







# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that MALATHI.S UAH1804196 has actively participated in the Value Added Course on Disinfection VAC08/AHS/2020-15/06 held June to July 2020 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

RESOURCE PERSON

Dr. G.Somasundram

COORDINATOR



**Student Feedback Form****Course Name: DISINFECTION**Subject Code: VAC08/AHS/2020-15/06

Name of Student: \_\_\_\_\_ Roll No.:

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

**Feedback Form**

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. The course met my expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I will be able to apply the knowledge learned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The course objectives for each topic were identified and followed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The content was organised and easy to follow.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The quality of instruction was good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Class participation and interaction were encouraged.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Adequate time was provided for questions and discussion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. How do you rate the course overall?

- Excellent
- Good
- Average
- Poor
- Very poor

9. The aspects of the course could be improved?

10. Other comments?

**Signature of the student:****Date:**

**Student Feedback Form**Course Name: **DISINFECTION**Subject Code: VAC08/AHS/2020-15/06Name of Student: Yashini. P Roll No.: UAH1805205

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

**Feedback Form**

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. The course met my expectations.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I will be able to apply the knowledge learned.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The course objectives for each topic were identified and followed.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The content was organised and easy to follow.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The quality of instruction was good.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Class participation and interaction were encouraged.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
7. Adequate time was provided for questions and discussion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

8. How do you rate the course overall?

- Excellent
- Good
- Average
- Poor
- Very poor

9. The aspects of the course could be improved?

Practical should be conducted

10. Other comments?

more ,

Need to improve extracurricular activities, like

Signature of the student:

Date: 18/07/20 Yashini. P sports and cultural events.

**Student Feedback Form**Course Name: **DISINFECTION**Subject Code: VAC08/AHS/2020-15/06Name of Student: GAYATHRI V Roll No.: VAH1804194

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

**Feedback Form**

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. The course met my expectations.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I will be able to apply the knowledge learned.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The course objectives for each topic were identified and followed.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The content was organised and easy to follow.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The quality of instruction was good.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Class participation and interaction were encouraged.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
7. Adequate time was provided for questions and discussion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

8. How do you rate the course overall?

- Excellent
- Good
- Average
- Poor
- Very poor

9. The aspects of the course could be improved? Need more Practical classes10. Other comments? Classes are very effective.Signature of the student: GayathriDate: 18/07/20



Date: 18.07.2020

From

Dr.G.Somasundram  
Department of Pharmacology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: DISINFECTION for AHS**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: “**DISINFECTION** ” June to July 2020 for 27 AHS Students . We solicit your kind action to send certificates for the participants that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr.G.Somasundram

**Encl: Certificates**

**Photographs**



**SRI LAKSHMI NARAYANA INSTITUTE OF ALLIED HEALTH SCIENCE  
MEDICAL EDUCATIONAL PROJECT**

DISINFECTION - VAC08/AHS/2020-15/06

<b>S.No.</b>	<b>Name of the Students</b>	<b>University Register Number</b>	<b>Signature</b>
1	AKSHAY SURESH	UAH1803178	
2	ANAGHA SUKUMARAN	UAH1803179	
3	APARNA REMESHAN	UAH1803180	
4	ASHIK.R	UAH1803182	
5	FEBA SUSAN ABRAHAM	UAH1803183	
6	GOKUL A	UAH1803184	
7	JIJI ELZA JOSE	UAH1803185	
8	MINNU MATHACHAN	UAH1803186	
9	MUHAMMED IRFAN.I	UAH1803187	
10	MURALIKRISHNAN.K	UAH1803188	
11	DONALD MORISON.S	UAH1805199	
12	GADDALA PRAVEEN	UAH1805200	
13	PRAVEEN.G	UAH1805201	
14	RAMANAN.V	UAH1805202	
15	SARATH P S	UAH1805203	
16	S.K.DHARSHINI	UAH1804193	
17	GAYATHRI.V	UAH1804194	
18	JAYABHAVANI.J	UAH1804195	
19	MALATHI.S	UAH1804196	
20	NARAYANADASS.M	UAH1804197	
21	SANDRA.S	UAH1803190	
22	SATHISHKUMAR.R	UAH1803191	
23	SHEHANAYI.M	UAH1803192	
24	VENKATESH.S	UAH1805204	
25	YAZHINI.P	UAH1805205	
26	SHALINI.T	UAH1804198	
27	SHEHANAYI.M	UAH1803192	

**SRI LAKSHMI NARAYANA INSTITUTE OF ALLIED HEALTH SCIENCE  
MEDICAL EDUCATIONAL PROJECT**

DISINFECTION - VAC08/AHS/2020-15/06

S.No.	Name of the Students	University Register Number	Signature
1	AKSHAY SURESH	UAH1803178	Akshay Suresh
2	ANAGHA SUKUMARAN	UAH1803179	Anagha S
3	APARNA REMESHAN	UAH1803180	Aparna
4	ASHIK.R	UAH1803182	Ashik
5	FEBA SUSAN ABRAHAM	UAH1803183	Feba Susan Abraham
6	GOKUL A	UAH1803184	Gokul A
7	JIJI ELZA JOSE	UAH1803185	Jiji Elza Jose
8	MINNU MATHACHAN	UAH1803186	Minnu Mathachan
9	MUHAMMED IRFAN.I	UAH1803187	Muhammad Irfan.I
10	MURALIKRISHNAN.K	UAH1803188	Muralikrishnan
11	DONALD MORISON.S	UAH1805199	Donald Morison
12	GADDALA PRAVEEN	UAH1805200	Gaddala Praveen
13	PRAVEEN.G	UAH1805201	Praveen G.
14	RAMANAN.V	UAH1805202	Raman V
15	SARATH P S	UAH1805203	Sarath P S
16	S.K.DHARSHINI	UAH1804193	S.K. Dharshini
17	GAYATHRI.V	UAH1804194	Gayathri V
18	JAYABHAVANI.J	UAH1804195	Jayabhavani J
19	MALATHI.S	UAH1804196	Malathi S
20	NARAYANADASS.M	UAH1804197	Narayanadass M
21	SANDRA.S	UAH1803190	Sandra S
22	SATHISHKUMAR.R	UAH1803191	Sathish Kumar R
23	SHEHANAYI.M	UAH1803192	Shehanayi M
24	VENKATESH.S	UAH1805204	Venkatesh S
25	YAZHINI.P	UAH1805205	Yazhini P
26	SHALINI.T	UAH1804198	Shalini T
27	SHEHANAYI.M	UAH1803192	Shehanayi