<Q>A Gram staining was done to *Mycobacterium* leprae, at the end of this staining technique the color of this bacteria under the microscope is:
<C>Pink
<C>Violet
<C+>Colorless
<C>Blue
<C>Deep violet

<Q>In the figure above (fig. B1), the arrangement of bacterial cell at (d) is known as:
<image>Picture B1.JPG
<C>Diplococci
<C>Tetrads
<C>Streptococci .
<C>Lactobacilli
<C+>Sarcina

<Q>Cloudiness is a sign that bacteria have grown in a _____ after inoculation and incubation.
<C>Streak plate
<C+>Nutrient broth
<C>Nutrient Slant
<C>Deep agar
<C>Brain heart infusion agar

<Q>Strictly aerobic bacteria are unable to do which of the following?
<C>Obtain energy from organic compounds
<C>Use oxygen as an electron acceptor
<C>Convert hydrogen peroxide (H_2O_2) to non-toxic forms
<C+>Growth at the bottom of the Brain heart infusion agar
<C>Convert oxygen radical into non – toxic substances

<Q>You isolate five different species of bacteria (named A-E) from a certain source and study their growth under a variety of conditions. You test all isolates for growth in Brain heart infusion agar. Among the isolates you obtain, which one of the test tube in the above figure (Fig. B2) represents Microaerophilic bacteria?
<image>Picture B2.JPG
<C>A
<C>B
<C>C
<C>D
<C+>E

<Q>The instrument “incubator” used in microbiology laboratory to :
<C+>Give the suitable environmental condition for the growth of microorganisms
<C>Maintain and store the stock cultures between sub culturing periods and store the sterile media to prevent dehydration
<C>Sterilize the heat-stable media and equipments (Pyrex glasses, thermo stable solution)
<C>Use as repository for thermo labile solutions, antibiotics, serums, and biochemical reagents
<C>Counting the bacterial colonies

<Q>Which one of the following terms is used to describe the growth of the bacteria that grew equally in the whole nutrient broth?
<C>Flocculant
<C>Sediment
<C+>Uniform fine distribution
<C>Pellicle
<C>Echinolate

<Q>The above figure (Fig. B3) represents which one of the following methods:
<image>Picture B3.JPG
<C>Quadrant streaking .
<C>Contunious streaking
<C>Surface spreading
<C>Radiant streaking
<C+>T- streaking

<Q>The counter stain in endospore staining is :

<C>Crystal violet
<C>Methylene blue
<C>Carbolfuchsin
<C>Malachite green
<C+>Safranin

<Q>Obligate anaerobes have:
<C>Superoxide dismutase and catalase
<C>Superoxide dismutase, but not catalase
<C>Catalase, but not superoxide dismutase
<C+>Neither superoxide dismutase nor catalase
<C>It depends on where the bacteria growing

<Q>The Counter stain in Gram staining is:
<C>Malachite green
<C>Carbolfuchsin
<C+>Safranin
<C>Crystal violet
<C>Nigrosine

<Q>The Primary stain in acid – fast staining is:
<C>Malachite green
<C+>Carbolfuchsin
<C>Safranin
<C>Crystal violet
<C>Nigrosine

<Q>The decolorizing agent in endospore staining is
<C>3% Acid alcohol
<C+>H_2O
<C>Absolute alcohol
<C>70% alcohol
<C>95% alcohol

<Q>Spherical shaped bacteria cells are called
<C>Bacilli
<C>Streptococci
<C+>Cocci
<C>Staphylobacilli
<C>Spirilla

<Q>When exposed to harsh conditions, some bacteria form:
<C>Capsules
<C+>Endospores
<C>Pili
<C>Flagella
<C>A cell wall

<Q>The bacterial species which gave A/A on TSI is:
<C+>Lactose and glucose fermenter
<C>Glucose fermenter
<C>Utilize peptone under aerobic condition
<C>Oxidize glucose
<C>The information is insufficient.

<Q>The process by which the slant part of TSI media is inoculated is called_____ and achieved by using_____
<C>Stabbing, loop, respectively
<C>Spreading method, L-shaped rod, respectively
<C+>Streaking method, Loop, respectively
<C>Stabbing, needle, respectively
<C>Stabbing, swab, respectively

<Q>The IMViC test series includes all of the followings EXCEPT:
<C>Citrate.
<C>Methyl red.
<C>Indole.
<C+>Catalase.
<C>Voges proskauer test

<Q> The above diagrams (fig. B4) shows the pattern of bacterial growth on nutrient agar slant, the test tubes which represent Filiform and Arborescent bacterial growth, respectively are:
<image>Picture B4.JPG
<C+>1 and 5
<C>1 and 6
<C>2 and 3
<C>2 and 6
<C>4 and 5

<Q>The pH indicator used in Simmon's citrate media is:
<C>Methyl red
<C>Phenol red
<C+>Bromothymol blue
<C>Kovac's reagent
<C>Barrett's reagent

<Q>The reagent you used to test the production of stable acid by bacteria is:
<C>Bromothymol blue
<C>Kovac's reagent
<C>Barrett's reagent
<C+>Methyl red
<C>α – naphthol + 40% KOH

<Q>The media you used in the lab. to test the production of Indole by bacteria is:
<C+>SIM
<C>Simmon's citrate
<C>TSI
<C>MR - VP
<C>Nutrient agar

<Q>The principle of the catalase test is that:
<C>The enzyme produced by positive organisms reacts with a reagent in the paper strips to generate a coloured product
<C>The positive organisms coagulate plasma
<C>The positive organisms do not react with hydrogen peroxide
<C+>The enzyme causes production of oxygen from hydrogen peroxide
<C>The positive colonies alter the colour of a pH indicator in catalase reagent

<Q>In the above figure (Fig. B5) which test tube shows K / A, gas result?
<image>Picture B5.JPG
<C>D
<C>B and C
<C>C, D, and F
<C>C
<C+>D and F

<Q>The above figure (Fig. B6), shows the results of Methyl red - Voges proskauer test for different types of bacteria, which test tube shows " VP " positive?
<image>Picture B6.JPG
<C>A
<C>B

<C>C
<C+>D
<C>B and D

<Q>The above figure (Fig. B7) shows the motility test of two types of bacteria, which one of the following is true about the bacteria in these test tubes?
<image>Picture B7.JPG
<C>" A " non motile
<C>" A " motile while " B " non motile and both of them are H_2S non producer
<C>Both bacteria are motile and H_2S producer
<C+>" A " motile while " B " non motile and both of them are H_2S producer
<C>Both bacteria are non motile and H_2S producer

<Q>One of the followings is not use to purify the bacteria:
<C>Quadrant method
<C>Radiant method
<C+>Surface spreading method
<C>Continuous method
<C>T – streaking

<Q>Which one of the followings is NOT a parameter use to characterized the bacterial growth on nutrient agar slant?
<C>Abundance of growth
<C>Pigmentation
<C>Forms
<C>Optical density
<C+>The region of the media where the bacteria grew

<Q>Which one of the following media inhibits the growth of Gram positive bacteria?
<C+>MacConkey
<C>Blood agar
<C>Brain heart infusion agar
<C>Sulfide indole motility media
<C>Nutrient broth

<Q>A contaminated culture is
<C>The observable growth that appears in or on the medium
<C>Free of other living things except the one being studied
<C>Holds two or more identified microorganisms
<C+>Was once pure or mixed but now has microbes of uncertain identity
<C>A container that grows only a single known species of microorganism

<Q>What is the correct order of chemicals used in acid - fast staining procedure?
<C>Malachite green, Acid - alcohol, safranin
<C>Carbolfuchsin, acid – alcohol, safranin
<C+>Carbolfuchsin, acid – alcohol, methylene blue
<C>Carbolfuchsin, acid – alcohol, crystal violet
<C>carbolfuchsin, absolute alcohol, methylene blue

<Q>If various bacterial species were inoculated on TSI, which of the followings is (are) impossible to be one of the results:
<C>K/K
<C>K/A
<C+>A/k.
<C>K/No change.
<C>A/A

<Q>Which one of the following statements are TRUE?
<C>Since bacterial cells are mostly water, they have the same index of refraction as water.
<C>In bright field microscopy the specimen is illuminated by a hollow cone of light.
<C>Since bacteria are mostly water, the only way to properly visualize them is to stain them.
<C>Preparing a wet mount will always kill your bacteria.
<C+>Cells that move in all direction are motile.

<Q>Which one of the followings is used in Triple Sugar Iron agar as sulfur source?

<C>Tryptophan
<C>Ferrous ammonium sulfate
<C+>Cysteine
<C>Phenol red
<C>Sucrose

<Q>Which one of the following is the best media you used in the lab. to classify bacteria according to their oxygen requirement ?
<C>Nutrient agar
<C>Eosin methylene blue
<C>Muller Hinton agar
<C+>Brain Heart infusion agar
<C>All types of the media gives the same result

<Q>The chemical that control the growth of bacteria by killing the bacteria is called:
<C>Antiseptic
<C>Disinfectant
<C>Bacteriostatic
<C+>Bactericidal
<C>Antibiosis

<Q>Bromothymol blue was incorporated into the media indicated in the above figure (Fig. B9), so, the pH of the media in test tube " B " is:
<image>Picture B9.JPG
<C>Alkaline
<C>Acid
<C+>Neutral
<C>Variable
<C>Can't tell

<Q>Bacteria were inoculated in SIM, TSI, and MR – VP, after the incubation time the results were obtained as indicated in the above figure (Fig. B10).According to the above information, which one of the following inoculated media has contamination:
<image>Picture B10.JPG
<C>TSI
<C+>SIM
<C>MR – VP
<C>Both “ SIM “ and “ MR – VP “
<C>Can’t till

<Q>Agar gels at:
<C>Boiling temperature
<C>60°C
<C+>42 - 44°C
<C>Room temperature
<C>Ice box temperature

<Q>Which of the following is a disadvantage of the colony plate count?
<C>Both dead and live cells are counted.
<C>It is an indirect method.
<C>It determines viable cells only.
<C+>Not all organisms grow on the enumeration medium

<Q>A certain bacteria was inoculated on Simmons citrate agar slants, after 48 hours of incubation the media turned to the blue colour, this indicates which one of the followings:
<C+>The production of sodium carbonate.
<C>The production of stable acids.
<C>The production of unstable acid.
<C>Decrease in the pH degree.

<Q>Which one of the followings is false about bromothymol blue:
<C>Green under neutral condition
<C>pH indicator
<C>Yellow under acidic condition
<C>Blue under alkaline condition
<C+>Pink under alkaline condition

<Q>Heat-steaming of the slide is required during acid-fast staining procedure because:
<C>Mycobacterium is very difficult to fix on the slide.
<C>This is part of aseptic techniques.
<C+>Steam drives the stain into the mycobacterium cells.
<C>It decrease the solubility of primary stain in mycolic acid

<Q>In catalase test, bacteria must be not previously inoculated in which one of the following media:
<C>Triple sugar Iron agar
<C+>Blood agar
<C>Brain heart infusion agar
<C>Sulfide – indole motility media
<C>MacConkey

<Q>One of the followings is not belongs to the others:
<C>10% KOH
<C>Gram staining
<C>Selective media for gram negative bacteria
<C+>40% KOH

<Q>Following Gram staining procedure:
<C>Gram negative bacteria are stained purple.
<C>Gram positive bacteria are stained pink.
<C+>Gram negative bacteria are stained pink.
<C>Gram negative bacteria are unstained.
<C>Gram positive bacteria are unstained

<Q>In the above figure (Fig 003) represents the MR-VP results for an unknown bacteria. According to these results all of the following are correct, EXCEPT:
<image>picture 003.JPG
<C+>This bacterium is able to produce stable acids as a final product of glucose fermentation.
<C>This bacterium is able to produce acetoin as a final product of glucose fermentation.
<C>Methyl red (MR) test result is negative.
<C>Vogues Proskauer (VP) test result is positive.
<C>This bacterium is one of the Enerobacteriaceae.

<Q>The above figure (fig 004) represents two tubes containing Simmons's citrate media slant inoculated by two different types of bacteria. All of the following are correct regarding the test tube indicated by the arrow (B), EXCEPT:
<image>picture 004.jpg
<C>This bacteria can utilize citrate as its sole carbon and energy source .
<C>This bacteria produce the enzyme Citrase.
<C+>It can ferment Citrate to produce acid as a final products.
<C>The media contains bromothymol blue as a pH indicator.
<C>There is no glucose in this media.

<Q>In the above figure (Fig 05) all test tube was inoculated by different types of bacteria, the bacteria that ferment lactose without gas production is inoculated in which one of the above test tubes?
<image>picture 005.jpg
<C+>Tube 4
<C>Tube 1
<C>Tube 3
<C>Tube 2
<C>Tube 5

<Q>The best media must be used for the test shown in the above figure (Fig 007) is:
<Image>picture 007.jpg
<C+>Mueller Hinton Agar.

<C>Nutrient Agar
<C>Blood Agar.
<C>MacConky Agar.
<C>Brain Heart infusion.

<Q>The colonies appear in the above figure (Fig 008) can be described as:
<Image>picture 008.jpg
<C+>Circular drop like with entire margin.
<C>Circular flat with entire margin.
<C>Irregular convex with entire margin.
<C>Irregular flat with undulate margin.
<C>Circular convex with undulate margin.

<Q>One of the following TSI component – function pairs is not correct:
<C>Glucose – carbon source.
<C>Phenol red - PH indicator.
<C+>Cystine- Sulfure indicator.
<C>Peptone – Carbon source.
<C>Lactose- carbon source.

<Q> All of the following are Intercellular enzymes EXCEPT:
<C+>Amylase.
<C>Catalase.
<C>Citrate Permease
<C>Tryptophanase.
<C>Cysteine desulferase.

<Q>The above figure (Fig 011) represents a smear of bacteria stained through Gram staining, according to this figure the bacteria can be described as :
<image>picture 011.jpg
<C>Gram positive cocci.
<C>Gram negative cocci .
<C+>Gram negative bacilli.
<C>Gram positive bacilli.
<C> Gram negative spirilli.

<Q>The plate in the above (Fig 012) was inoculated through :
<image>picture 012.jpg
<C+>Quadrant streaking.
<C>Radiant Streaking.
<C>Continuous Streaking.
<C>T streaking.
<C>Spread Plate method.

<Q>The above figure (Fig 013) shows a bacterial culture on nutrient agar plate, the type of the pigment which produced by bacteria is:
<image>picture 013.jpg
<C+>Green diffusible water soluble
<C>Green indiffusible water insoluble
<C>Green indiffusible water soluble
<C>Green diffusible water insoluble

<Q>The Hygiene showed in the above figure (Fig 014) is classified as:
<image>picture 014.jpg
<C+>Antiseptic.
<C>Disinfectant.
<C>Chemotherapeutic Agent.
<C>Antibiotic.
<C> Synthetic Drug.

<Q>Which one of the followings describe bacterial growth.
<C>An increase in cell size
<C>A decrease in cell mass
<C+>An increase in cell population
<C>A decrease in cell population
<C>An increase in bacterial waste products in the medium.

<Q>In the figure (Fig. B8), the configuration of the colonies indicated by " B" is:
<image>Picture B8.jpg
<C+>L- form
<C>Wrinkled
<C>Complex
<C>Irregular
<C>Round with dentate margin

<Q>The pH indicator in MacConkey media is
<C>Phenol red
<C>Bromothymol blue and acid fuchsin
<C>Crystal violet dye and acid fuchsin
<C+>Neutral red
<C>Methyl red

<Q>The selectivity of mannitol salt agar is back to:
<C>Bile salt
<C>Crystal violet and bile salt
<C+>High NaCl
<C>Bromothymol blue and bile salt
<C>Methylene blue

<Q>The type of chocolate agar media is:
<C+>Selective media
<C>Enrichment differential media
<C>Selective differential media
<C>General media
<C>Enrichment media

<Q>The type of EMB media is:
<C>Selective media
<C>Enrichment differential media
<C+>Selective differential media
<C>General media
<C>General differential

<Q>Which of the followings is NOT true about the method in the above figure (Fig 20 B)
<image>picture 20B.jpg
<C>The purpose of this method is to get isolated colonies and pure culture.
<C>It is a dilution of bacteria on the solid surface of the media.
<C+>It needs high amount of inoculum.
<C>It has the ability to purify the mixed bacterial culture .

<Q>Gelatin hydrolysis bacteria was inoculated in a medium contains gelatin , Which one of the followings is a component of the media after " 48" hours of inocubation :
<C>Serine
<C>Cysteine
<C>Tryptophan
<C>Valine
<C+>All choices except Tryptophan

<Q>The above figure (fig. 001) shows growth of different bacteria on blood agar, the type of hemolysis at (C) is:
<image>Midterm exam_b232_formB2_fig 001.JPG

<C>β - hemolysis
<C+>α - hemolysis
<C>∞ - hemolysis
<C>No hemolysis
<C>α and ∞- hemolysis

<Q>We can make the media in the above figure (fig. 003) by adding blood to nutrient agar at:
<image>Midterm exam_b232_formB2_fig 003.JPG
<C>High temperature (above 70 ^{o}C)
<C+>Holding temperature
<C>Room temperature
<C>Any temperature

<Q>The above figure (Fig. 002) shows the bacterial growth on mannitol salt agar, which one of the following is correct about this bacteria?
<image>Midterm exam_b232_formB2_fig 002.JPG
<C+>Halophiles, mannitol fermenter, it's *Staphylococcus aureus*
<C>Mesophiles, mannitol fermenter, it's *E. coli*
<C>Mesophiles, lactose fermenter, it's *Staphylococcus aureus*
<C>Halophiles, lactose fermenter, it's *E. coli*
<C> Halophiles, mannitol fermenter, it could be any bacteria

<Q>The pH indicator in the mannitol salt agar media is:
<C+>Phenol red
<C>Bromothymol blue
<C>Crystal violet dye
<C>Acid fuchsin
<C>Methyl red

<Q>The bacteria that grew on **Eosin methylene blue agar** (EMB agar) which showed by the above figure(Fig.004) is:
<image>Midterm exam_b232_formB2_fig 004.JPG
<C>*Salmonella* species
<C>*Shigella* species
<C>*Pseudomonas aeruginosa*
<C>*Klebsiella* species
<C+>*E. coli*

<Q>A culture medium consisting of agar, peptone and beef heart extract is a/an:
<C>Chemically defined medium.
<C>Enrichment medium.
<C>Differential medium.
<C+>Complex medium.
<C>Selective medium

<Q>Which of the following types of media is designed to suppress the growth of unwanted bacteria and encourage the growth of desired microbes?
<C>Nutrient agar
<C>Enriched media
<C>Defined media
<C>Differential media
<C+>Selective media

<Q> Egg yolk agar media which used to observe a red ring around *Bacillus cereus* colonies is an example of a/an:
<C+>Differential medium
<C>Selective medium
<C>General media
<C>Complex medium
<C>Enrichment media

<Q>The above figure (Fig. 005) shows growth of different types of bacteria on XLD, the bacteria at (A) is:
<image>Midterm exam_b232_formB2_fig 005.JPG
<C+>*Salmonella* species
<C>*Shigella* species

<C>*Pseudomonas aeruginosa*
<C>*Klebsiella* species
<C>*E. coli*

<Q>The above figure (Fig. 006) shows bacterial growth on nutrient agar, this bacteria is:
<image>Midterm exam_b232_formB2_fig 006.JPG
<C>*Salmonella* species
<C>*Shigella* species
<C+>*Pseudomonas syringae*
<C>*Klebsiella* species
<C>*E. coli*

<Q>The selectivity of EMB to Gram negative bacteria is back to:
<C>High salt concentration
<C+>Eosin and Methylene Blue
<C>Bromthymol blue and acid fuchsin dyes
<C>Bile salt

<Q>The pH indicator (s) in MacConkey's Agar is:
<C+>Neutral red
<C>Bromothymol blue
<C>Crystal violet dye
<C>Methylene blue
<C>Phenol red

<Q>The type of Blood agar media is:
<C>Selective media
<C+>Enrichment differential media
<C>Selective differential media
<C>General media
<C>Enrichment media

<Q>The type of nutrient agar media is:
<C>Selective media
<C>Enrichment differential media
<C>Selective differential media
<C+>General media
<C>Enrichment media

<Q>In the above figure (Fig. 007) the parts of the microscope pointed at (8) is:
<image>Midterm exam_b232_formB2_fig 007.JPG
<C+>Nosepiece
<C>Body tube
<C>Mirror
<C>Condenser
<C>Diaphragm

<Q> In the above figure (Fig. 008), What structure can be used to make the image brighter?
<image>Midterm exam_b232_formB2_fig 008.JPG
<C>4
<C>9
<C+>10
<C>9
<C>7

<Q>The media which contains less than 1 % agar is:
<C>Broth
<C+>Semisolid
<C>Solid
<C>Soft

<C>Liquid

<Q>The bacteria which has green colonies on MacConkey media will give _____ colonies on EMB media.
<C>Green
<C>Yellow
<C>Pink
<C>Orange
<C+>Colorless

<Q>The pH indicator which incorporated in the above media (Fig. 010), is:
<image>Midterm exam_b232_formB2_fig 010.JPG
<C>Phenol red
<C>Bromothymol blure
<C+>No pH indicator
<C>Malachite green
<C>Methyl red

<Q>A positive result for the catalase test is the appearance of bubbles of oxygen when a reagent is placed on the bacterial smear. What is the reagent used in the catalase test?
<C>Methyl red
<C>Hydrogen sulfide
<C>Kovac's reagent
<C+>Hydrogen peroxide
<C>Acidified iron chloride

<Q>You set up a ten-tube Minimum Inhibitory Concentration test where the concentration of the antibiotic in each tube is a 1/2 dilution of the previous tube. If the concentration of the antibiotic in tube 1 is 3200 micrograms per ml. What is the concentration of the antibiotic in tube 6?
<C>3200 micrograms /ml
<C>1600 micrograms /ml
<C>600 micrograms /ml
<C+>100 micrograms /ml
<C>6 micrograms /ml

<Q>You are attempting to identify an unknown enteric bacterium that is one of the 12 species shown in the biochemical test key that is given above (Fig 31). Your unknown bacterium is positive for dulcitol fermentation, negative for raffinose fermentation and positive for Simmon's citrate. Which one of the following would you expect to be true?
<image>Picture 31.JPG
<C>Your unknown is positive for the indole test.
<C+>Your unknown produces a black precipitate in TSI agar.
<C>Your unknown is Citrobacter freundii.
<C>Your unknown is positive for lactose fermentation.
<C>Your unknown can create a clear zone around the area of growth on egg yolk agar.

<Q>If a viable plate count of a 0.1 ml sample yields 210 colonies and the dilution factor was 10^3, what was the concentration of cells in the original sample?
<C>2.1×10^4 cells/ml
<C+>2.1×10^6 cells/ml
<C>2.1×10^7 cells/ml
<C>210×10^4 cells/ml
<C>210,000 cells/ml

<Q>Which one of the following statements about the Kirby-Bauer disc diffusion test for antibiotic susceptibility is true?
<C>If the bacterium is resistant to an antibiotic there is a big clear zone around that disc.
<C>If there is any clear zone at all around a given antidiotic disc, even a very small one, the bacterium is considered to be resistant to that antibiotic.
<C>The concentration of the antibiotic on a disc has no effect on the size of any clear zone that may be seen around that disc.
<C+>If there is a big clear zone around a given antibiotic disc, that drug might be clinically useful in treating an infection caused by the bacteria being tested.
<C>If the bacterium is susceptible to any of the antibiotics on the discs it won't grow on the agar plate at all

<Q>Which of the following is NOT a method for isolating bacteria in a pure culture?
<C>Streak-plate method
<C>Serial dilutions of broth media
<C+>Lyophilization
<C>Pour-plate technique

<Q>Which of these statements does NOT describe differential media?
<C>Blood agar is considered a differential medium.
<C+>Differential media favor the growth of some organisms while inhibiting the growth of others.
<C>It is possible for some differential media to also be selective.
<C>Carbohydrate fermentation tubes can be considered differential media.

<Q>The addition of which of the following would change a chemically defined medium into a complex medium?
<C>Biotin (a vitamin)
<C>K2HPO4
<C>NH4NO3
<C>Maltose
<C+>Yeast extract

<Q>In a differential stain
<C> The slide must never contain more than two different species of bacteria
<C> The positively charged stain colors the negatively charged cells
<C+> It is possible to distinguish between different types of cells based on how they take up stain
<C>Heat fixation is not needed
<C>The positively charged cell wall attracts the positively charged stain