THIRD YEAR BSc MLT

BACTERIOLOGY

STREPTOCOCCUS PYOGENES

ESSAY

1. Classify streptococci?
   - Based on hemolysis on blood agar
   - Lance field group

2. Write pathogenesis and laboratory diagnosis of streptococci pyogenes?
   - Streptococcal disease- suppurative-skin and soft tissue infection
   - Genital infection
   - Non suppurative-acute rheumatic fever, acute glomerulo nephritis
   - Diagnosis- specimen, microscopy, culture,ABST,serology

SHORT ESSAY

1. Enumerate virulence factor of streptococci?
   - Antigenic structure
   - Protein antigen
   - Pili
   - Toxins- hemolysin
   - Streptolysin O & S
   - Pyrogenic exotoxin
   - Hyaluronidase
   - SOP

SHORT NOTES

1. Viridans streptococci ?
   - Common site
   - Haemolytic property
   - Common site
   - Pathogenesis

2. Toxins of streptococci?
   - Hemolysin- streptolysin O & S
   - Pyrogenic exotoxin
   - Streptokinase
   - DNAase
   - NADase
   - Hyaluronidase
   - SOP

3. CAMP test?
   - Christie,atkins,munch-peterson
   - Group B
   - Procedure
   - Figure

4. Laboratory diagnosis of rheumatic fever ?
   - Conventional methods including serology

5. Post streptococcal complications?
   - Non suppurative-acute rheumatic fever
   - Acute glomerulo nephritis

STREPTOCOCCUS PNEUMONIAE

ESSAY

1. Describe the culture and identification of streptococcus pneumonia?
   - Cultural characters on BA
   - Draughtsman or carom coin appearance
   - In liquid media
   - Biochemical reactions
   - Bile solubility
   - Microscopy
   - Culture
   - Animal inoculation

- Antigenic detection
- CRP
- Molecular methods

2. Enumerate the organism causing meningitis? Write in detail about diagnosis of meningitis?
   - Bacterial agents
   - Microscopy
   - Culture
   - Animal inoculation
   - Antigenic detection
   - CRP
   - Molecular methods

SHORT ESSAY

1. Describe the diagnosis of strep.pneumoniae?
   - Microscopy
   - Culture
   - Animal inoculation
   - Antigenic detection
   - CRP
   - Molecular methods

2. Quelling reaction ?
   - Capsule swelling reaction
   - Principle
   - Procedure

3. Virulence factors of strep.pnuemoniae?
   - Capsule
   - CHO antigen
   - Beta globulins
   - CRP
   - S-R variation

- Capsule polysaccharide
- Pneumolysin
- Autolysins

4. Bile solubility test?
   - Principle and procedure

5. Optochin sensitivity test?
   - Principle and procedure

6. Differences between S.pneumoniae and S.viridans
   - Write at least 5differntiatoing features

STAPHYLOCOCCUS AUREUS

SHORT ESSAY

1. Describe the virulence factors of Staph.aureus? Explain pathogenesis and lab diagnosis of staphylococcal infections?
   - Cell associated polymers
   - Cell surface proteins,
   - Extra cellular enzymes
   - Toxins
   - Describe in detail about common pyogenic and toxin mediated staphylococcal diseases
   - Specimen
   - Microscopy
   - Culture
   - Serology

SHORT NOTES

1. Coagulase test ?
   - Principle
   - Procedure

- Interpretation
- Types

2. Staphylococcal food poisoning ?
   - Pathogenesis
   - Clinical features
   - Lab diagnosis

3. Virulence factors of staph aureus?
   - Cell associated polymers
   - Cell surface proteins
   - Extra cellular enzymes
   - Toxins

4. MRSA ?
   - Mechanism
   - Action

5. CONS ?
   - S.epidermidis
   - S.hemolyticus
   - S.saprophyticus

6. COPS ?
   - S.intermedius
   - S.hyicus

7. Selective media for staph. aureus?
   - Mannitol salt agar
   - Milk agar
   - Ludlams media

8. TSS?
   - Toxin – charecters

9. SSSS?
   - Exfoliative toxin mediated

10. Micrococci ?
    - Identifying features

11. Toxins and enzymes of Staphylococci
    - List and decribe

NEISSERIA

ESSAY

1. Name the organism causing meningitis.Describe the pathogenesis and diagnosis of meningo coccal meningitis ?
    - Name the organism
    - Meningitis
    - Meningococcemia-diagnosis by specimen
    - Examination of CSF
    - Blood culture
    - Nasopharyngeal swab
    - Petechial lesions
    - Autopsy
    - Serology
    - Molecular methods

2. Name the organism causing STD. Describe virulence factors and lab diagnosis of Neissseria gonorrhoea ?
    - Name the organism
    - Pili
    - OMP
    - Endotoxin
    - Diagnosis by specimen
    - Microscopy
    - Culture
    - Serology
    - Molecular methods

SHORT NOTES

1. NGU ?
   - Clinical conditions

CORYNEBACTERIUM

ESSAY

1. Describe the morphology ,cultural characteristics & pathogenesis of C.diphtheriae and add a note on prophylactic treatment?
   - Morphology
   - Cultural characteristics
   - Pathogenesis with virulence factors
   - Add a short note on clinical features(ie, changes in respiratory ,cutaneous and other sites)
   - Schick's test
   - Treatment include antitoxin therapy
   - Antibiotic therapy
   - Prevention

2. What are the organisms that cause sore throat? Explain the pathogenesis and laboratory diagnosis of diphtheria?
   - List out the organisms
   - Small note on morphology
   - Write in detail about pathogenesis with virulence factors
   - Add a short note on clinical features
   - Laboratory diagnosis include epidemiology
   - Specimens
   - Microscopy
   - Culture
   - Toxigenicity testing

3. Describe the gram staining appearance of C.diphtheriae.name two special stains used for the demonstration of orgamnism. Write in detrail about lab diagnosis of diphtheria
   - Gram positive bacilli

- Cuneiform arrangements
- Alberts stain/neissers /ponders staining method
- Specomen collection transport and processing of diphtheriae

SHORT ESSAY

1. Cultivation of diphtheria?
   - Disease caused by organism
   - It is an aerobic and facultative anaerobic organism,
   - Optimum temperature
   - pH range
   - Medias used
   - Characteristic growth produced on the media

2. Diseases caused by diphtheria?
   - What are the diseases caused
   - Changes in respiratory
   - Cutaneous and other sites

3. Elek's test/virulence test of diphtheria?
   - Short note on diphtheria toxin
   - Principle
   - Procedure
   - Media used
   - Interpretation of test

4. Laboratory diagnosis of diphtheria?
   - Laboratory diagnosis include epidemiology
   - Specimens
   - Microscopy
   - Culture
   - Toxigenicity testing

5. Mechanism of action and detection of diphtheria toxin?
   - Note on diphtheria toxin
   - Principle

- Procedure
- Media used and interpretation of different toxigenicity tests of diphtheria

SHORT NOTES

1. Diphtheroids?
   - Write its defining features-morphology
   - Pathogenesis
   - Clinical features
   - Diagnosis

2. Metachromatic granules?
   - Other name
   - Content
   - Use
   - Staining property

3. Diphtheria toxin?
   - Causative organism
   - Structure
   - Potency
   - Mechanism ofaction
   - Role in pathogenesis

4. DPT vaccine
   - Components
   - Mechanism of action
   - Vaccination schedule

BACILLUS

ESSAY

1. What are zoonotic diseases? Give examples. Explain epidemiology and laboratory diagnosis of any one them
   - Out the zoonotic diseases

- Explain epidemiology
- List laboratory diagnosis of B.anthracis

2. Describe pathogenesis of food poisoning due to B.cereus?
   - Morphology
   - Culture
   - Pathogenesis with virulence factors
   - Clinical features
   - Laboratory diagnosis

3. Describe cultural characteristics, pathogenesis and clinical features of anthrax bacilli?
   - Culture
   - Pathogenesis
   - Virulence factors
   - Clinical features –cutaneous
   - GI
   - Inhalational anthrax
   - Anthrax meningitis

SHORT ESSAY

1. Differences between B.anthracis and B.cereus?
   - Write about motility
   - Casule
   - Type of colony on different culture medias
   - Pathogenicity and disease

2. Virulence factors of B.anthracis?
   - Toxin
   - Capsule
   - Its structure
   - Functions

3. McFadyean reaction?
   - Principle
   - Procedure

- Interpretation
- Organism responsible for this phenomenon

4. Hide porters's disease?
   - Write the organism which causes the infection
   - Other name of infection
   - How it occurs
   - Clinical features

5. Wool sorter's disease?
   - Write the organism which causes the infection
   - Other name of infection
   - How it occurs
   - Clinical features

6. Intestinal anthrax?
   - Write the organism which causes the infection
   - Other name of infection
   - How it occurs
   - Clinical features

SHORT NOTES

1. Differences between B.anthracis and B.cereus?
   - Write about motility
   - Capsule
   - Type of colony on different culture medias
   - Pathogenicity and disease

2. Virulence factors of B.anthracis?
   - Toxin
   - Capsule
   - Its structure
   - Functions

3. McFadyean reaction?

- Principle
- Procedure
- Interpretation
- Organism responsible for this phenomenon

4. Hide porters's disease?
   - Write the organism which causes the infection
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5. Wool sorter's disease?
   - Write the organism which causes the infection
   - Other name of infection
   - How it occurs
   - Clinical features

6. Intestinal anthrax?
   - Write the organism which causes the infection
   - Other name of infection
   - How it occurs
   - Clinical features

7. B.anthrax?
   - Write shortly about its main features

8. B.cereus?
   - Write shortly about its main features

9. Diseases caused by Bacillus species?
   - List out the Bacillus species and diseases caused by each of them

CLOSTRIDIUM

ESSAY

1. Explain pathogenesis and laboratory diagnosis of gas gangrene?
   - Short note on morphology
   - Pathogenesis with virulence factors
   - Epidemiology
   - Lab diagnosis

2. Describe the pathogenesis and laboratory diagnosis of tetanus and outline of prophylaxis?
   - Short note on morphology
   - Pathogenesis with virulence factors
   - Epidemiology and lab diagnosis
   - Prophylaxis include active
   - Passive and combined immunization

SHORT ESSAY

1. Antibiotic associated diarrhea?
   - Write morphology
   - Culture pathogenesis
   - Diagnosis of Clostridium.difficile
   - C.difficile causes Antibiotic associated diarrhea

2. Food poisoning due to C.perfringens?
   - Short note on morphology
   - Write about pathogenesis
   - Clinical features of food poisoning

3. Pathogenesis of gas gangrene?
4. Pathogenesis of tetanus?
5. Nagler's reaction?
   - Principle
   - Procedure

- Media used
- Interpretation of test

6. Pathogenesis of botulism?
7. Virulence factors of C. perfringens?
8. Virulence factors of C.tetani?
9. Reverse CAMP test?
    - Principle
    - Procedure
    - Media used
    - Interpretation of test
10. Tetanus toxin?
    - Types
    - Mechanism of action
11. Tetanus ?
    - Short note on organism
    - Pathogenesis
    - Clinical features
    - Diagnosis

SHORT NOTES

1. Antibiotic associated diarrhea?
    - Write morphology
    - Culture pathogenesis
    - Diagnosis of Clostridium.difficile
    - C.difficile causes Antibiotic associated diarrhea
2. Food poisoning due to C.perfringens?
    - Short note on morphology
    - Write about pathogenesis
    - Clinical features of food poisoning
3. Virulence factors of C. perfringens?

4. Virulence factors of C.tetani?
5. Reverse CAMP test?
   - Principle
   - Procedure
   - Media used
   - Interpretation of test
6. Tetanus toxin?
   - Types
   - Mechanism of action
7. Tetanus ?
   - Short note on organism
   - Pathogenesis
   - Clinical features
   - Diagnosis
8. Nagler's reaction?
   - Principle
   - Procedure
   - Media used
   - Interpretation of test
9. Foodborne botulism?
10. Infant botulism?
11. Wound botulism?
12. C .difficile?
    - Write shortly about its main features

HAEMOPHILUS

ESSAY

1. Enumerate the organisms causing meningitis and describe lab diagnosis of H.influenzae meningitis?
   - List out the organisms

- Short note on morphology
- Culture and pathogenesis
- Write detail about epidemiology
- Hib vaccine
- Lab diagnosis

SHORT ESSAY

1. Satellitism ?
   - Principle
   - Procedure
   - Media used
   - Interpretation of test

2. Culture of H.influenzae?
   - Optimum growth conditions
   - Growth factors
   - Culture medias
   - Growth characters

SHORT NOTES

1. Hib vaccine?
   - Components
   - Mechanism of action
   - Vaccination schedule

2. H.ducreyi?
   - Write shortly about its main features

3. HACEK?
   - Expand-HACEK
   - Write shortly about its main features

4. Koch-weeks bacillus?
   - Write shortly about its main features

BORDETELLA

ESSAY

1. Collection, pathogenesis and lab diagnosis of whooping cough/ pertussis?

SHORT NOTES

1. Acellular pertusis vaccine?
   - Components
   - Mechanism of action
   - Vaccination schedule

2. DPT vaccine?
   - Components
   - Mechanism of action
   - Vaccination schedule

3. Cough plate method?
   - Principle
   - Procedure
   - Media used
   - Interpretation of test

BRUCELLA

ESSAY

1. Define zoonosis and enumerate bacteria causing zoonosis. Explain pathogenesis and laboratory diagnosis of brucellosis.?
   - List out the organisms
   - Short note on morphology explain pathogenesis
   - Epidemiology
   - Lab diagnosis

SHORT ESSAY

1. Serological tests for the diagnosis of brucellosis?
   - Standard tube agglutination test
   - IIF
   - ELISA

2. Milk ring test?
   - Principle
   - Procedure
   - Media used
   - Interpretation of test

3. Casteneda method?
   - Principle
   - Procedure
   - Media used
   - Interpretation of test
   - Advantages

SHORT NOTES

1. Milk ring test
   - Principle
   - Procedure
   - Media used
   - Interpretation of test

2. Casteneda method
   - Principle
   - Procedure
   - Media used
   - Interpretation of test
   - Advantages

3. Standard agglutination test
   - Principle procedure, media used and interpretation of test, advantages

TREPONEMA PALLIDUM

ESSAY

1. Enumerate STD and describe the laboratory diagnosis of syphilis
   - STD-definition
   - How it transmitted
   - Factors effecting
   - Clinical features
   - Complications
   - Example of organism causing STD
   - Morphology
   - Clinical features
   - Laboratory diagnosis of T.pallidum

2. Classify spirochetes pathogenic to humans and describe the pathogenesis and laboratory diagnosis of syphilis
   - Classify
   - Write morphology
   - Pathogenesis
   - Laboratory diagnosis of T.pallidum

SHORT ESSAY

1. Laboratory diagnosis of syphilis
2. Laboratory diagnosis of leptospirosis
3. Specific T.pallidum tests
   - TPI
   - TPA
   - TPIA
   - FTA
   - TPHA
   - EIA

4. Serological tests for syphilis
   - Non-treponemal test

- Specific test for treponema

5. Non venereal syphilis/non venereal treponematosis
   - Write about endemic syphilis
   - Yaws
   - Pinta

6. Relapsing fever
   - Types
   - Pathogenesis
   - Clinical features

7. Lyme disease
   - Causative organism
   - Vector, pathogenesis
   - Clinical features
   - Diagnosis

8. Weil's Disease
   - Organism
   - Pathogenesis
   - Clinical features

SHORT NOTES

1. Vincent's angina
2. VDRL
   - Expansion
   - Principle
   - Procedure
   - Samples used and interpretation of test
   - Advantages

3. RPR
   - Principle
   - Procedure

- Media used
- Interpretation of test
- Advantages

4. TPHA
   - Principle
   - Procedure
   - Media used
   - Interpretation of test
   - Advantages

5. Weil's disease
   - Causative organism
   - Vector
   - Pathogenesis
   - Clinical features
   - Diagnosis

6. Specific T.pallidum tests
7. Refer short essay
8. Serological tests for syphilis
9. Refer short essay
10. Non venereal syphilis
    - Write about endemic syphilis
    - Yaws
    - Pinta

11. Relapsing fever
12. Refer short essay
13. Lyme's disease
    - Refer short essay

MYCOPLASMA

ESSAY

1. Describe pathogenesis and lab diagnosis of Mycoplasma pneumonia

SHORT ESSAY

1. Mycoplasma
   - Write shortly about its main features

2. Primary atypical pneumonia
   - Pathogenesis
   - Lab diagnosis Mycoplasma

RICKETTSIACEAE

ESSAY

1. Describe the laboratory diagnosis of rickettsial infections
   - List out the rickettsial species
   - Write the diseases caused by them
   - Lab diagnosis

SHORT NOTES

1. Scrub typhus
   - Causative organism
   - Vector
   - Pathogenesis
   - Clinical features
   - Diagnosis

2. Q fever
   - Causative organism
   - Vector

- Pathogenesis
- Clinical features
- Diagnosis

3. Trench fever
   - Causative organism
   - Vector, pathogenesis
   - Clinical features
   - Diagnosis

4. Weil – Felix reaction
   - Principle
   - Procedure
   - Specimen used
   - Interpretation of test
   - Advantages

CHLAMYDIAE

SHORT ESSAY

1. Describe the life cycle of chlamydiae
   - Describe the life cycle with neat diagram

2. Elementary body of chlamydia
3. Reticulate body of Chlamydia
4. Chlamydial infections that occur in humans
   - List out the infections
   - Its pathogenesis
   - Clinical features

5. Nongonococcal urethritis
   - Write about the pathogenesis
   - Clinical features
   - Diagnosis of urethritis caused by chlamydiae

SHORT NOTES

1. TRIC AGENTS
2. LGV
3. Inclusion conjunctivitis/inclusion blenorrhea
4. Trachoma
5. Psittacosis

YERSINIA

ESSAY

1. What are zoonotic diseases? Give examples. Explain epidemiology and laboratory diagnosis of Yersinia pestis.
   - Definition-zoonotic disease
   - Give examples
   - Write epidemiology
   - Laboratory diagnosis of Yersinia pestis.

2. Describe the clinical spectrum and laboratory diagnosis of plague

SHORT ESSAY

1. Virulence factors of Yersinia pestis
2. Epidemiology of plague in India

SHORT NOTES

1. Plague
2. Yersinia enterocolitica
3. Pasteurella
4. Francisella

E.COLI

ESSAY

1. Clinical features, laboratory diagnosis of E.coli
   - Clinical features -Urinary tract infection
   - Diarrhea
   - Septicaemia
   - Pyogenic infections
   - Lab diagnosis – collection of urine
   - Processing
   - Stool sample collection
   - Processing

2. Enumerate diarrhoegenic E.coli, explain any two of them.
   - EPEC
   - TEC
   - EIEC
   - EHEC
   - EAEC

3. Describe antigenic structure, virulence factors, clinical features of E.coli.
   - Antigenic structure- O antigen
   - H antigen
   - K antigen
   - F antigen
   - Virulence factors –surface antigens
   - Toxins – Hemolysins
   - Entero toxins

SHORT ESSAY

1. Enumerate diarrhoegenic E.coli, explain any one of them.
   - EPEC
   - ETEC
   - EIEC

- EHEC
- EAEC

2. EPEC
   - Pathogenesis
   - Lab diagnosis

3. ETEC
   - Pathogenesis
   - Mention traveller's diarrhea
   - Lab diagnosis

4. EIEC
   - Pathogenesis
   - Lab diagnosis

5. EHEC
   - Pathogenesis
   - Lab diagnosis

6. EAEC
   - Pathogenesis
   - Lab diagnosis

7. Describe the virulence factors of E coli
   - Mention surface antigen
   - Toxins – Hemolysins
   - Enterotoxins

8. Describe the antigenic structure of E coli
   - Explain O antigen
   - H antigen
   - K antigen
   - F antigen

9. Traveller's diarrhoea
   - Mention ETEC

- Pathogenesis
- Laboratory diagnosis

10. Method used to detect ETEC

SHORT NOTES

1. Enumerate diarrhoegenic E.coli
2. EPEC
3. ETEC
4. EIEC
5. EHEC
6. EAEC
7. Describe the virulence factors of E coli
8. Describe the antigenic structure of E coli
9. Traveller's diarrhea
10. Uropathogenic E coli

KLEBSIELLA

SHORT ESSAY

1. Klebsiella
   - Mention Klesiella pneumonia
   - K. Ozaenae
   - K. Rhinoscleromatis
   - Explain their morphology
   - Biochemical reaction
   - Pathogenicity
   - Lab diagnosis

SHORT NOTES

1. Klebsiella
2. Enterobacter
3. Hafnia
4. Serratia

PROTEUS

SHORT ESSAY

1. Proteus
   - Morphology
   - Clinical infections
   - Mention swarming
   - Laboratory diagnosis

2. Swarming
   - Mention proteus
   - Explain swarming
   - Advantage
   - Disadvantage
   - How it inhibit

SHIGELLA

ESSAY

1. Describe the laboratory diagnosis of bacillary dysentery Specimen, Sachs' buffered glycerol saline and gram negative broth; Microscopy, culture, serology)
2. Pathogenicity and laboratory diagnosis of shigella.
   - Mention invarsive property and virulence marker antigen
   - Endotoxins
   - Lab diagnosis – specimen
   - Sachs' buffered glycerol saline
   - Gram negative broth
   - Microscopy
   - Culture
   - Serology

3. Classification,clinical features and laboratory diagnosis of shigella
   - Classification based on biochemical and serological charecteristics –
   - Subgroup a(S.dysenteriae)

- Subgroup B(S. flexneri)
- Subgroup C(S.boydii)
- Subgroup D(S.sonnei)
- Mention dysentery
- HUS
- Shigellosis
- Bacillary dysentery
- Lab diagnosis - specimen
- Sachs' buffered glycerol saline
- Gram negative
- Broth;Microscopy
- Culture
- Serology.

SHORT ESSAY

1. Bacillary dysentery.
2. Shigellosis.
3. Classification of shigella.

SHORT NOTES

1. Selective medias for shigella.
2. Enrichment medias for shigella.
3. Classification of shigella.
4. Sereny's test.
5. Shigellosis.

SALMONELLA

ESSAY

1. Clinical features and laboratory diagnosis of Salmonella typhi
   - Enteric fever
   - Step ladder pyrexia
   - Rose spot

- Specimen
- Blood culture,
- Clot culture
- Stool culture
- Widal
- PCR
- Ig M detection

2. Clinical features and laboratory diagnosis of enteric fever.
   - Enteric fever
   - Step ladder pyrexia
   - Rose spot
   - Specimen
   - Blood culture
   - Clot culture
   - Stool culture
   - Widal
   - PCR
   - Ig M detection

3. Antigenic variations of salmonella
   - H-O variation
   - V-W varation
   - S-R variation explain detail

SHORT ESSAY

1. Antigenic variations of salmonella
   - H-O variation
   - V-W varation
   - S-R variation explain detail

2. Enteric fever. Clinical features, complication, epidemiology, laboratory diagnosis.)
3. Widal Test
   - H,O,AH,BH

- Procedure
- Result
- Interpretation

4. TAB vaccine
   - Dose, schedule
   - Preparation

5. Antigens of salmonella
   - H, O, Vi

6. Kauffmann– white classification
   - Mention sero groups A,B,C1,C2,D,E1

7. Laboratory diagnosis of enteric fever
   - Specimen
   - Blood culture
   - Clot culture
   - Stool culture
   - Widal
   - PCR
   - Ig M detection

SHORT NOTES

1. Vi antigen in S.Typhi.
2. Non – Typhoidal salmonella.
3. Enteric fever.
4. TAB Vaccine.
5. Antigens of salmonella.
6. Salmonella gastroenteritis.

VIBRIO

ESSAY

1. Pathogenesis and laboratory diagnosis of cholera
   - Rice water stool
   - Mechanism of action
   - Enterotoxin
   - Specimen
   - Collection
   - Transport
   - Microscopy
   - Culture
   - Slide agglutination
   - Biochemical reactions
   - Serology

2. Describe the laboratory diagnosis of cholera
   - Specimen collection
   - Transport
   - Microscopy
     - Culture
   - Slide agglutination
   - Biochemical reactions
   - Serology

SHORT ESSAY

1. Cholera
   - Rice water stool
   - mechanism of action
   - enterotoxin
   - specimen collection, transport, microscopy, culture, slide agglutination, biochemical reactions, serology

2. Halophilic vibrio
   - V.parahaemolyticus,V,.vulnificus and v.alginolyticus .Explain each

3. Medias for vibrio
   - Holding media – V.R Media
   - Carry blair medium
   - Autoclaved sea water
   - Enrichment media – Alkaline peptone water, Monsur's taurocholate tellurite peptone water
   - Plating media – TCBS,GTTA,BSA

4. Serological classification of vibrio
   - Gardner and Venkatraman,Group A

SHORT NOTES

1. Kangawa phenomenon.
2. Cholera toxins.
3. Halophilic vibrios.
4. Selective medias for vibrio.
5. Difference between classical and El Tor vibrios.
6. String test.
7. Cholera.
8. Cholera red reaction.

MYCOBACTERIUM

ESSAY

1. Classify tuberculosis. Explain detail about pulmonary tuberculosis. + add note on multidrug resistant tuberculosis (MDR-TB)
   - Classification – Pulmonary tuberculosis
   - Renal tuberculosis
   - Tubercular meningitis
   - Bone and joint tuberculosis
   - Miliary tuberculosis
   - Pulmonary tuberculosis – Pathogenesis, specimen, collection , transport , processing

2. Classify tuberculosis. Explain detail about extrapulmonary tuberculosis.
   - Classification – Pulmonary tuberculosis, renal tuberculosis, tubercular meningitis, bone and joint tuberculosis, miliary tuberculosis
   - Extrapulmonary tuberculosis - Pathogenesis, specimen, collection, transport, processing

3. Classify leprosy. Explain detail about it.
   - Tuberculoid
   - Borderline tuberculoid
   - Borderline
   - Borderline lepromatous
   - Lepromatous

4. Classification of MOTT. Explain MOTT.
   - Photochromogen
   - Scotochromogens
   - Nonchromogens
   - Rapid growers

5. Pathogenesis and lab diagnosis of tuberculosis
   - Pulmonary and extra pulmonary tuberculosis
   - Specimen collection transport and processing

6. Pathogenesis and lab diagnosis of leprosy.
   - Classification of leprosy
   - Lepromin test
   - Specimen collection transport and processing

7. Third generation of cephalosporin
8. NGU
9. Cat scratch diseases
10. Passive immunization of tetanus
11. Mid stream urine sample
12. Ewings classification of enterobacteriaceae family
13. Mid stream urine sample