



RAN - 2106000102030101

RAN-2106000102030101

2nd Year M.B.B.S. Examination January - 2023

Microbiology : Paper - I



Time: 3 Hours]

[Total Marks: 100

સૂચના : / Instructions

(1) નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of signs on your answer book

Name of the Examination:
2nd Year M.B.B.S.

Name of the Subject :
Microbiology : Paper - I

Subject Code No.: 2106000102030101

Seat No.:

Student's Signature

- (2) Draw a label diagram wherever required with blue pen/pencil only.
- (3) Short notes 100-150 words
- (4) Write heading of each question properly.

SECTION - IA

(General Microbiology and Immunology)

Que. 1 Define Hypersensitivity reactions, Classification of Hypersensitivity reaction, write in detail about mechanism of type 1 hypersensitivity reactions, write methods for detection of Type 1 hyper sensitivity reactions. **(12 marks)**

Que. 2 Write notes. (any four) **(4 × 7 = 28 marks)**

- a. Principle, applications and modifications of Polymerase Chain Reaction in patient care.
- b. Classification, types and diagnostic modalities of Immunodeficiency diseases.
- c. Define vaccine. Describe National Immunization Schedule and the types of vaccines used in it.
- d. Moist heat sterilization: methods, principle, application and control.
- e. Mechanisms of transferable drug resistance in bacteria.

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Que. 3 Multiple Choice Questions.

(10 Marks)

1. Which of the following is absent in Gram negative bacteria?
 - a. Peptidoglycan
 - b. LPS
 - c. Teichoic acid
 - d. Porin Channels
2. Resolution power of microscope can be improved by using?
 - a. Oil
 - b. Stain
 - c. Lenses
 - d. Condenser
3. Bacteria are uniformly stained in which of the following phase of growth curve?
 - a. Lag phase
 - b. Log phase
 - c. Stationary phase
 - d. Declining phase
4. All of the following are basic steps of PCR cycle **EXCEPT**:
 - a. Denaturation
 - b. Amplification
 - c. Extension
 - d. Gel documentation
5. The antibodies detectable in mothers milk are
 - a. IgG
 - b. IgA
 - c. IgG & IgA
 - d. IgG, IgA & IgM
6. If the infection occurs at a much higher rate than usual in a particular geographic area, it is known as:
 - a. Epidemic
 - b. Endemic
 - c. Hyper endemic
 - d. Sporadic
7. Active acquired immunity has following features **EXCEPT**
 - a. It involves active functioning of host's immune system
 - b. It is long lasting
 - c. There is no latent period
 - d. It is associated with immunological memory
8. A child with a history of repetitive intestinal worm infestation is likely to show an increase in the level of:
 - a. IgG
 - b. IgM
 - c. IgE
 - d. IgD
9. Type of hypersensitivity reaction in myasthenia gravis is:
 - a. Type I
 - b. Type II
 - c. Type III
 - d. Type IV

10. Application of skin graft for the second time from the same donor will result in:
- | | |
|------------------------|-------------------------|
| a. First set rejection | b. Second set rejection |
| c. Both | d. None |



SECTION - IB

**(Infection of Blood stream, Cardiovascular system,
Gastrointestinal tract, Hepatobiliary system)**

Que. 1 A young adult female was admitted to the hospital with intense headache, abdominal discomfort for past 5 days. She had also developed fever which is of remittent type with gradual rise in a step ladder fashion. On examination, she was toxic with temperature of 101°F, tongue was coated and mild splenomegaly was present. **(12 marks)**

- What is the most probable etiological diagnosis?
- Describe the pathogenesis of this condition.
- Explain the choice of test, sample collection and laboratory diagnosis of the condition.
- Suggest preventive measures for the disease.

Que. 2 Write notes. (any four) **(4 × 7 = 28 marks)**

- Hepatitis B virus: pathogenesis, laboratory diagnosis and prevention
- Mycotic food poisoning.
- Pyrexia of unknown origin: definition, causes and diagnostic test used
- Two common hemo parasitic infections with pathogenesis and laboratory diagnosis of any one of them.
- Importance of effective communication skill in Doctor Patient relationship.

Que. 3 Multiple Choice Questions **(10 Marks)**

- Most common agent causing native valve endocarditis is:

a. S.aureus	b. S.epidermidis
c. Viridans streptococci	d. Enterococci
- Which of the following infections causes Megaloblastic anemia:

a. Babesia microti	b. Diphyllbothrium latum
c. Bartonella bacilliformis	d. Leishmania donovani

3. Antibodies against which of the following antigen appear in typhoid carrier:
- a. Vi antigen
 - b. O antigen
 - c. H antigen
 - d. Capsular antigen
4. Which of the following is the infective form of the malaria parasite to man:
- a. Merozoite
 - b. Sporozoite
 - c. Trophozoite
 - d. Gametocyte
5. Which of the following is responsible for transmission of HBV infection:
- a. HBsAg
 - b. HBcAg
 - c. HBcAg
 - d. HBV DNA
6. Single most important agent of traveler's diarrhea is:
- a. Enterotoxigenic E. coli
 - b. Enteroaggregative E. Coli
 - c. Campylobacter jejuni
 - d. Non Typhodal salmonella
7. Most common viral cause of gastroenteritis is:
- a. Rotavirus
 - b. Norwalk virus
 - c. Adenovirus
 - d. Hepadnavirus
8. A 35 year old male patient presented with complains for chronic indigestion and having diarrhoea alternating with constipation. He is a traveller and frequently consumes beef. The most appropriate investigation of choice to be advised in this case would be:
- a. Stool for toxin detection
 - b. Stool for occult blood
 - c. Stool for routine and microscopic examination
 - d. Stool concentration technique
9. Which of the following route has highest risk of transmission of HIV:
- a. Sexual
 - b. Blood product
 - c. Needle/syringe
 - d. Mother to fetus
10. Definitive host for Echinococcosis is:
- a. Man
 - b. Dog
 - c. Sheep
 - d. Pig



RAN - 2106000102030102

RAN-2106000102030102



2nd M.B.B.S. Examination January - 2023

Microbiology : Paper - II

Time: 3 Hours]

[Total Marks: 100

સૂચના : / Instructions

(1) નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
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Name of the Subject :
Microbiology : Paper - II

Subject Code No.: 2106000102030102

Seat No.:

Student's Signature

- (2) Draw a label diagram wherever required with blue pen/pencil only.
- (3) Short notes 100-150 words.
- (4) Write heading of each question properly.

Section - IIA

(Skin and soft tissue infection, Musculoskeletal and respiratory system)

- Que. 1** A 35 year old female from a village of Bihar came to the hospital with history of fever on and off for the past one year and recently developed unilateral swelling of the left lower limb. Her blood sample was sent for peripheral blood smear examination which revealed worm like structures, 240 um in length with pointed tail tip. **(12 marks)**
- a. Name the disease and its etiological agent.
 - b. Describe the life cycle, pathogenesis and laboratory diagnosis of this condition.
 - c. Explain prevention and treatment of this clinical condition.

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Que. 2 Write notes (any four) (4 × 7 = 28 Marks)

- a. Etio-pathogenesis, laboratory diagnosis and complication in a man with necrotic limb wound that crepitates following a road traffic accident.
- b. Fever with rash in a child: four causative organisms and pathogenesis, laboratory diagnosis and prevention of any one
- c. Hospital acquired Infections: types, risk factors and preventive measures.
- d. Pathogenesis and Laboratory Diagnosis of Madura foot.
- e. COVID 19: Laboratory Diagnosis and Vaccines.

Que. 3 Multiple Choice Questions. (10 Marks)

1. Which of the following statement is correct about lepromatous leprosy:
 - a. Multibacillary
 - b. CMI is normal
 - c. Langerhans cells are found
 - d. Positive lepromin test
2. Survival of *M. tuberculosis* inside the macrophages is due to:
 - a. Inhibition of entry into the host cell
 - b. Inhibition of phagosome-lysosome fusion
 - c. Inhibition of entry into the phagosome
 - d. Inhibits degradation by lysosomal enzymes
3. Ecthyma gangrenosum is caused by:
 - a. *Pseudomonas*
 - b. *Brucella*
 - c. *Bordetella*
 - d. *H. influenzae*
4. Which of the following protein is used for Serotyping of *Streptococcus pyogenes* :
 - a. M protein
 - b. T protein
 - c. R protein
 - d. Carbohydrate antigen
5. CAMP test is useful in identification of:
 - a. *S. pyogenes*
 - b. *S. agalactiae*
 - c. Viridans streptococci
 - d. *S. pneumoniae*
6. Gram-stain morphology of *Bacillus anthracis* is:
 - a. Tennis racket appearance
 - b. Bamboo stick appearance
 - c. Drum stick appearance
 - d. Spectacle glass appearance

7. Which viral infection is responsible for Subacute Sclerosing Pan Encephalitis (SSPE):
- Mumps
 - Measles
 - Rubella
 - Influenza
8. Which of the following is vector for leishmaniasis:
- Sandfly
 - Reduvid bug
 - Tsetse fly
 - Anopheles mosquito
9. Which of the following fungus **DOES NOT** infect nail:
- Trichophyton
 - Microsporum
 - Epidermophyton
 - Candida albicans
10. Rhinosporidiosis is characterized by all of the following **EXCEPT**:
- It is caused by a fungus.
 - The fungus is usually found in dirty waters.
 - It manifests as polyps that bleed easily.
 - It can be cultured easily in laboratory.

Section - II B

(CNS, Genitourinary, HAI, Miscellaneous)

Que. 1 A 25 yr. old man presented with painless ulcer with hard base on penis. He had a history of sex with multiple partners. On examination, inguinal lymph nodes were enlarged, discrete, non-tender and rubbery. The blood specimen was collected and sent to the laboratory for serological test.

(12 marks)

- What is the clinical diagnosis and possible causative agent? Justify.
- Explain the pathogenesis and laboratory diagnosis of this condition.
- Enlist three possible etiological agents in case the man had multiple painful genital ulcers.

Que. 2 Write notes. (any four)

(4 × 7 = 28 marks)

- Laboratory Diagnosis, treatment and prevention of tetanus.
- Encephalitis: four causative agents and pathogenesis with laboratory diagnosis of anyone.
- Antimicrobial stewardship program: concept and different strategies used in the program.
- Non-tuberculosis Mycobacterium: classification and significance as human pathogen.
- Consent: Definition, types and its importance in autonomy.

Que. 3 Multiple Choice Questions. (10 Marks)

1. Which of the following is the causative agent of chancroid?
 - a. Haemophilus ducreyi
 - b. Klebsiella granulomatis
 - c. Mycoplasma hominis
 - d. Candida albicans

2. Which of the following is **NOT** vaccine-derived poliovirus (VDPVs):
 - a. mVDPV
 - b. cVDPV
 - c. iVDPV
 - d. VDPV

3. Which of the following fungi are associated with zygomycosis?
 - a. Mucor
 - b. Rhizopus
 - c. Absidia
 - d. All of the above

4. Which of the following pigment is diagnostic of Pseudomonas aeruginosa?
 - a. Pyocyanin
 - b. Pyorubin
 - c. Pyomelanin
 - d. Fluorescein

5. Which culture medium is preferred for processing of urine specimens?
 - a. TCBS agar
 - b. CLED agar
 - c. Chocolate agar
 - d. XLD agar

6. Which of the following depicts the decreasing order of risk of transmission following occupational exposure?
 - a. HIV>HBV>HCV
 - b. HBV>HCV>HIV
 - c. HBV>HIV>HCV
 - d. HCV>HBV>HIV

7. Which of the following **IS NOT USED** as indicator organism of fecal contamination of water:
 - a. Fecal E. coli
 - b. Fecal streptococci
 - c. Pseudomonas
 - d. Vibrio cholerae

8. The most effective way of preventing tetanus is:
 - a. Hyperbaric oxygen
 - b. Tetanus toxoid
 - c. Antibiotics
 - d. surgical debridement and toilet

9. Neonatal meningitis acquired through contaminated/ colonized/infected birth canal is due to:
 - a. S. pyogenes
 - b. Viridans streptococci
 - c. S. agalactiae
 - d. S. pneumoniae

10. Serotyping and serosubtyping of meningococci are based on:
 - a. Outer membrane proteins
 - b. Endotoxin
 - c. Capsular polysaccharide
 - d. Transferrin binding proteins

2nd MBBS

11/05/23



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S. Y. M.B.B.S. Examination March - 2023

Microbiology : Paper - I

Time: 3 Hours]

[Total Marks: 100

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(1)

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S. Y. M.B.B.S.

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Student's Signature

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- (3) Short notes 100-150 words.
- (4) Write heading of each question properly.

SECTION - IA

(General Microbiology and Immunology)

Que. 1 Define and differentiate Sterilization from disinfection. Explain the principle, application and control of any one method of sterilization based on heat used in patient care. Explain the concept and use of CSSD in hospitals. **(12 marks)**

Que. 2 Write notes. (any four) (4 × 7 = 28 marks)

- a. Principle, applications and modifications of Polymerase Chain Reaction in patient care.
- b. Classification, types and diagnostic modalities of Immunodeficiency diseases.
- c. Define vaccine. Describe National Immunization Schedule and the types of vaccines used in it.
- d. A girl presented in emergency with sudden onset of itching, redness and erythema following unknown bite. Identify the condition. Explain the immuno-pathogenesis of her condition.
- e. Mechanisms of transferable drug resistance in bacteria.

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Que. 3 Multiple Choice Questions.

(10 marks)

1. *Cryptococcus neoformans* can be best demonstrated by:
 - a. Gram staining
 - b. Negative staining
 - c. Acid-fast staining
 - d. Albert staining
2. The type of microscope best suited for studying microbial motility is:
 - a. Light microscope
 - b. Electron microscope
 - c. Phase contrast microscope
 - d. Atomic force microscope
3. Bacteria are uniformly stained in which of the following phase of growth curve?
 - a. Lag phase
 - b. Log phase
 - c. Stationary phase
 - d. Declining phase
4. All of the following are the basic steps of PCR cycle **EXCEPT**:
 - a. Denaturation
 - b. Amplification
 - c. Extension
 - d. Gel documentation
5. Horizontal transmission of 'R' factor is by:
 - a. Transformation
 - b. Transduction
 - c. Conjugation
 - d. Fusion
6. If the infection occurs at a much higher rate than usual in a particular geographic area, it is known as:
 - a. Epidemic
 - b. Endemic
 - c. Hyper endemic
 - d. Sporadic
7. All are agglutination reactions, **EXCEPT**:
 - a. VDRL test
 - b. Standard agglutination test
 - c. Widal test
 - d. Paul Bunnell test
8. T cell area of lymph node is:
 - a. Cortex
 - b. Para cortical area
 - c. Medulla
 - d. All of the above
9. Cell type which lacks HLA antigen is:
 - a. Monocyte
 - b. Thrombocyte
 - c. Neutrophil
 - d. RBC
10. Application of skin graft for the second time from the same donor will result in:
 - a. First set rejection
 - b. Second set rejection
 - c. Both
 - d. None

SECTION-IB

(Infection of Blood stream, Cardiovascular system, Gastrointestinal tract, Hepatobiliary system)

Que. 1 A young adult female was admitted to the hospital with intense headache, abdominal discomfort for past five days. She had also developed fever which is of remittent type with gradual rise in a step ladder fashion. On examination, she was toxic with temperature of 101°F, tongue was coated and mild splenomegaly was present. **(12 marks)**

- a. What is the most probable etiological diagnosis? Give justification
- b. Describe the pathogenesis of this condition.
- c. Explain the choice of test, sample collection and laboratory diagnosis of the condition.
- d. Suggest preventive measures for the disease.

Que. 2 Write notes. (any four) (4 × 7 = 28 marks)

- a. Laboratory diagnosis and Post exposure prophylaxis of HIV.
- b. Describe the pathogenesis and laboratory diagnosis of a female brought to emergency department with sunken eyes. Relatives gave history of sudden onset of watery diarrhea (15-20 times per day) without blood and mucus and abdominal pain.
- c. Mycotic food poisoning.
- d. Pyrexia of unknown origin: definition, causes and diagnostic test used
- e. Importance of effective communication skill in Doctor Patient relationship.

Que. 3 Multiple Choice Questions. (10 marks)

1. Most common agent causing native valve endocarditis is:
 - a. S.aureus
 - b. S.epidermidis
 - c. Viridans streptococci
 - d. Enterococci
2. Infections causing Megaloblastic anemia include:
 - a. Babesia microti
 - b. Diphyllbothrium latum
 - c. Bartonella bacilliformis
 - d. Leishmania donovani
3. Antibodies against which of the following antigen appear in typhoid carrier?
 - a. Vi antigen
 - b. O antigen
 - c. H antigen
 - d. Capsular antigen

4. Which of the following is the infective form of the malarial parasite to man:
- a. Merozoite
 - b. Sporozoite
 - c. Trophozoite
 - d. Gametocyte
5. Which of the following is responsible for transmission of HBV infection:
- a. HBsAg
 - b. HBeAg
 - c. HBcAg
 - d. HBV DNA
6. Single most important agent of traveler's diarrhea is:
- a. Enterotoxigenic E. coli
 - b. Enteroaggregative E. Coli
 - c. Campylobacter jejuni
 - d. Non Typhoidal salmonella
7. Which of the following is **NOT** a commensal in human female genital tract?
- a. Lactobacillus
 - b. Streptococcus agalactiae
 - c. Neisseria
 - d. Trichomonas vaginalis
8. *Leishmania donovani* can be cultivated in:
- a. Blood agar
 - b. NNN medium
 - c. Diamonds medium
 - d. RPMI 1640 medium
9. During the window period of patient with AIDS, best diagnostic test is:
- a. ELISA
 - b. Western Blot
 - c. Rapid test
 - d. RT-PCR
10. Trench fever is caused by:
- a. B.henselae
 - b. B.quintana
 - c. B.bacilliformis
 - d. C.burnetii



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S. Y. M.B.B.S. Examination March - 2023

Microbiology : Paper - II

Time: 3 Hours]

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- (4) Write heading of each question properly.

Section - 2A

(Skin and soft tissue infection, Musculoskeletal and respiratory system)

Que. 1 A 35 year old female from a village of Bihar came to the hospital with history of fever on and off for the past one year and recently developed unilateral swelling of the left lower limb. Her blood sample was sent for peripheral blood smear examination which revealed worm like structures, 240 um in length with pointed tail tip. **(12 marks)**

- a. Name the disease and its etiological agent.
- b. Describe the life cycle, pathogenesis and laboratory diagnosis of this condition.
- c. Explain prevention and treatment of this clinical condition.

Que. 2 Write notes. (any four) **(4 × 7 = 28 marks)**

- a. Etiopathogenesis and laboratory Diagnosis of Madura foot
- b. Etiopathogenesis, laboratory diagnosis and complication in a man with necrotic limb wound that crepitates following a road traffic accident.

RAN-2106000102030102]

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[P.T.O.]

P1604

- c. Fever with rash in a child: four causative organisms and pathogenesis, laboratory diagnosis and prevention of any one.
- d. Hospital acquired Infections: types, risk factors and preventive measures.
- e. COVID 19 : Laboratory Diagnosis and Vaccines

Que. 3 Multiple Choice Questions.

(10 Marks)

1. Which of the following is correct about lepromatous leprosy:
 - a. Multibacillary
 - b. Langerhans cells are found
 - c. CMI is normal
 - d. Positive lepromin test
2. Which is the most preferred antimicrobial for the treatment of methicillin-resistant *S. aureus* (MRSA)?
 - a. Dicloxacillin
 - b. Cephalexin
 - c. Cefazolin
 - d. Vancomycin
3. Which of the following toxin mediates Scalded skin syndrome :
 - a. Hemolysin
 - b. Coagulase
 - c. Enterotoxin
 - d. Epidermolytic toxin
4. Serotyping of *Streptococcus pyogenes* is based on which of the following protein:
 - a. M protein
 - b. T protein
 - c. R protein
 - d. Carbohydrate antigen
5. CAMP test is useful in identification of:
 - a. *S. pyogenes*
 - b. *S. agalactiae*
 - c. Viridans streptococci
 - d. *S. pneumoniae*
6. Gram-stain morphology of *Bacillus anthracis* is:
 - a. Tennis racket appearance
 - b. Drum stick appearance
 - c. Bamboo stick appearance
 - d. Spectacle glass appearance
7. Which viral infection is responsible for Subacute Sclerosing Pan Encephalitis (SSPE):
 - a. Mumps
 - b. Measles
 - c. Rubella
 - d. Influenza

8. Which of the following is a vector for leishmaniasis:
- a. Sandfly
 - b. Reduviid bug
 - c. Tsetse fly
 - d. Anopheles mosquito
9. Which of the following fungus does not infect nail:
- a. Trichophyton
 - b. Microsporum
 - c. Epidermophyton
 - d. Candida albicans
10. Rhinosporidiosis is characterized by all of the following **EXCEPT**-
- a. It is caused by a fungus
 - b. The fungus is usually found in dirty waters
 - c. It manifests as polyps that bleed easily.
 - d. It can be cultured easily in laboratory.

Section - 2B
(CNS, Genitourinary, HAI, Miscellaneous)

- Que. 1** A 25 yr. old man presented with painless ulcer with hard base on penis. He had a history of sex with multiple partners. On examination, inguinal lymph nodes were enlarged, discrete, non-tender and rubbery. The blood specimen was collected and sent to the laboratory for serological test.
- (12 marks)**
- a. What is the clinical diagnosis and possible causative agent? Justify.
 - b. Explain the pathogenesis and laboratory diagnosis of this condition.
 - c. Enlist three possible etiological agents in case the man had multiple painful genital ulcers.

- Que. 2** **Write notes. (any four)** **(4 × 7 = 28 marks)**
- a. A 30 years of Male with history of HIV/AIDs presented to casualty with high grade fever, Headache and seizures. CSF microscopy revealed budding yeast cells surrounded by a halo. Identify the etiological agent. Explain pathogenesis and laboratory diagnosis of the condition.
 - b. Encephalitis: four causative agents and pathogenesis with laboratory diagnosis of anyone.
 - c. Antimicrobial stewardship program: concept and different strategies used in the program
 - d. Non-tuberculosis Mycobacterium: classification and significance as human pathogen
 - e. Consent: Definition, types and its importance in autonomy is autonomy?

Que. 3 Multiple Choice Questions.

(10 Marks)

1. Which of the following is the causative agent of chancroid?
 - a. Haemophilus ducreyi
 - b. Klebsiella granulomatis
 - c. Mycoplasma hominis
 - d. Candida albicans

2. Causative agents of non gonococcal urethritis may be:
 - a. Chlamydia trachomatis
 - b. Ureaplasma urealyticum
 - c. Mycoplasma genitalium
 - d. All of the above

3. Which of the following fungi are associated with zygomycosis?
 - a. Mucor
 - b. Rhizopus
 - c. Absidia
 - d. All of the above

4. Which of the following pigment is diagnostic of Pseudomonas aeruginosa?
 - a. Pyocyanin
 - b. Pyorubin
 - c. Pyomelanin
 - d. Fluorescein

5. What is significant bacteriuria?
 - a. Bacterial count $>10^5$ per mL
 - b. Bacterial count between 10^4 to 10^5 per mL
 - c. Bacterial count $<10^4$ per mL
 - d. None of the above

6. Which of the following depict decreasing order of risk of transmission following occupational exposure:
 - a. HIV > HBV > HCV
 - b. HBV > HIV > HCV
 - c. HBV > HCV > HIV
 - d. HCV > HBV > HIV

7. Which of the following microbe is **NOT** used as indicator organism of fecal contamination of water:
 - a. Fecal E. coli
 - b. Fecal streptococci
 - c. Pseudomonas
 - d. Vibrio cholerae

8. The most effective way of preventing tetanus is:
 - a. Hyperbaric oxygen
 - b. Antibiotics
 - c. Tetanus toxoid
 - d. Surgical debridement and toilet

9. Neonatal meningitis acquired through colonized/infected birth canal is due to:
- a. *S. pyogenes*
 - b. Viridans streptococci
 - c. *S. agalactiae*
 - d. *S. pneumoniae*
10. Humans acquire *Cysticercus cellulosae* infection by all of the following mechanisms, **EXCEPT**:
- a. Ingestion of contaminated vegetables
 - b. Reverse peristalsis
 - c. Autoinfection
 - d. Ingestion of contaminated pigs meat