

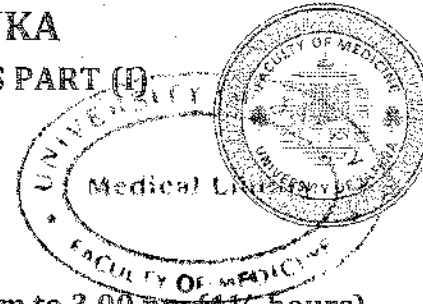


**UNIVERSITY OF JAFFNA, SRI LANKA**  
**SECOND EXAMINATION FOR MEDICAL DEGREES PART (I)**

May 2026

Academic Year 2021/2022

**Microbiology - Paper I**



**Date: 05.05.2026**

**Answer all 30 questions**

**1.30 pm to 3.00 pm (1½ hours)**

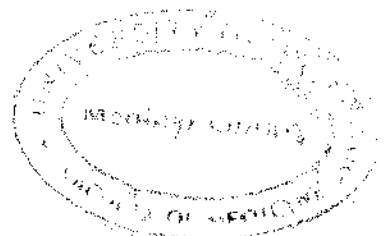
1. State whether the following are true or false regarding the microbiome.
  - a) The stomach has the greatest number of bacteria in the gastrointestinal tract.
  - b) *E. coli* is the most abundant organism in the colon.
  - c) Use of broad-spectrum antibiotics can lead to overgrowth of *Clostridioides difficile*.
  - d) Gut microbiome is acquired primarily at birth.
  - e) *Staphylococcus epidermidis* is a major component of the skin microbiome.
  
2. A middle-aged man was admitted to the accident and emergency unit in an unconscious state with severe bleeding after a road traffic accident. State whether the following are true or false regarding the infection prevention and control measures to be followed in this patient.
  - a) Hand hygiene before touching this patient is not necessary in this situation.
  - b) Sterile gloves should be worn when coming in contact with this patient.
  - c) Respiratory hygiene and cough etiquette are not necessary around this patient.
  - d) 70% alcohol should be poured over the blood on the floor before removing the blood.
  - e) Disposable apron should be used when dealing with this patient.
  
3. A 13-year-old girl with a wound on the leg developed local inguinal lymph nodes enlargement. State whether the following are true or false regarding the immune response in her lymph nodes.
  - a) Antigen presentation happens in the lymph nodes.
  - b) Lymph nodes mainly filter the organisms in the blood.
  - c) Proliferation of B cells and T cells contributes to the swelling of the lymph node.
  - d) Lymph nodes do not have antibody producing cells.
  - e) Lymph nodes prevent the infection spreading into the bloodstream.
  
4. State whether the following are true or false regarding humoral immune responses.
  - a) IgM is the first antibody isotype produced during a primary infection.
  - b) Affinity maturation occurs in responses to T cell independent antigens.
  - c) IgE is the most abundant immunoglobulin in the serum.
  - d) T cell independent antigens primarily induce an IgM response.
  - e) IgG immunoglobulin provides passive immunity to the fetus.
  
5. A 10-month-old child was referred to the well-baby clinic as he had received only BCG at birth and the vaccines at two months. State whether the following are true or false regarding the management of this child.
  - a) This child should be given an MMR vaccine at this visit.
  - b) Japanese Encephalitis vaccine is not necessary at this age.
  - c) This child does not need to be given a pentavalent (DTP-HepB-Hib) vaccine.
  - d) This child should be given a Human papillomavirus vaccine at this visit.
  - e) Oral poliovirus vaccine is not necessary at this visit.

6. Ciprofloxacin
- can be used in the treatment of infections with *Bacteroides fragilis*
  - is used in the treatment of bacillary dysentery
  - resistance in *Campylobacter jejuni* has increased significantly
  - is used in the treatment of typhoid fever
  - covers *Pseudomonas aeruginosa*
7. A 59-year-old-woman with sepsis was admitted to the hospital. State whether the following are true or false regarding the antibiotic treatment of this patient.
- Broad-spectrum antibiotics should be avoided.
  - Antibiotic therapy within the first hour is critical for survival.
  - Response to antibiotic therapy should be reviewed routinely in six hours.
  - Parenteral antibiotics should be given for the full course of treatment.
  - Antibiotic choice depends on the local resistance pattern.
8. A 20-year-old student presented with a non-itchy rash on the face and upper chest. On examination multiple, discrete and coalescing, 1- 3 cm, hypopigmented, slightly scaly patches were seen. State whether the following are true or false regarding this infection.
- The causative agent is a dermatophyte.
  - This infection is highly contagious.
  - The infection is acquired from pets.
  - Diagnosis commonly needs microscopic examination of the skin scrapings from the infected area.
  - Topical azoles may be necessary for the treatment.
9. A four-year-old child was brought to the dermatology clinic with itchy scaling of the scalp with bald patches. On examination, inflamed patches of hair loss with black dots (broken hair shafts) were seen on the scalp. The antifungals that can be used in the treatment include
- griseofulvin
  - nystatin
  - amphotericin B
  - terbinafine
  - itraconazole
10. *Enterococci faecalis*
- is an obligate anaerobe
  - is the most common species isolated from clinical specimens of enterococcal infections
  - is a common cause of neonatal meningitis
  - causes urinary tract infections in hospitalized patients
  - is intrinsically resistant to all generations of cephalosporins
11. *Neisseria meningitidis*
- is a capsulated organism
  - can be carried in nasopharynx of healthy individuals
  - meningitis can occur in otherwise healthy adults
  - infections can be treated with cefotaxime
  - meningococemia can produce blanching rash

12. *Mycoplasma pneumoniae*
  - a) is an obligate intracellular organism
  - b) commonly causes lobar pneumonia
  - c) infections are confirmed by cold agglutinins tests
  - d) infection can trigger Stevens Johnson syndromes
  - e) is best treated with cephalosporins
  
13. *Bacteroides fragilis*
  - a) is an aerobe
  - b) infection is mainly from the own normal flora
  - c) infection can lead to sepsis
  - d) infection is confirmed by serology in clinical settings
  - e) infection is best treated with penicillin
  
14. State whether the following are true or false regarding measles.
  - a) It is transmitted by droplet transmission.
  - b) The rash is maculopapular.
  - c) Vitamin A supplementation reduces the severity of the disease.
  - d) Subacute Sclerosing Panencephalitis (SSPE) manifests within 72 hours of the primary measles rash.
  - e) Post auricular and suboccipital lymphadenopathy are characteristic features of measles.
  
15. State whether the following are true or false regarding picornaviruses.
  - a) Poliovirus targets the anterior horn cells of the spinal cord.
  - b) Hand, foot, and mouth disease is most commonly caused by Coxsackie A16.
  - c) Herpangina is characterized by vesicles on the posterior part of the pharynx.
  - d) Echoviruses are a common cause of lower respiratory infections.
  - e) Myocarditis is associated with Coxsackie B infections.
  
16. State whether the following are true or false regarding hepatitis A virus (HAV) infection.
  - a) The virus is highly resistant to detergents.
  - b) HAV infections are usually asymptomatic in adults.
  - c) Chronic carrier state is a common complication of HAV infection.
  - d) Fulminant hepatic failure is uncommon in children.
  - e) Detection of HAV Ag in stool sample is useful for the diagnosis of HAV infections.
  
17. State whether the following are true or false regarding oncoviruses.
  - a) Epstein-Barr virus is associated with nasopharyngeal carcinoma.
  - b) Human papillomavirus types 6 and 11 can produce cervical cancer.
  - c) Human T-cell lymphotropic virus type 1 (HTLV-1) causes adult T-cell leukemia/lymphoma.
  - d) Human herpes virus 8 causes Kaposi sarcoma in healthy individuals.
  - e) Hepatitis C virus can directly transform hepatocytes into malignant cells.
  
18. State whether the following are true or false regarding Creutzfeldt-Jakob disease (CJD).
  - a) It is caused by a proteinaceous infectious particle.
  - b) Variant CJD (vCJD) usually affects older people.
  - c) Prions are inactivated by autoclaving at 121°C.
  - d) Iatrogenic CJD can be caused by contaminated corneal transplants.
  - e) There is currently no effective curative treatment for CJD.

19. State whether the following are true or false regarding chlamydial infections.
- Chlamydia trachomatis* can cause urethritis in men.
  - Untreated chlamydial infections in women can lead to pelvic inflammatory disease.
  - Chlamydial infections can be effectively treated with beta-lactam antibiotics like penicillin.
  - Chlamydia trachomatis* can survive freely in the environment for several weeks.
  - Chlamydial infections in women commonly present with a purulent vaginal discharge.
20. State whether the following are true or false regarding erysipelas.
- It affects the subcutaneous tissues.
  - It is commonly caused by *Staphylococcus aureus*.
  - The affected skin area is typically well-demarcated and raised.
  - Systemic symptoms like fever and chills are common in erysipelas.
  - It is diagnosed by culturing the swab from the surface of the lesion.
21. State whether the following are true or false regarding peritonitis.
- Secondary peritonitis is usually caused by a single organism.
  - Bacteroides fragilis* is commonly isolated in primary peritonitis.
  - Spontaneous Bacterial Peritonitis (SBP) is diagnosed by a neutrophil count  $>250$  cells/mm<sup>3</sup> in ascitic fluid.
  - Anaerobes play an important role in peritonitis.
  - Primary peritonitis is a recognized complication in children with nephrotic syndrome.
22. State whether the following are true or false regarding the infections in the fetus and newborn.
- Group B streptococcus is a common cause of neonatal meningitis.
  - Cytomegalovirus is the leading viral cause of congenital sensorineural deafness.
  - All pregnant women should be screened in the first trimester for syphilis to prevent vertical transmission.
  - Neonatal herpes is most commonly acquired in-utero via the placenta.
  - Blueberry muffin rash is specific to congenital rubella syndrome (CRS).
23. State whether the following are true or false regarding leprosy.
- Mycobacterium leprae* can be identified by culturing.
  - Tuberculoid leprosy is characterized by a strong T cell-mediated immune response.
  - Peripheral nerve enlargement and associated sensory loss are common findings in leprosy.
  - In lepromatous leprosy, the lepromin skin test is strongly positive.
  - Leonine facies is a clinically important feature of advanced tuberculoid leprosy.
24. A 45-year-old otherwise healthy man presented with cough, weight loss and mild fever at nights for three weeks. Signs of consolidation were seen over the upper lobe of the right lung. ESR was 100mmHg in the first hour. State whether the following are true or false regarding the aetiological diagnosis of the illness in this patient.
- Three sputum specimens should be sent for culture.
  - Sputum should be sent at room temperature for culture.
  - Mantoux test is the confirmatory test of this disease.
  - GeneXpert test on sputum can detect resistance strains.
  - Sputum direct smear microscopy is a quick test.

25. A 1 ½ -year-old child with poor immunization history was admitted with cough for two weeks which became severe paroxysmal coughing bouts for the last two days. Coughs ended with typical inspiratory whoop and post-tussive vomiting. The illness started with runny nose three weeks ago. Pertussis was suspected. Pertussis
- is an upper respiratory infection
  - has an incubation period of 1 - 3 days
  - patients commonly have lymphocytosis
  - diagnosis can be made by PCR test of nasopharyngeal aspirate
  - is best treated with ceftriaxone
26. A 63-year-old lady presented with dysuria, frequency and urinary urgency of three days duration. On examination, she had mild tenderness on the suprapubic region. She did not have any other significant features. The urine full report revealed pus cells 20-30/TIPF. Urine culture report stated heavy mixed growth. State whether the following are true or false regarding the infection in this patient.
- This patient has got cystitis caused by mixed organisms.
  - Empirical antibiotic is not indicated.
  - Blood culture/ABST should be done in this patient.
  - Nitrofurantoin can be used in the treatment, if her renal function is normal.
  - Antibiotics should be given for 7 – 10 days.
27. A 38-year-old woman with recurrent gastric ulcer was positive for *Helicobacter pylori*. Tests that could have been done in this patient to identify *Helicobacter pylori* include
- special staining of gastric biopsy sample
  - culture of endoscopic biopsy material
  - blood culture
  - stool antigen test
  - urease breath test
28. A 2 ½ -year-old child was brought to the outpatient unit with a history of non-productive barking cough and stridor for three days. He also had hoarseness of voice. It started with runny nose five days ago. His temperature was 37.5°C, and respiratory rate 28/min. Auscultation findings were unremarkable except for occasional rhonchi. State whether the following are true or false regarding this infection.
- The most possible diagnosis is acute bronchitis.
  - Parainfluenza virus is an important causative organism.
  - Aetiological diagnosis is important for the management of this patient.
  - Oseltamivir is the treatment of choice.
  - Primary prevention is by vaccination.
29. A 30-year-old pregnant lady at second trimester developed malaise and a generalised papulovesicular rash with erythematous base. The skin lesions appeared as successive crops. On examination, she had different stages of skin lesions such as papules, vesicles, pustules and crusted lesions. She delivered the baby at full term. State whether the following are true or false regarding this infection.
- The vesicular fluid of her skin lesions is an important source of infection to others.
  - She could have transmitted this infection to others before the development of rash.
  - She can develop severe pneumonitis.
  - Antiviral treatment is not indicated for her.
  - The baby should be given acyclovir soon after birth.



30. A 60-year-old lady admitted with severe pneumonia was started on empirical ceftriaxone and clarithromycin after collecting specimens for culture/ABST. Blood culture report received in two days revealed the growth of *Streptococcus pneumoniae*. Part of the antibiotic sensitivity pattern is given below.
- Penicillin – S
  - Ceftriaxone – S
  - Meropenem – S
  - Chloramphenicol – S
  - Vancomycin – S

State whether the following are true or false regarding the antibiotic treatment of this patient.

- a) Benzyl penicillin should be started as targeted treatment.
  - b) Ceftriaxone and clarithromycin should be discontinued.
  - c) Meropenem can be used as the targeted treatment.
  - d) Vancomycin is used as targeted treatment when the isolate is resistant to other antibiotics.
  - e) Empirical antibiotic should not have been given to this patient.
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