



UNIVERSITY OF JAFFNA, SRI LANKA
SECOND EXAMINATION FOR MEDICAL DEGREES PART (I)
October 2022
Academic Year 2017/2018
Microbiology -Paper I

Date: 11.10.2022
Answer all 30 questions

1.30 pm to 3.00 pm. (1½ hours)

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1. Sterile gloves should be worn in healthcare settings while
 - a) performing intramuscular injections
 - b) taking temperature from a patient
 - c) cleaning up spills of body fluids
 - d) assisting vaginal delivery
 - e) performing digital rectal examination

 2. Which of the following are true or false regarding biofilms?
 - a) Biofilms protect microorganisms against host immune defenses.
 - b) Biofilms are found in association with device related infections.
 - c) Dental plaque is a biofilm formed by the bacteria on the surface of the teeth.
 - d) Biofilms are made of communities of bacteria within a hyaluronic acid matrix.
 - e) Bacteria in the form of biofilm develop resistant to antibiotics quickly.

 3. Live attenuated vaccines should not be administered
 - a) to a person having a malignancy of the reticulo-endothelial system
 - b) along with an inactivated vaccine
 - c) during pregnancy
 - d) if a live vaccine had been administered within one month
 - e) if the person has had blood or blood products, including immunoglobulin, within three months

 4. The underlying mechanisms behind type I hypersensitivity reactions include
 - a) smooth muscle contraction
 - b) antibodies formed against bound antigens
 - c) increased vascular permeability
 - d) formation of antigen- antibody complex
 - e) antigen specific IgE antibody formation

 5. Pityriasis versicolor
 - a) is caused by dermatophytes
 - b) occurs in oily skin
 - c) commonly presents with itchy lesions
 - d) can be confirmed by microscopic examination of skin scrapings
 - e) can be treated with topical selenium sulfide lotion or shampoo

6. *Candida* infections can be treated with
- casprofungin
 - nystatin
 - amphotericin B
 - terbinafine
 - griseofulvin
7. *Aspergillus fumigatus*
- is transmitted by airborne conidia
 - causes opportunistic infections
 - causes type II hypersensitivity reaction
 - does not cause invasive infections
 - infection is diagnosed by culturing biopsy specimen
8. State whether the following are true or false regarding systemic mycosis.
- Infections are acquired by inhalation of the spores of dimorphic fungi.
 - They are endemic to certain geographic areas.
 - They are transmitted mainly faeco-orally.
 - Life threatening infections occur in immunocompromised patients.
 - Disseminated infections need to be treated with IV antifungal drugs.
9. Virulence factors of *Streptococcus pyogenes* include
- streptokinase
 - lecithinase
 - endotoxin
 - DNase
 - M-protein
10. Antibiotics that cover *Haemophilus influenzae* include
- vancomycin
 - clarithromycin
 - metronidazole
 - co-amoxiclav
 - chloramphenicol
11. State whether the following are true or false regarding pneumococcal vaccines.
- Pneumococcal polysaccharide vaccine is more immunogenic than the pneumococcal conjugate vaccine.
 - Pneumococcal conjugate vaccine can be given to children under two years of age.
 - Pneumococcal vaccine is recommended for the patients with severe dysfunction of the spleen.
 - Pneumococcal vaccines which are available in Sri Lanka are monovalent.
 - Pneumococcal polysaccharide vaccine is given to healthy adults above 65-years.
12. State whether the following are true or false regarding *Neisseria gonorrhoeae*.
- Exotoxin is an important virulence factor of *Neisseria gonorrhoeae*.
 - In woman, primary infection of *Neisseria gonorrhoeae* occurs in endocervix.
 - It can cross the placenta and infect the foetus.



- d) Presence of Gram-negative diplococci within the polymorphonuclear cells in a vaginal discharge is sufficient for the diagnosis of gonorrhoea.
- e) Infection is best treated with penicillin.
13. Bacteria that cannot be cultured in routine clinical microbiology laboratories in Sri Lanka include
- Mycoplasma pneumoniae*
 - Haemophilus influenzae*
 - Acinetobacter* spp.
 - Pseudomonas aeruginosa*
 - Group B streptococcus
14. *Corynebacterium diphtheriae*
- is a Gram negative bacillus
 - has animals as the main reservoir
 - non-toxicogenic strains cause pseudo membrane in the throat
 - can cause skin infections
 - infection is prevented in Sri Lanka by giving toxoid in childhood
15. *Clostridium tetani*
- is a spore forming organism
 - can cause tetanus in burn patients
 - causes paralysis by producing a toxin
 - infection is diagnosed by isolation of bacteria from the blood
 - infection is treated with human tetanus immunoglobulin (HTIG)
16. Infections caused by *E.coli* include
- bloody diarrhoea
 - neonatal meningitis
 - peritonitis
 - pharyngitis
 - urinary tract infections
17. *Salmonella typhi*
- infection has an incubation period of one to three days
 - is a normal flora of the intestine
 - is best isolated from the blood of the patient in the third week of illness
 - infection is treated with antibiotics for five to seven days
 - infection can be prevented by improving sanitation and personal hygiene
18. A 12-year-old child presented with watery diarrhea and severe abdominal cramps for five days. *Campylobacter* spp. was isolated from the stool culture. State whether the following are true or false regarding this infection.
- The causative bacterium is a microaerophilic organism.
 - This child could have acquired this infection by ingestion of contaminated poultry.
 - It has an incubation period of six to eight hours.
 - It could be complicated by Guillain-Barre syndrome.
 - Antibiotics are contraindicated in this infection.



19. A 49-year-old diabetic patient presented with a history of on and off headache, mild fever, loss of weight and loss of appetite for three weeks. TB meningitis was suspected. State whether the following are true or false.
- GeneXpert (Xpert MTB/RIF) test should be done on the blood of this patient.
 - It takes one to two weeks to receive the GeneXpert (Xpert MTB/RIF) results.
 - Specimens for GeneXpert should be stored and transported at room temperature for TB diagnosis.
 - CSF culture is not useful in this patient.
 - Direct smear microscopy of CSF is a highly sensitive test for the diagnosis of TB meningitis.
20. State whether the following are true or false regarding spotted fever.
- It is caused by a chlamydia species.
 - It is transmitted by infected larval mite bite.
 - It presents with disseminated vesicular rash.
 - It can be treated with doxycycline.
 - It can be associated with encephalitis.
21. Tests that can be used to confirm dengue fever within the first two days of illness include
- NS1 antigen detection
 - RNA detection
 - anti-dengue IgM detection
 - virus isolation from blood
 - platelet count
22. Hepatitis E virus
- is a DNA virus
 - is transmitted faeco-orally
 - infection is routinely diagnosed by detection of HEV Ag in stool specimen
 - acute infection can be treated with antiviral drugs
 - infection can be prevented by a live attenuated vaccine
23. Epstein-Barr virus (EBV)
- can be transmitted by sharing drinks
 - primarily infects T lymphocytes
 - causes glandular fever
 - can cause lymphoproliferative disease
 - is associated with development of hepatocellular carcinoma
24. State whether the following are true or false regarding rabies.
- Dogs are the major animal reservoirs for rabies in Sri Lanka.
 - Rabies cannot be transmitted through contamination of open wounds with the saliva of a rabid animal.
 - Detection of anti-rabies antibody is a useful test for the diagnosis of rabies.
 - Skin test should be performed before the administration of anti-rabies immunoglobulin.
 - Washing the site of bite with soap and water after an animal bite will reduce the risk of developing rabies.

25. Mumps
- has been eradicated from Sri Lanka
 - in males can cause subfertility
 - is a childhood exanthem
 - is infectious only after the parotid gland swelling
 - in pregnancy, can lead to congenital foetal defects
26. State whether the following are true or false regarding croup.
- Parainfluenza virus is the common causative agent.
 - It commonly affects infants less than a year old.
 - Croup patients present with cough ending with a whoop.
 - Croup is mostly diagnosed clinically.
 - Croup is prevented by giving vaccine in childhood.
27. Poliomyelitis
- causative agent is transmitted only by symptomatic people
 - causative agent is transmitted by the faecal oral route
 - is caused by destruction of the motor neurons in the spinal cords
 - can be confirmed by stool culture in the reference laboratory in Sri Lanka
 - can be cured by early antiviral treatment
28. State whether the following are true or false regarding primary syphilis.
- It can cause painful ulcer at the site of inoculation.
 - It can present with a maculopapular rash.
 - VDRL test is used as a screening test in primary syphilis.
 - Dark field microscopy is useful for the diagnosis.
 - It is effectively treated with penicillin.
29. A 32-year-old otherwise healthy married woman presented with dysuria, frequency and suprapubic pain for three days. She did not have fever. On examination, she had suprapubic tenderness. Her urine full report revealed pus cells 20 – 30 per HPF. State whether the following are true or false regarding this infection.
- Staphylococcus saprophyticus* can be the causative agent of this infection.
 - Gut flora is the common source of this infection.
 - Urine culture is not necessary for the management of this patient.
 - Blood culture should be done in this patient.
 - This patient should be given antibiotics for 14 days.
30. Healthcare-associated infections (HAI)
- are infections occurring in patients undergoing care in a healthcare facility which were not present or incubating at the time of admission
 - can be reduced by hand washing
 - can be transmitted by the medical personnel
 - include occupational infections in staff
 - can be caused by *Klebsiella pneumoniae*