CLINICAL OFFICERS STUDENTS ASSOCIATION (C.O.S.A).

GULU COLLEGE OF HEALTH SCIENCES.

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COSA ACADEMIA COLLABORATIVE ASSESSMENT QUESTIONS .

DCM 1.2 MAY/JUNE 2025.

MICROBIOLOGY AND PARASITOLOGY.

1. Define and outline examples of mycoses that fall under the following;

a. Systemic mycoses (2 Marks)

b. Dermatomycoses (2 Marks)

c. Subcutaneous mycoses (2 Marks)

d. Opportunistic mycoses (2 Marks)

e. Superficial Mycoses (2 Marks)

f. Cutaneous Mycoses (2 Marks)

b) Outline the prevention and control of fungal infections giving examples in each case. (8 marks).

2. Recently Salmonella Typhí has become a common isolate in many laboratory studies and thus has become a public Health concern.

a) Name three specimens from which Salmonella Typhi can be isolated in laboratory studies? (3 Marks)

b) Outline the clinical presentation of Salmonella Typhi (5 Marks)

c) List three medicines of choice used to treat Salmonella Typhi (3 Marks)

d) Outline three examples of infections caused by Salmonella Typhi? (3 Marks)

e) How would you prevent and control the spread of Salmonella Typhi infections? (6 Marks)

3. i) A male patient aged 20 years old presented to the OPD section at GRRH with the following symptoms: abdominal discomfort, loose stools which are bloody and foul smelling. Laboratory studies revealed pus cells and amoeboid shaped unicellular

organisms in the stool sample. The frequency of defecation had also increased from 2 times per day to 6 times. He was later initiated on treatment at the hospital.

a) Mention the causative agent for the above clinical presentation? (2 marks)

b) Identify two diseases caused by the above organism? (2 marks)

c) Briefly describe the life cycle of the parasite identified above? (6 marks)

ii) A 10 year old boy presented to the OPD section at the GRRH with complaints of passing out loose watery stools. The stools are frothy and have a greasy appearance. The stools also have a distinctive unpleasant smell. He also complained of abdominal pains, nausea and vomiting. Laboratory studies revealed pear shaped organisms.

a) Identify the organism responsible for the above appearance (2 marks)

b) How is the above organism transmitted? (4 Marks)

c) Describe the treatment and prevention of the above organism. (4 Marks)

4. State the body site affected by each of the fungal pathogens below:

a) Tinea corporis

b) Tinea pedis

c) Tinea cruris

d) Tinea barbae

e) Candida albicans

d). Name five (5) opportunistic parasites associated with HIV and AIDS infections (5 marks)

5. (a) Describe the first five (5) stages of viral replication

(b) Chronologically explain the HIV testing algorithms as stipulated by Ministry of Health Uganda stating one (1) intervention for each outcome

(c). Describe the etiology, transmission, signs and symptoms, laboratory tests in suspected cryptosporidiosis infection

6. a) Describe the life cycle of malaria parasite

b) Describe five (5) methods of reporting malaria parasites from blood smears.

c). Define:

(i) Pathogenicity

(ii) Opportunistic pathogens

(iii) Virulence

7a). Describe four (4) routes of transmission of viruses.

b). Describe sporogony cycle of malaria

c). With the aid of illustrations, describe the four (4) morphological classification of bacteria giving examples in each class. (20 marks)

8. A 40-year-old man presents at an outpatient department complaining of a watery foul - collected and laboratory findings revealed the presence of a pear-shaped flagellated smelling diarrhea, flatulence and fatty appearance of stool. He reports that all this started 2 weeks after a trip from where he had drunk un-boiled water. His stool sample was trophozoite.

(a) Name the causative agent of the diarrhea in this patient. (2 marks)

(b) Describe the pathogenesis of the agent causing the diarrhea in this patient. (9 marks)

(c) Apart from stool analysis, give one (1) other laboratory test which should be used to identify the causative microorganism in this patient. (2 marks)

(d) Name the drug of choice to manage this patient's infection (2 marks)

(e) Explain five (5) prevention and control measures for the causative microorganism of diarrhoea in this patient. (5 marks)

9. (a) Explain three (3) factors responsible for fungal pathogenicity. (3 marks)

(b) Describe Cryptococcus neoformans under the following headings;

(i) Morphology, staining and culture characteristics (3 marks)

(ii) Pathogenicity and host protection against Cryptococcus (4 marks)

(iii) Sources and mode of infection(2marks)

(iv) Signs and symptoms(4 marks)

(v) Laboratory diagnosis (4 marks)

10a). Explain the factors that influence transmission of viral infections. (6 marks)

b). Outline five general characteristics of viruses (5 marks)

c). List 3 methods of diagnosing viral infections in the laboratory? (3 Marks)

c).List any three Dermatophytes that you know? (3 marks)

d). Give two examples of opportunistic mistakes? (3 Marks)

11a). Define and outline examples of mycoses that fall under the following: (12mks)

i. Systemic mycoses.

ii. Dermatomycoses

iii. Subcutaneous mycoses

iv. Opportunistic mycoses

b) Outline the prevention and control of fungal infections giving examples in each case. (8mks)

12. Mycobacterium Tuberculosis is a pathogenic agent in the genus of Mycobacterium. It is the causative agent of most cases of Tuberculosis. In the advent of HIV, Tuberculosis is becoming a more common and is regarded as the number one killer of HIV infected patients

i) Outline six signs and symptoms of Tuberculosis, (4 Marks)

ii) Describe the pathogenesis of Tuberculosis? (8 Marks)

iii) Give three laboratory tests to confirm Tuberculosis infection in the Laboratory? (3 Marks)

iv) Outline the measures of prevention of Tuberculosis in the community. (5 Marks)

13. Identify the infective stage of each of the following parasites? (5 marks)

i) Schistosoma species

ii) Strongyloides Stercoralis species

iii) Trypanasoma Rhodesiense species

iv) Wuchereria Bancrofti

v) Plasmodium species

b) Define the life cycle of Necator Americanus? (8 Marks)

c) Give the different modes of transmission of parasitic infection? (5 Marks)

14a). Outline four (4) sources of microbial infections

b). Stating an example of a specific microorganism, name four (4) routes through which microorganisms exit the body(4 marks)

c). Stating the result for each, name four (4) laboratory tests that can be performed in the diagnosis of enteric fever (4 marks)

d). Name four (4) diseases associated with staphylococcus aureus (4 marks)

15. a) Define malaria

b) State three (3) ways by which malaria is transmitted (3 marks)

c) Describe the life cycle for Plasmodium spp (12 marks)

d) State four (4) ways in which results of malaria can be reported following examination of a blood slide (4 marks)

16. Describe the lifecycle, transmission, and diagnosis of each of the following:

a) Necator americanus (10 marks)

b) Brugia malayi (10 marks)

17. (a) Explain the serial HIV testing Algorithm for person above 18 months old (8 marks)

(b) State the recommended HIV test for children less than 18 months old (2 marks)

(c) Stating the causative agent of each, name five (5) opportunistic infections (10 marks).

18. Define the following terminologies giving one example in each case: (1 mark each)

i .Acid fast bacilli

ii. Opportunistic infections

iii. Protozoan infestation

iv. Pathogenesis

v. Bacterial endotoxins (2 mark)

19. Stating the possible findings, outline two (2) laboratory investigations performed to confirm Staphylococcus aureus infection: (4 marks)

20. (a) Using a diagram, describe the life cycle of malaria parasite. (16 marks)

(b) Explain four (4) genetic factors that protect a human being against malaria infection: (4 marks)

21. (a) Identify one(1) disease/ condition caused by each of the following organisms: (1 mark each)

i. Brucella abortus

ii. Neisseria meningitidis

iii.Treponema pallidum

iv. Chlamydia trachomatis

v. Cryptococcus neoformans

vi. Trypanosoma gambiense

vii. Varicella Zoster virus

viii. Rickettsia prowazeki

(b) State one diagnostic investigation that should be carried out for a case of infection by organisms i, ii, iii. and iv. (4 marks)

(c) Describe two (2) prevention and control measures for each of the infections caused by organisms; i, iii, vi, and vii. (8 marks)

22. Define the following terminologies giving one example in each: (1 mark each)

(a) Opportunistic mycoses

(b) Parasitic infestation

(c) Pathogenesis

(d) Bacterial endotoxins

(e) Sensitivity testing

23.State two (2) possible bacterial pathogens in each of the following sites. (1 mark each)

(a) Spinal cord

(b) Pleural cavity

(c) Blood

(d) Prostate gland

(e) Fallopian tube

24. Mention the infective stage of the following parasite:

(a) Plasmodium species

(b) Schistosoma species

(c) Stronglyloides stercoralis

(d) Trypoanosoma rhodiesiense

(e) Wuchereria hancrofti

25a). State five (5) characteristics of viruses.

b). List three (3) methods of diagnosing viral infections in the laboratory. (2½ marks)

c) State four characteristics of fungi. (2 marks)

d) List two examples of opportunistic mycoses. (2 marks)

26. Mycobacterium tuberculosis is a pathogenic bacteria in the genus mycobacterium and the causative agent of most cases of tuberculosis (TB). In the advent of HIV, TB is becoming more common and is regarded as the number one killer of HIV infected patients.

(a) State six (6) signs and symptoms of pulmonary TB(3 marks)

(b) Describe the pathogenesis of mycobacterium tube tulosis. (10 marks)

(c) Explain three (3) laboratory investigations you wou'd do to confirm TB infection. (3 marks)

(d) Outline eight (8) ways of preventing TB amongst HIV infected patients attending ART clinic. (4 marks)

27. (a) Define parasitic infestation: (2 marks)

(b) Describe the life cycle of Necator americanus: (10 marks)

(c) Explain the prevention and control of Nectar americamus community. infection in a given (8 marks)

28a). State five medical importance of mosquitoes (5 marks)

b). List 5 pathological microorganisms that can be isolated in a stool sample.

c). Describe the erythrocytic life cycle of malaria (10 marks)

d). The control and prevention of malaria parasitic infection in man. (4 marks)

e). Give tests commonly used for diagnosis of malaria infection in man and state how positive findings are reported.(6 marks)

29. Of recent, Salmonella typhi has become a common isolate in many laboratories and this has become a public health issue.

a) Name four specimens from which Salmonella typhi can be isolated (4 marks)

b) Outline the clinical presentation of Salmonella typhi infection (5 marks)

c) List three (3) medicines of choice in the treatment of Solmonella typhi infection indicating the adult dose of each of the drug stated(6 marks).

d) How would you prevent salmonella typhi infections in your community (5 marks)

30. a) Outline five factors that are responsible for HIV virulence in man (5 marks)

b) Explain the factors that influence the immunity of an individual (15 marks)

31 a). What are the most recommended samples for diagnostic tests of the following infections in man? (5 marks)

(i) Helimth infections

(ii) Malaria

(iii) Urinary tract infection

(iv) Syphilis

(v) Meningitis

b). Define Mycology? (2mks)

c). State five characteristics/properties of fungi? (5mks)

d). Explain any five pharmaceutical importance of fungi. (5mks)

e). Explain the morphological classification of fungi. (4mks)

32. Define the following: (4mks)

a) - Mycosis

b)- Mycotoxins

c) - Mycotoxicoses

d) - Mycetism

e). Outline any four examples of mycotoxins. (4mks)

f). State any four examples of mycotoxicoses. (4mks)

33.Give types of mycoses of medical importance: (8mks)

a)-Cutaneous (superficial) mycoses

b)- Subcutaneous mycoses

c)-Systemic mycoses - Opportunistic mycoses

34.a) Outline any five examples of cutaneous mycoses/dermatophytoses with their causative agents. (4mks)

b) Outline four examples of opportunistic mycoses with their causative agents. (4mks)

c). Outline any four examples of systemic mycoses with their causative agents. (4mks)

d). State five ways to prevent fungal infections. (5mks)

35 a). State five differences between viruses and fungi. (5mks)

b). Define virology.

c). Explain any six properties/characteristics of viruses.

d). With the aid of a diagram, illustrate the structure of a virus, stating the function of any three parts.

e). Describe the structure of an HIV viral particle with the aid of a diagram.

36. Define the following:

a. Bacteriophage

b. Virion

c. Incubation period

d. Eclipse period

e. Recovery period

37 a). Explain the classification of viruses according to the nature of their nucleic acid, stating two examples.

b). Describe the morphological classification of viruses.

c). Outline five examples of DNA viruses.

d). Outline five examples of RNA viruses.

38.a) Describe the process of viral replication or explain the steps of viral infection of the host cell.

b). Explain the process of HIV replication, indicating the phases of activity of antiretroviral drugs.

c). Explain four modes of transmission of viral infections.

d). Outline any four routes of entry of viral infections.

e). Outline any four factors influencing the transmission of viral infections.

f). Outline any five examples of arboviruses.

g). State any five examples of arboviral infections.

h). State any five examples of viral infections.

i). Explain five ways through which viral infections can be prevented.

39. Define the following parasitological terms;

a) Auto infection

b) Parasite

c) Life cycle

d) Vector

e) Mutualism

40. a) Differentiate between the following; (4mks each)

i. Definitive and intermediate host

ii. Endo and Ectoparasites Direct and indirect Lifecyle

iv. Parasitism and commensalism

V. Obligate and facultative parasites

vi. Mechanical and biological vector

vii. Infection and infestation

b) Outline any ten prevention and control methods of parasitic infections. (10mks)

41 a) Explain why only the female mosquitos are involved in malaria transmission. (2mks)

b) Describe the lifecycle of malaria parasite both in intermediate host and definitive host. (20mks)

c) List the stages of plasmodium life cycle that are a target of antimicrobial drugs. (5mks)

d) List the four species of plasmodium that commonly cause malaria.

e) Outline any seven clinical features of malaria infection.

f) Explain factors that lead to the spread of parasitic infections in your community. (12mks)

g) Outline the various sources of parasitic infections. (5mks)

42. Copy and complete the table below;(6 marks)

S/N	**Micro organism**	**Specimen(s) for identification(1/2 mark @)**	**Laboratory test done(1 mark @)**
(i)	Mycobacterium tuberculosis		
(ii)	Tinea corporis		
(iii)	P.falciparum		
(iv)	S.haematobium		

43.Copy and fill in the table below;

S/N	Organism	Disease caused	Specimen	Treatment
(a)	Vibrio cholera			
(b)	Treponema pallidum			
(c)	Herpes simplex 1			
(d)	Cryptosporidium parvum			
(f)	Aspergillus flavus			

44. Match the following disease conditions in column A with there respective laboratory tests in column B.

A	B
1. Primary syphillis	a.Genexpert
2.Crptococcal menengitis	b.ASOT
3.Fungal infection of the tissue	c.BAT
4.Multidrug resistant TB	d.Widal test
5.HIV confirmatory	e.TPHA
6.Broncho pneumonia	f.STATPAK
7.Semen analysis	g.Crag test
8.Undulant fever	h.Potassium Hydroxide
9.Arthritis	i.Motility test
10.Enteric fever	j.BinaxNow

END

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