a) Streptococcus pneumoniae
b) Haemophilus influenzae
c) Staphylococcus aureus

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INDEX NO. MED/24/10/09

MEDICINE LEVEL II CAT ON 13TH SEPTEMBER, 2006

Riyanny.

Microbiology

MED/24/10/09

1. Which of the following is/are a genus/genera composed of strict anaerobic gram-positive cocci?
   a) Moraxella
   b) Neisseria
   c) Veillonella
   d) Peptostreptococcus
   e) Bacteroides

2. Which is NOT an arthroped-borne infection of man?
   a) Bubonic plaque
   b) Cholera
   c) Endemic typhus fever
   d) Q'-fever
   e) Scrub fever

3. Opthalmia neonaterum is:
   a) Caused commonly by Neisseria meningitides
   b) Treatable condition that can be prevented prophylactically by use of tetracycline or silver nitrate solution
   c) Infection of pregnant mother from her foetus
   d) Caused commonly by Neisseria gonorrhoea and Calamydia trachomatis
   e) Non-treatable with antibiotics

4. Flagella are organelles of:
   a) locomotion
   b) protection against other bacteria
   c) adhesion
   d) responsible for conjugation
   e) cell division

5. The following is/are causative agent (s) of pseudomembranous colitis:
   a) Clostridium tetani
   b) Clostridium sordelli
   c) Clostridium difficile
   d) Clostridium welchii (perfringens)
   e) Clostridium botulinum

6. The following is/are primary gastrointestinal pathogens except:
   a) Klebsiella pneumoniae
   b) Yersinia pseudotuberculosis
   c) Escherichia coli
   d) Yersinia enterocolitica
   e) Shigella Flexner

7. Which of the following vibrio antigenic types are more commonly associated with epidemics:
   a) V.cholerae biotype classical - Inaba
   b) V.cholerae biotype classical - Hikojima
   c) V.cholerae biotype El tor – Inaba
   d) V.cholerae biotype El tor – Hikojima
   e) V.cholerae biotype El tor – ogawa

8. Campylobacter jejyni is
   a) An aerobic gram negative organism
   b) A motile gram negative organism commonly causing diarrhea
   c) An anaerobe causing infantile diarrhea
   d) A lactose fermenter enterobacteriocae
   e) Grows at 42C

9. Most strains of Bacillus anthracis are:
   a) Anaerobic spore former terminally
   b) Capsulated in pathological material (tissue or pus)
   c) Able to liquefy gelatin, responsible for "inverted fir tree" growth
   d) Producers of alpha haemolytic colonies on blood agar
   e) Are non-pathogenic to man

10. Mycoplasma organisms:
    a) Are sensitive to penicillins
    b) Contain peptidoglycan in their cell walls
    c) Are motile organisms
    d) Do not cause disease in man
    e) May be found occurring as normal flora of the urethra

11. The Weil-Felix reaction:
    a) Is a test for detection of proteus species
    b) Is a test for detection of Rickettsiae other than coxiella
    c) Is not associated with false positive and false negative
    d) Relies on antibodies specific for Proteus vulgaris
    e) Is reliable test for Q-fever

12. Which of the following is utilized in Lancefield grouping for streptococci?
    a) C-Polysaccharide
    b) Hyaluronic acid capsule
    c) Streptokinase
    d) Streptolysin "S"
    e) Type-specific M protein

13. Which will NOT distinguish Streptococcus pneumoniae from Streptococcus viridans:
a) Bile solubility test
b) Blood agar plate culture
c) Capsule swelling (quelung) reaction
d) Gram reaction and catalase test
e) Optochin sensitivity

14. Which one of the following is the active agent in bacterial transduction?
a) Chemical mutagen
b) Episome
c) Extracted or released DNA
d) Temperate bacteriophage
e) U-V radiation

15. Which age group is particularly prone to Haemophilus influenzae meningitis
a) Under 3 months
b) 1 year – 5 years
c) 3 years – 12 year
d) 12 years – 25 years
e) Under 25 days

16. Germ-tube test is useful in identification of:
a) Candida tropicalis
b) Cryptococcus neoformans
c) Candida albicans
d) Candida krusei
e) Geotricum candidum

17. Which term is applied to chemicals used to kill bacteria on an inanimate object
a) Antibiotic
b) Antiseptic
c) Chemotherapeutic agent
d) Disinfectant
e) Sterilizing agent

18. Deoxycholate Citrate Agar (DCA) is a selective medium for
a) Campylobacter spp
b) Enterococci spp
c) Salmonella spp
d) Vibrio cholerae
e) Shigella spp

19. Paired acute (onset) and another after 10-14 days serum samples are useful for the following:
a) Assay of serum antibiotic levels
b) Detection of rising antibody titre
c) A test for cure
d) Exclude development of chronic infective state
e) Show antibody titre has fallen with recovery

20. Which is a specific character of Staphylococcus aureus?
a) Coagulase production
b) Golden pigment
c) Haemolysin production
d) Phosphatase production
e) Enterotoxin production

21. The following are properties of Bordetella pertussis:
a) Strict anaerobes
b) Requires high concentration of blood in the media
c) Gram positive rods
d) Require special media for growth
e) Grow rapidly in dry atmospheric conditions

22. Which property can differentiate chlamydiae from viruses?
a) Ability to elicit delayed hypersensitivity
b) Filterable nature of infections unit
c) Existence as obligated intracellular parasite
d) Formation of inclusion bodies in infected cells
e) Sensitivity to antibiotics

23. Which of the following features are useful for identification of Cryptococcus neoformans:
a) Capsule
b) Sporangia
c) Microconidia
d) Fluorescence under Wood's lamp
e) Ascospores

24. Which antigen of Salmonella typhi can completely inhibit agglutination of the organism by "O" antiserum:
a) Flagella "H" antigen
b) Somatic "O" antigen
c) Pili antigen
d) "Vi" antigen
e) Fimbrial "K" antigen

Registration No. [illegible]

7. Which of the following is not a common cause of acute bacteria[illegible]
a) Strep[illegible]

25. Which of the following species for mycobacteria is/are able to produce yellow pigment when cultured in darkness or light?
a) Mycobacterium tuberculosis
b) Mycobacterium bovis
c) Mycobacterium scrofulaceum
d) Mycobacterium kansasii — only light ✗
e) Mycobacterium leprae

26. The following are reagents used in the Ziehl-Neelsen (ZN) staining technique except:
a) Neutral red
b) Acid-alcohol
c) Malachite green
d) Carbol fuchsin
e) Methylene blue

27. Which statement (s) is/are true of Nocardia?
a) Occurs as saprophytes in the soil
b) Motile sporing gram positive rods ✗
c) May appear acid-fast
d) Nocardia brasiliensis does not cause mycetoma ✗
e) Does not produce beta-lactamase ✗

28. Minimum inhibitory concentration (MIC) of an antibiotic is:
a) Lowest concentration of the drug which kills the organism
b) Determined by both plate and tube method
c) Not useful for calculation of dosage
d) Determined using patient's serum
e) Lowest concentration of the drug which inhibit the growth of the micro-organism

29. Match item in column I with the most appropriate one on column II:

Column I	Column II
Treponema pallidum F	A. Bubonic plague — Y. Pestis
Corynebacteria diptheriae G	B. Chancroid — H. ducreyi
Yersinia pestis A	C. Dimorphic fungus —
Coccidiodes immitis C	D. Mac Fadyean reaction — B. Anthracis
Streptococcus pyogenes I	E. Germ Tube Test — C. albicans
	F. Condylomata lata — syphilis (3°) (T. Pallidum)
	G. Elek Test — C. diphtheriae
	H. Alpha Toxin —
	I. Rheumatic fever — S. pyogenes

dimorphic fungi
histoplasma
blastomyces

30. Which of the following viruses has a single-stranded DNA genome?
a) Papovavirus
b) Adenovirus
c) Herpesvirus
d) Poxvirus
e) Parvovirus

31. Which virus has a single-stranded RNA genome that serves as a mRNA (i.e. infectious virus)?
a) Picornavirus
b) Togavirus
c) Rhabdovirus
d) All of the above
e) Only (a) and (b)

1 point
RNA +ve
only RNA the viruses

32. During latent viral infections (true latency, e.g. with herpesviruses)
a) Progeny virus is produced and the infected cells dies
b) Progeny virus is not produced and infected cell remains health and viable
c) Infected cell is always transformed
d) All of the above
e) None of the above

33. When herpes virus is in a latent stage, which class of viral proteins are expressed to maintain latency?
a) Early proteins
b) Immediate-early proteins
c) Late proteins
d) Surface proteins
e) All of the above

34. Ebola virus infection has a case fatality rate of
a) Less than 10%
b) 20-30%
c) 40-50%
d) More than 50%
e) None of the above

35. Which of the following are vectors of trypanosomias.
a) Rhodnius prolixus — reduviid bug — (South American typs
b) Simulium-damnosum
c) Glossina palipalis
d) Chrysops-dimidiata
e) Glossina palidipes

Autoinfexn => H.nana, C.philippinensis, Tsolan
Hyperinfexn => Strongyloides, Enterobius vermicularis
Retrogradeinfexn => E.vermicularis.

36. Autoinfection occurs in which of the following parasitic infections.
a) Hymenolepis nana
b) Taenia saginata
c) Echinococcus granulosus
d) Diphyllobothrium latum
e) Hymenolepis diminuta

DELETE

- Strongyloidis stercoralis
- Enterobius vermicularis

37. Urine examination may be helpful in the diagnosis of which of the following parasites.
a) Schistosoma mansoni
b) Loa loa
c) Wuchereria bancrofti → Chyluria
d) Trichomonas hominis ♀ vaginalis
e) Entamoeba gingivalis

38. Which of the following drugs are useful in the treatment of schistosoma haematobium.
a) Metronidazole
b) Niclosamide
c) Albendazole
d) Oxamniquine
e) Metrifonate

9. Which of the following parasitic diseases are zoonotic:-
a) Amoebiasis
b) Filariasis
c) Malaria
d) Toxoplasmosis
e) Trichuriasis

All of the following have blood larval migration in their life cycle except -
a) Ascaris lumbricoides
b) Necator americanus
c) Strongyloides stercoralis
d) Ancylostoma duodenale
e) Enterobius vermicularis

Which of the following larval stages are infective to human -
a) Miracidium
b) Coracidium
c) Procercoid
d) Rhabditform larvae
e) Metacercariae in fluices

42. Visceral leishmanisis (Kalazar) occurs in which of the following Districts in Kenya.
a) Kiambu
b) Siaya
c) Kitui
d) Kakamega
e) Nyeri

43. All of the following parasitic infections may invade human eye except:-
a) Taenia solium
b) Toxoplasma gondii — Chorioretinitis
c) Onchocerca volvulus
d) Mansonella ozzardi — non pathogenic
e) Loa loa

44. Periportal cirrhosis of the liver is usually observed in infectious with:
a) Fasciola hepatica
b) Trichinella spiralis
c) Trypanosoma cruzi
d) Leishmania donovani
e) Schistosoma mansoni

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45. Which of the following measures are useful in the control of schistosomiasis:-
a) Washing hands after visiting the toilet
b) Use of DDT to kill the intermediate snail hosts — Use molusciciles
c) Treatment of infected individuals with praziquantel
d) Building dams
e) Covering of food from flies

46. Urine microscopy is useful in the diagnosis of which of the following infections
a) Trichimonas vaginalis
b) Diphyllobothrium latum
c) Schistosoma haematobium
d) Pneumocystis jiroveci
e) Schistosoma mansoni

47. Winterbottoms sign is a classical finding in infection with:-
a) Espundia
b) African trypanosomiasis
c) American trypanosomiasis — Romana's Sign
d) American leishmaniasis
e) Toxoplasmosis

5 - 1 = 4

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48. Drugs for treatment of severe and complicated malaria include:-
(a) Quinine
b) Chloroquine
(c) Primaquine
d) Sulphadiazine
e) Ivermectin

49. Complication of plasmodium falciparum infections include which one of the following:
a) Myocarditis
b) Gastroenteritis
c) Coma
d) Haemoglobinopathy
(e) Jaundice — in children.

50. Which parasite is transmitted through uncooked foods?
(a) Diphyllobothrium latum — fish
b) Wuchereria bancrofti
c) Onchocera volvulus
d) Echinococcus granulosus
e) Trypanosoma gambiense

51. Intestinal obstruction may occur in which of the following infections:
(a) *Taenia saginata*
b. *Dracunculus medinensis*
c. *Clonorchis sinensis*
(d) *Ascaris lumbricoides*
e. *Enterobius vermicularis*

52. Jaundice may be observed in infections with:
a. *Onchocerca volvulus*
b. *Ascaris lumbricoides* — may block biliary tract.
c. *Trichuris trichiura*
(d) *Plasmodium falciparum*
e. *Mansonella ozzardi*

Which of the following statement(s) about *Leishmania donovani* is are true:
(a) Amastigotes may be found in splenic smears
(b) The stages of the parasite in the vector are called promastigotes
c. Human infections are restricted to the skin
d. The vector in Kenya is *Culex quinquefasciatus*
e. Human infections are endemic throughout Kenya

54. Which of the following are useful in the control of *Schistosoma haematobium* infection:
a. Boiling drinking water
b. Proper cooking of snails before consumption
(c) Treatment of infected individuals with metrifonate
d. Use of molluscicides such as Niclosamide
e. Proper washing of hands before taking a meal

55. Which of the following parasites may cause rectal prolapse?
a. *Trichinella spiralis*
b. *Enterobius vermicularis*
(c) *Trichuris trichiura*
d. *Strongyloides stercoralis*
e. *Taenia saginata*
— *E. histolytica*

56. The following parasitic infection(s) causes severe disease in Acquired immunodeficiency syndrome (AIDS)?
a. *Hymenolepis nana*
b. *Entamoeba histolytica*
(c) *Cryptosporidium parvum*
d. *Giardia lamblia*
(e) *Isospora belli*

57. Which of the following protozoal parasites are non-motile?
a. *Naegleria fowleri*
b. *Balantidium coli*
(c) *Toxoplasma gondii* — Coccidian
d. *Leishmania donovani*
e. *Trypanosoma rhodesiense*

58. Which of the following parasites causes primary amoebic meningo-encephalitis?
a. *Entamoeba histolytica*
b. *Entamoeba coli*
(c) *Naegleria fowleri*
d. *Acanthamoeba species* — granulomatous amebic encephalitis
e. *Dientamoeba fragilis*

59. Which of the following parasitic infections may cause pruritus ani:
a. *Trichuris trichiura*
(b) *Enterobius vermicularis*
c. *Trichinella spiralis*
d. *Necator americanus*
(e) *Strongyloides stercoralis*

7-1½ = 6/6

SECTION B:

Instructions: Match items in Column I with those in Column II by inserting the letter of the alphabet in the corresponding brackets

60.

Column I	Column II
(G) 1. *Necator americanus*	A. Formal gel test – leishmania, malaria, schistosoma.
(A) 2. *Leishmania donovani*	B. String test –
(D) 3. *Enterobius vermicularis*	C. Counting chamber technique –
(F) 4. *Plasmodium falciparum*	D. Scotch tape technique – *E. vermicular*
(C) 5. *Giardia lamblia*	E. Rectal snip
	F. Giemsa stain – malaria.
	G. Harada mori technique –
	H. Xenodiagnosis –

61.

Column I	Column II
(G) 1. *Necator americanus*	A. Pathological fractures – *E. granulosus*
(H) 2. *Trichuris trichiura*	B. Auto infection – *E. vermicularis*, *Strongyloides*
(G) 3. *Clonorchis sinensis*	C. Microcytic anaemia – hookworm.
(A) 4. *Echinococcus granulosus*	D. Elephantiasis – wuchereria.
(B) 5. *Strongyloides stercoralis*	E. Intestinal obstruction
	F. Pruritus ani – *E. vermicularis*
	G. Jaundice – malaria
	H. Prolapse of the rectum – trichuris

62. Which of the following generally does not apply to bone marrow (a primary lymphoid organ) and secondary lymphoid organs?
a. cellular proliferation
b. differentiation of lymphocytes
c. cellular interaction
(d.) antigen-dependent response
e. None of the above.

Which of the following apply uniquely to secondary lymphoid organs?
a. presence of precursor B and T cells
(b.) circulation of lymphocytes
(c.) terminal differentiation
d. cellular proliferation
e. All of the above.

11 - 1 = 10

1½ + 10 = 70 1/2

64. Which of the following does not apply to "innate" immune mechanisms?
a. absence of specificity
b. activation by a stimulus
c. involvement of multiple cell types
(d.) a memory component
e. none of the above

65. Which of the following is the major function of the lymphoid system?
a. innate immunity
b. inflammation
c. phagocytosis
(d.) acquired immunity
e. None of the above.

66. Removal of the bursa of Fabricius from a chicken results in
a. a markedly decreased number of circulating T lymphocytes.
b. anaemia.
c. delayed rejection of skin graft
(d.) low serum levels of antibodies in serum.
e. all of the above.

67. The germinal centers found in the cortical region of lymph nodes and the peripheral region of splenic periarteriolar lymphatic tissue ← B cells
a. support the development of immature B and T cells
b. function in the removal of damaged erythrocytes from the circulation.
c. act as the major source of stem cells and thus help to maintain haematopoiesis.
(d.) provide an infrastructure that on antigenic stimulation contains large populations of B lymphocytes and plasma cells.
e. are the sites of NK-cell differentiation.

68. Which of the following is correct?
a. NK cells proliferate in response to antigen.
b. NK cells kill their target cells by phagocytosis and intracellular digestion.
c. NK cells are a subset of polymorphonuclear cells.
(d.) NK-cell killing is extracellular. make Perforins!
e. NK cells are particularly effective against certain bacteria.

69. The following properties render a substance immunogenic:
(a.) high molecular weight
(b.) chemical complexity
c. sufficient stability and persistence after injection
(d.) All of the above.
e. All of the above are essential but not sufficient.

4 - 1½ = 2½

Registration No.

The protection against smallpox afforded by prior infection with cowpox represents
a. antigenic specificity.
b. antigenic cross-reactivity.
c. enhanced viral uptake by macrophages.
d. innate immunity.
e. passive protection.

71. Converting a toxin to a toxoid
a. makes the toxin more immunogenic.
b. reduces the pharmacologic activity of the toxin.
c. enhances binding with antitoxin.
d. induces only innate immunity.
e. increases phagocytosis.

72. Haptens
a. require carrier molecules to be immunogenic.
b. react with specific antibodies when homologous carriers are not employed.
c. interact with specific antibody even if the hapten is monovalent.
d. cannot stimulate secondary antibody responses without carriers.
e. all of the above.

73. An immunologic adjuvant is a substance that
a. reduces the toxicity of the immunogen.
b. enhances the immunogenicity of haptens.
c. enhances haematopoiesis
d. enhances the immune response against the immunogen.
e. enhances immunologic cross-reactivity.

74. Papain digestion of an IgG preparation of antibody specific for the antigen hen egg albumin (HEA) will
a. lose its antigen specificity.
b. precipitate with HEA.
c. lose all interchain disulfide bonds
d. produce two Fab molecules and one Fc fragment.
e. None of the above.

75. The first immunoglobulin synthesized by the fetus is
a. IgA.
b. IgE.
c. IgG.
d. IgM
e. None; the foetus does not synthesize immunoglobulins.

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76. The following properties of human IgG are true except:
a. It can pass through the placenta.
b. It can be cleaved by pepsin and yet remain divalent.
c. Its half-life is approximately 23 days.
d. It induces the formation of leukocytes.
e. It participates in the activation of complement.

77. Relative level of specific IgM antibodies can be of diagnostic significance because
a. IgM is easier to detect than the other isotypes.
b. viral infection often results in very high IgM responses.
c. IgM antibodies are more often protective against reinfections than are the other isotypes.
d. relatively high levels of IgM often correlate with a first recent exposure to the inducing agent.
e. IgM antibodies are found at relatively higher levels than other antibodies after exposure to the inducing agent

78. The primary and secondary antibody responses differ in
a. the predominant isotype generated.
b. the number of lymphocytes responding to antigen.
c. the speed at which antibodies appear in the serum.
d. the biologic functions manifested by the Ig isotypes produced.
e. All of the above.

79. Complement is required for
a. lysis of erythrocytes by lecithinase.
b. NK-mediated lysis of tumor cells.
c. phagocytosis.
d. bacteriolysis by specific antibodies.
e. All of the above.

80. Primary interactions between antigens and antibodies involve all of following exce
a. covalent bonds.
b. van der Waals forces.
c. hydrophobic forces.
d. electrostatic forces.
e. a very close fit between an epitope and the antibody.

81. Immature B lymphocytes
a. produce only μ chains.
b. are progenitors of T as well as B lymphocytes.
c. express both IgM and IgD on their surface.
d. are at a stage of development where contact with antigen may l unresponsiveness.
e. must go through the thymus to mature.

Immature = IgM on surface (new B cells)
mature = IgD > IgM on surface. (naive B cells)