KENYATTA UNIVERSITY

SUPPLEMENTARY/SPECIAL EXAMINATION 2021/2022

EXAMINATION FOR THE DEGREE OF BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (MBChB LEVEL II)

HPA I: PATHOLOGY I PAPER II: MCQS

MARCH 2022 TIME: 1 HR. 40 MIN.

INSTRUCTIONS

This paper consists of 100 multiple choice questions.

Each question carries one mark.

Answer all the questions in the booklet provided.

1. The following statements are true except:
    a. Pulmonary embolism commonly results from superficial veins lower limbs.
    b. The commonest source of a systemic embolus is the left ventricle.
    c. Most pulmonary emboli are clinically silent.
    d. A thrombus in the saphenous vein may cause local congestion
2. Adenocarcinoma is a:
    a. Carcinoma developing from mesenchymal tissue
    b. Carcinoma arising from simple squamous epithelium
    c. Carcinoma arising from glandular epithelium
    d. Undifferentiated carcinoma

3. ONE of the following best defines neoplasm
    a. A newly diagnosed malignant tumour.
    b. New growth which can be benign or malignant
    c. Pre-malignant change
    d. A newly diagnosed benign tumour
4. The cause of exudative oedema is
    a. Acute inflammation
    b. Increased plasma oncotic pressure
    c. Congestive heart failure
    d. Sodium retention
5. In regard to infarction, one of the following statements is not true
    a. Most infarcts result from thrombotic or embolic effects
    b. Most infarcts occur as a result of arterial occlusion
    c. Most infarcts occur as a result of venous occlusion
    d. White infarcts occur in solid tissue with end arterial circulation
6. One of the following is a chemotactic factor
    a. Bacterial products
    b. Thrombin
    c. Histamine
    d. Complement product C3b
7. A feature of reversible cell injury is
    a. Hydropic change
    b. Karyolysis
    c. Karyorrhexis
    d. Nuclear pyknosis
8. One of the following statements is true
    a. Fatty change represents irreversible cell injury.
    b. Dystrophic calcification commonly occurs with hypercalcaemia.
    c. Dystrophic calcification can be accentuated by hypercalcaemia.
    d. Lipofuschin is a haemoglobin derived pigment.

9. Mast cell granules contain one of the following mediator of inflammation
    a. Histamine
    b. Prostaglandin
    c. Leukotriene
    d. Compliment product C3a

10. Thestatement that best describes metaplasia is
    a) Change from one adult cell type to another adult type
    b) Increase in number of cells in an organ or tissue
    c) Increase in individual cell size
    d) Decrease in individual cell type

11. In the signal transduction process among cells of the immune system, an example of a first messenger is a:
    a. Cell division
    b. Growth factor
    c. Movement of the cell
    d. Secretion by the cell

12. The name given to the condition that manifests when the signal that directsleucocytes to the injury site fails is:
    a. Agammaglobulinaemia
    b. Adneroleukodystrophy
    c. Leucocyte adhesion deficiency
    d. Tay-Sachs disease

13. The cell types found in the peripheral lymphoid organs that are activated for subsequent qualitative and quantitative immune responses in a vaccination programme are the:
    a. Memory B- and T-lymphocytes
    b. Activated B-and T-lymphocytes
    c. Immuno-incompetent B- and T-lymphocytes
    d. Naïve resting B- and T-lymphocytes

14. When serum antibody reacts with antigens on the surface of target cells to form clumps, the process is called:
    a. Precipitation
    b. Neutralization
    c. Complement-mediated lysis
    d. Agglutination
15. In the fluid-mosaic model of the cell plasma membrane structure the specific functions of the membrane are determined by the:
    a. Enzymatic proteins
    b. Integral proteins
    c. Peripheral proteins
    d. Surface glycoproteins
16. One of the following is not an example of damage-associated molecular patterns detected by pattern recognition receptors on human phagocytes:
    a. Heat- shock proteins
    b. Lipoteichoic acid
    c. Monosodium urate
    d. High-mobility group box -1 molecules
17. The following cell type is only indirectly associated with cell-mediatedhypersensitivity reaction:
    a. CD8+ T cell
    b. T_H 1
    c. T_H 2
    d. T_H 17
18. A molecule that appears to act as a marker for memory in a recently activated T lymphocyte is:
    a. CD28
    b. CD 40
    c. CD 45
    d. CD 80

19. The predominant immune response against helminthic worms is mediated by 1gE, suggesting that the important T helper lymphocytes conferring protection mainly belong to the subset:
    a. $T_H 2$
    b. $T_H 1$
    c. T_{REG}
    d. $T_H 17$
20. One example of a T-dependent B-cell mitogen in an *in vitro* experimental system is:
    a. Phytohemagglutinin (PHA)
    b. Pokeweed mitogen (PWM)
    c. Concanavalin A (Con A)
    d. Lipopolysaccharide (LPS)

21. One of the following is not true of smoking among diabetics
    a. Causes type I diabetes
    b. Increases risk of heart disease
    c. Causes type II diabetes
    d. Increases risk of kidney failure
22. Male to male transmission is not seen in:
    a. Autosomal dominant diseases
    b. Autosomal recessive disease
    c. X-linked recessive disease
    d. Genomic imprinting
23. Genomic imprinting is associated with:
    a. Silencing of paternal chromosome
    b. New mutations
    c. Fragile X syndrome
    d. Mitochondrial DNA

24. Increasing severity of mental retardation in male members over generations is a result of:
    a. Mitochondrial DNA mutation
    b. Frameshift mutation
    c. Y linked disorder
    d. Trinucleotide repeat mutation
25. Earlier onset of disease than either father or grandfather is most likely explained by one of the following
    a. Increased penetrance
    b. Pleiotropy
    c. Anticipation
    d. Mosaicism
26. A woman had a high fever, hypotension, and a diffuse macular rash. When all cultures showed no bacterial growth, a diagnosis of toxic shock syndrome was made. Regarding the mechanism by which the toxin causes this disease, one of the following is least accurate
    a. The toxin is not processed within the macrophage.
    b. The toxin binds to both the class II MHC protein and the T cell receptor.
    c. The toxin activates many CD4-positive T cells, and large amounts of interleukins are released.
    d. The toxin has an A-B subunit structure--the B subunit binds to a receptor, and the A subunit enters the cells and activates them.
27. Natural killer cells are
    a. B cells that can kill without complement.
    b. Cytotoxic T cells.
    c. Increased by immunization.
    d. Able to kill virus-infected cells without prior sensitization.
28. One of the following is the most potent stimulator of Naïve T-cells:
    a. Mature dendritic cells
    b. Follicular dendritic cells
    c. Macrophages
    d. B-cell

29. Antigen presenting cells present in lungs are called

a. Langerhan's cells
b. Kupffer's cells
c. Microglia
d. Melanocytes

30. One of the following features is shared between 'T cells' and 'B cells'

a. Antigen Specific Receptors
b. Class II MHC Expression
c. Somatic hypermutation
d. Expression of CD3

31. Regarding the complement pathway, one of the following is most accurate

a. C5a mediates chemotaxis and attracts neutrophils to the site of infection.
b. C5b plays an important role in the opsonization of gram-negative bacteria.
c. C3a is a decay-accelerating factor that causes the rapid decay and death of bacteria.
d. C1 binds to the surface of gram-positive bacteria, which initiates the classic pathway.

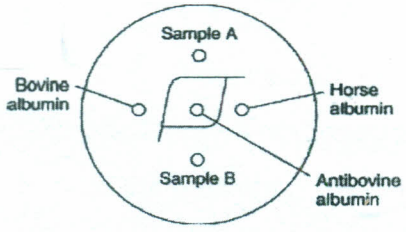
32. A 38-year-old previously healthy man developed a *Staphylococcus aureus* infection after sustaining multiple abrasions in a bicycle accident. lgG antibodies bind to epitopes on the *S. aureus* cells, facilitating binding of C1q. The result or outcome of the pathway that is stimulated will be

a. An isotype switch of antibodies to *S. aureus* from lgG to lgM.
b. Destruction of *S. aureus* by the membrane attack complex.
c. Down regulation of Class II molecules on infected cells.
d. Secretion of chemokines to attract more cells to the site of infection.

33. All of the following statements about hybridoma technology are true except:

a. Specific antibody producing cells are integrated with myeloma cells
b. Myeloma cells in salvage pathway grows well in HAT medium
c. Aminopterin, a folate antagonist, inhibits denovo pathway
d. HGPRTase and thymidylate synthetase are required for salvage pathway

34. Proteins from two samples of animal blood, A and B, were tested by the double-diffusion test in agar against antibody to bovine albumin as shown in the figure below. Horse blood is contained in:



a. Sample A
b. Sample B
c. Samples A and B
d. Neither sample

35. One of the following is NOT a clinical application for carcinoembryonic antigens
a. Adjunct in diagnosis
b. Staging and prognosis
c. Monitoring response to therapy
d. Detection of overexpressed and abnormally expressed proteins

36. Severe combined immunodeficiency disease primarily affects
a. Macrophages, mast cells and T cells
b. T cells only
c. T cells and dendritic cells
d. T cells , B cells and in some cases NK cells

37. The antibody generated against the intrinsic factor in the gastric tissue leads to
a. Goodpasture syndrome
b. Pernicious anemia
c. Celiac disease
d. Peptic ulcers

38. The immune system cells that are NOT found at the maternal-foetal interface are
a. Uterine Natural Killer cells
b. Neutrophils
c. Macrophages
d. T cells

39. The statement that is NOT true about virus vector-based vaccines is

a. Easy to produce in culture
b. Infect broad spectrum of cell types
c. Mostly potent against protein antigens
d. Low risk of integration into chromosomal DNA

40. Parasitism can best be described as a symbiotic association in which:

a. Both symbionts benefit; usually an obligate relationship
b. One symbiont benefits, with no impact on the other
c. One symbiont benefits at the expense of the other
d. A parasite causes damage to a host

41. One of the following organisms causes streatorrhoea

a. *Entaemoeba dispar*
b. *Balantidium coli*
c. *Entamoeba coli*
d. *Giardia lamblia*

42. Daytime somnolence, confusion, coma and death points at advanced infection with

a. *Leishmania donovani*
b. *Cryptosporidium parva*
c. *Isosporacuyatenensis*
d. *Trypanosoma gambiense*

43. Cytozoic parasites live in:

a. Tissues of the host, but not within cells
b. Host cells
c. Cavities of the host
d. Lumen of the gut and blood vessels

44. Select a monoxenous parasite:

a. *Trypanosoma brucei*
b. *Trichomonas vaginalis*
c. *Plasmodium falciparum*
d. *Leishmania major*

45. Ground itch is caused by one of the following parasites

a. *Schistosoma mansoni*

b. *Schistosoma haematobium*

c. *Ancylostoma duodenale*

d. *Trichuris trichuira*

46. One of the following helminths causes rectal prolapse

a. *Enterobius vermicularis*

b. *Strongyloidesstercoralis*

c. *Ancylostoma duodenale*

d. *Trichuiristrichuria*

47. Splenomegaly may not result from infection with

a. *Ascaris lumbricoides*

b. *Plasmodium falciparum*

c. *Paragonimuswestermanni*

d. *Leishmania donovani*

48. ONE of the following infections causes Loefflers' syndrome

a. *Hymenolepisdiminuta*

b. *Taenia solium*

c. *Ascaris lumbricoides*

d. *Strongyloidesstercoralis*

49. Trichiuriasis is mainly characterized by

a. Biliary blockage and jaundice

b. Pruritis ani

c. Intestinal obstruction

d. Rectal prolapse

50. One of the following is not a manifestation of *Schistosoma haematobium* infection

a. Blood in urine

b. Blood in stool

c. Painful micturition

d. Regular and urgency of urination

51. One of the following cestode is associated with fresh water fish

a. *Diphyllobothrium latum*
b. *Taenia solium*
c. *Taenia saginata*
d. *Hymenolepis nana*

52. One of the following parasites is likely to cause intestinal occlusion

a. *Schistosoma haematobium*
b. *Clonorchis sinensis*
c. *Fasciola gigantica*
d. *Fasciolopsis buski*

53. Cysticercosis is caused by ingestion of:

a. *Taenia saginata eggs*
b. *Taenia solium eggs*
c. *Taenia saginata larvae*
d. *Taenia solium larvae*

54. One of the following drugs is not used in the treatment of infection with cestodes

a. Suramin
b. Niclosamide
c. Prazequantel
d. Albendazole

55. Cimicidosis refers to infestation with

a. Jiggers
b. Maggots
c. Lice
d. Bedbugs

56. One of the following is not true about the *triatomine* bug

a. Transmit human African trypanosomiasis
b. Feeds on blood vessels in the lips
c. Defecates in wounds created during feeding
d. Delivers painful attack on the host at night

57. The following can be attributed to sandflies except one:
    a. Transmit Kala-azar
    b. Both males and females suck blood
    c. Creates a wound before sucking blood
    d. Injects host with biochemicals to stop blood clotting
58. Fleas are hosts to oneof the following helminths
    a. *Dipylidium caninum*
    b. *Hymenolepisdiminuta*
    c. *Wuchereriabancrofti*
    d. *Diphyllobothrium latum*
59. One of the following is not true about *Schistosoma mansoni*
    a. The male lies in the gynecorphoral canal of female
    b. The egg has a lateral spine
    c. The egg is embryonated
    d. The egg hatches on contact with fresh water
60. Pediculosis is caused by
    a. Lice
    b. Bedbugs
    c. Fleas
    d. Maggots
61. Each of the following diseases is transmitted by mosquitoes except:
    a. *dengue fever*
    b. *Filariasis*
    c. *Fascioliasis*
    d. *Chikungunya*
62. Pigs or dogs are the sources of human infection by each of the following parasites except:
    a. *Echinococcus granulosus*
    b. *Taenia solium*
    c. *Ascaris lumbricoides*
    d. *Trichinella spiralis*

63. The trophozoite of *Entamoeba histolytica* feed on

a. Only mucosa and submucosa of the colon
b. Erythrocytes, mucosa and submucosa of the colon
c. Only blood
d. Intestinal food

64. Blackwater is a complication resulting from infection with

a. *Trypanosoma cruzi*
b. *Plasmodium falciparum*
c. *Leishmania major*
d. *Toxoplasma gondii*

65. This virus is not presently circulating in the human population

a. H1N1
b. H2N2
c. H3N2
d. H1N2

66. This statement is correct with regards to most RNA viruses:

a. Double-stranded RNA genome
b. Replicate in the cytosol
c. Icosahedral symmetry
d. Use host tRNA as a primer for genome replication

67. The following is the first step in the expression of reovirus proteins during infection

a. Translation of the incoming RNA segment into protein.
b. Copying of the positive strand of each genome into a negative strand.
c. Copying of the negative strand of each segment into an mRNA.
d. Capping of the positive strand of each genome segment.

68. The role of polypurine tract in retrovirus replication is

a. Serves as template for positive strand synthesis
b. Endonuclease activity of the RNA:DNA hybrid
c. Serves as a primer for positive strand synthesis
d. Serves as a terminator for the positive strand synthesis

69. One of the following immunoglobulin molecule is first to be made during an immune response to a virus infection

    a. IgA
    b. IgD
    c. IgG
    d. IgM

70. Tests for SARS-COV2 can be obtained from the following specimens except

    a. Serum
    b. Semen
    c. Nasal swab
    d. Anal swab

71. Microcephaly is a neurologic manifestation that is mainly associated with the following virus:

    a. Human Immunodeficiency Virus
    b. Hepatitis B Virus
    c. Coronavirus
    d. Human cytomegalovirus

72. Human Cytomegalovirus mainly goes into latency in one of the following:

    a. Dorsal root ganglion
    b. Liver
    c. Bone marrow
    d. Monocytes

73. One of the following statements is incorrect with regards to the pathogenesis of simian immunodeficiency virus.

    a. The virus is less virulent in chimps when compared to HIV in humans
    b. It is pathogenic in chimps like AIDS is in humans
    c. Transmission rates per coital act is similar to HIV in humans
    d. Has close sequence similarities to HIV

74. One of the following is the leading cause of viral-induced cirrhosis

a. Yellow fever
b. Hepatitis A
c. Herpes simplex 2 virus
d. Hepatitis C

75. Prokaryotic cells are more resistant to osmotic shock than eukaryotic cells because

a. Their cell wall is composed of peptidoglycan
b. They are selectively permeable
c. They contain osmoregulating porins
d. They block water molecules from entering the cell

76. ONE of the following groups of organisms does not have superoxide dismutase

a. Aerobes
b. Facultative anaerobes
c. Obligate anaerobes
d. Capnophiles

77. One of the following is an extracellular substance that allows bacteria to stick firmly to medical devices

a. Axial filament
b. Endotoxin
c. Flagella
d. Glycocalyx

78. The scientist who in 1978 demonstrated that materials from cowpox could be substituted for small pox for vaccination was:

a. Louis Pasteur
b. Edward Jenner
c. Emil Behring
d. Daniel Salmon

79. Safety measures in a clinic or laboratory are important in preventing:

a. Exposure to contaminated specimens
b. Interrogation of a risky patient by the nurse
c. Use of available space

d. Prolonged treatment of the patient with the appropriate medication

80. The special selective medium used to promote the growth of lactobacilli is
    a. CLED agar
    b. Tomato juice agar
    c. Blood agar
    d. Peptone
81. The most appropriate test to distinguish *Streptococcus pyogenes* from other β-hemolytic streptococci is
    a. Ability to grow in 6.5% NaCl
    b. Hydrolysis of esculin in the presence of bile
    c. Inhibition by bacitracin
    d. Inhibition by optochin
82. The virulence factor produced by *Staphylococcus aureus* that prevents the activation of complement and thereby reduces opsonization by C3b is
    a. Catalase
    b. Coagulase
    c. Endotoxin
    d. Protein A
83. ONE of the following *Bacillus spp* is not a commonly isolated pathogenic bacteria
    a. Bacillus cereus
    b. Bacillus thuringiensis
    c. Bacillus thermophilus
    d. Bacillus anthracis
84. One of the followingsyndromes is most commonly associated with complications of PID caused by *Chlamydia trachomatis*
    a. Blue baby syndrome
    b. Fitz-Hugh Curtis Syndrome
    c. Toxic shock syndrome
    d. Leaky gut syndrome

85. The drug used for the treatment of infections associated with *Mycoplasma genitalium*is

a. Moxifloxacin
b. Ceftriaxone
c. Acyclovir
d. Retrovir

86. One of the following statements about *Actinomyces israelii* is not true.

a. Appears as branching mycelium or diphtheroid forms
b. Man is the main reservoir of infection
c. Colonies in tissue show peripheral radial "clubs"
d. The organism is a strict aerobe.

87. The bacterium that causes lung infection and is the most common non-tuberculous mycobacterial infection associated with AIDS patients is

a. Mycobacterium avium complex
b. Mycobacterium leprae
c. Mycobacterium gordonae
d. Mycobacterium gastri

88. Characteristic infection caused by *Nocardia asteroides* is:

a. Diarrhea
b. Secondary dissemination to liver
c. Brain abscess
d. Colonic diverticula

89. Invasion of and intracellular growth in the epithelial cells lining the intestine is a characteristic of:

a. *Salmonella typhi*
b. *Shigella dysenteriae*
c. *Salmonella typhimurium*
d. Enteroinvasive*Escherichia coli*

90. ONE of the following combination therapy is used for the treatment of Tularemia

a. Aminoglycosides and Tetracycline
b. Clarithromycin and Omeprazole
c. Erythromycin and Tetracycline

d. Amoxycillin and Metronidazole

91. *Bordetella pertussis* produces a toxin which
    a. Inhibits protein synthesis
    b. Alters electrolyte balance in epithelial cells
    c. Causes a rash
    d. Prevents nerve impulse transmission
92. Uropathogenic*Escherichia coli* causes a wide range of urinary tract infections except:
    a. Pyelonephritis
    b. Cystitis
    c. Salpingitis
    d. Urethritis
93. ONE of the following is not a classification of surgical site wounds.
    a. Dirty infected wound
    b. Clean contaminated wound
    c. Clean wound
    d. Contaminated infected wound
94. Resistance of *Staphylococcus aureus* to Erythromycin results from:
    a. Altered receptor on 50S subunit due to methylation of a 23S rRNA
    b. Altered receptor on 30S subunit due to acetylation of 23S rRNA
    c. Change in the peptide component of peptidoglycan from d-alanyl-d-alanine
    d. Utilization of preformed folic acid instead of extracellular PABA
95. An 18-year-old with a history of dysuria and greenish vaginal discharge goes for a medical checkup. The Gram-stained smear of the exudate contains neutrophils and many intracellular Gram-negative diplococci. He is treated with Ceftriaxone and does not get better. On his second visit the Gram-stained exudate contains neutrophils, without any bacteria and no growth was seen on blood agar or chocolate agar. The most likely causative organism was.
    a. *Neisseria meningitidis* and *Chlamydia trachomatis*
    b. *Haemophilus ducreyi*and *Chlamydia trachomatis*
    c. *Neisseria gonorrhea* and *Mycoplasma hominis*
    d. *Gardnerella vaginalis* and *Mobiluncuscurtisii*

96. You have made a clinical diagnosis of meningitis in a 50-year-old immunocompromised woman. A latex agglutination test on the spinal fluid for capsular polysaccharide antigen is positive. Of the following organisms, the most likely cause is

a. *Histoplasma capsulatum*
b. *Cryptococcus neoformans*
c. *Aspergillus fumigatus*
d. *Candida albicans*

97. Fungal cells that reproduce by budding are seen in the infected tissues of patients with:

a. Candidiasis, cryptococcosis, and sporotrichosis
b. Mycetoma, candidiasis, and mucormycosis
c. Tinea corporis, tinea unguium, and tinea versicolor
d. Sporotrichosis, mycetoma, and aspergillosis

98. Aspergillosis is recognized in tissue by the presence of:

a. Budding cells
b. Septate hyphae
c. Metachromatic granules
d. Pseudohyphae

99. Each of the following statements concerning *Coccidioides immitis*is correct except:

a. The mycelial phase of the organism grows primarily in the soil, which is its natural habitat.
b. In the body, spherules containing endospores are formed.
c. A rising titer of complement-fixing antibody indicates disseminated disease.
d. Most infections are symptomatic and require treatment with amphotericin

100. The key test is used to definitively identify *Candida albicans* is

a. Gram stain
b. Germ tube
c. Colony morphology
d. KOH preparation