

UNIVERSITI SAINS MALAYSIA

First Semester Examination
Academic Session of 1994/95

October/November 1994

FCP553 : Pharmacotherapeutics III .

(3 hours)

This examination consists of two sections.

Section A consists of 100 multiple choice questions.

Section B consists of two (2) long questions.

Answer ALL questions.

Answers to section A must be entered into the scripts provided.

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Section A

Mark (/) on the opposite space corresponding to a correct or most appropriate answer for each question. Each question has only one correct or most appropriate answer or statement.

1. Which of the following is/are true about nosocomial infection?

- (i) Its source is exogenous.
- (ii) The most common is urinary tract infection.
- (iii) It does not occur via airborne spread.
- (iv) The most important route of infection is via contact from person to person.

..... (a) (i) only.

..... (b) (ii) and (iv) only.

..... (c) (i), (ii) and (iii) only.

..... (d) (i), (ii), (iii) and (iv).

2. Which of the following result(s) in a failure to culture or isolate a suspected pathogen?

- (i) Antibiotic therapy prior to specimen collection.
- (ii) Culturing specimen in wrong medium.
- (iii) Delayed transport and processing of specimen.
- (iv) The specimen is from an immunocompromised patient.

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- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

3. Which of the following laboratory tests is/are useful as aid(s) in antimicrobial therapy?

- (i) Disc diffusion test.
- (ii) The 'E' test for MIC.
- (iii) Assay on antibiotic concentration in serum.
- (iv) Sterility testing.

- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

4. Which of the following statements is/are true?

- (i) Detection of IgM indicates a current infection.
- (ii) All bacterial pathogens can be cultured or isolated using artificial media.
- (iii) Detection of microorganism by microscopy requires a living organism.
- (iv) Detection of microbial antigens is not useful in the diagnosis of infectious diseases.

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- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

5. Which of the following is/are (a) mechanism(s) of antimicrobial resistance?

- (i) The production of enzymes that destroy the active drug.
- (ii) The development of an altered structure of the target for the drug.
- (iii) The development of an altered metabolic pathway that by passes the reaction inhibited by the drug.
- (iv) The ability of the microorganism to reside within cells.

- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

6. Which of the following is/are essential for the prevention and control of bacterial resistance to antibiotics in hospitals?

- (i) Unrestricted use of broad spectrum antibiotics.
- (ii) Rational use of antibiotics.
- (iii) The use of antibiotics only after culture and sensitivity is known.
- (iv) Availability of expert advice on infectious disease.

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- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

7. Which of the following is/are (a) means for bacteria to acquire antibiotic resistance?

- (i) Mutation.
- (ii) Chromosomes.
- (iii) Plasmids.
- (iv) Lysis.

- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

8. Which of the following is/are (a) mode(s) of transmission of malaria?

- (i) Blood transfusion.
- (ii) Female Aedes mosquitoes.
- (iii) Intimate sexual contact.
- (iv) Congenital.

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- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

9. Which of the following is/are true about malaria?

- (i) The life cycle of a malaria parasite requires residence in both human and mosquitoes.
- (ii) Relapse of malaria is due to Plasmodium vivax.
- (iii) Severe or complicated malaria is usually due to Plasmodium falciparum infection.
- (iv) Demonstration of malaria parasite in blood film is not necessary for confirmation of diagnosis.

- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

10. Which of the following is/are(a) suitable measure(s) for the prevention and control of malaria?

- (i) Chemoprophylaxis.
- (ii) Personal protection measures against mosquitoes.
- (iii) Mosquito control.
- (iv) Jungle clearing.

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- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

11. Which of the following antimalarial drugs can be used for chloroquine-resistant Plasmodium falciparum?

- (i) Quinine.
- (ii) Artemeter.
- (iii) Mefloquine.
- (iv) Primaquine.

- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

12. Which of the following statements is/are true?

- (i) Chloroquine is safe in pregnancy but for the risk of middle ear deafness during the first trimester.
- (ii) Primaquine can give rise to acute massive hemolysis in G6PD deficient children.
- (iii) Failure of chemoprophylaxis against malaria is due to the presence of chloroquine-resistant Plasmodium falciparum.
- (iv) Plasmodium malariae is not found in Malaysia.

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- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

13. Which of the following is/are true regarding the pathogen in spontaneous bacterial peritonitis or primary peritonitis?

- (i) In a diabetic patient, the common pathogen is Pseudomonas aeruginosa.
- (ii) In primary peritonitis of childhood the common pathogen is Streptococcus pneumoniae.
- (iii) In a nephrotic patient, the common pathogen is Streptococcus pyogenes.
- (iv) In the cirrhotic patient, the most common organism is Escherichia coli.

- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

14. Which of the following is/are (a) cause (s) of peritonitis?

- (i) Rupture of viscus.
- (ii) Surgical postoperative leak.
- (iii) Pelvic inflammatory disease.
- (iv) Duodenal aspiration.

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- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

15. Which of the following is/are (an) effective measure(s) in controlling and preventing nosocomial infections?

- (i) Hand washing before and after contact with patients.
- (ii) Source isolation.
- (iii) Protective isolation.
- (iv) Appropriate surgical antibiotic prophylaxis.

- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

16. Which of the following pairs is correct?

- (a) Indomethacin — Causes frontal headache.
- (b) Sulindac — Long half-life permits daily or twice daily dosing.
- (c) Naproxen — Better tolerated than aspirin by some patients.
- (d) Piroxicam — Causes less gastrointestinal disturbance than aspirin.

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17. Which of the following non-steroidal antiinflammatory drugs (NSAIDs) is contraindicated in children for the treatment of juvenile rheumatoid arthritis?

- (a) Naproxen.
- (b) Indomethacin.
- (c) Naproxen sodium.
- (d) Piroxicam.

18. Which of the following drugs is ineffective in healing or preventing gastrointestinal erosion during ongoing NSAID therapy?

- (i) Ranitidine.
 - (ii) Sucralfate.
 - (iii) Omeprazole.
 - (iv) Misoprostol.
- (a) (i) only.
 - (b) (i) and (ii) only.
 - (c) (i), (ii) and (iii) only.
 - (d) (i), (ii), (iii) and (iv).

19. Which of the following is/are risk factors for NSAIDs gastropathy?

- (i) Old age.
- (ii) Duration of therapy.
- (iii) Concomitant steroid therapy.
- (iv) Smoking.

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- (a) (i) only.
- (b) (i) and (ii) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

20. Which of the following NSAIDs is relatively safe in patients with impaired renal functions?

- (a) Indomethacin.
- (b) Sulindac.
- (c) Piroxicam.
- (d) Tolmetin.

21. Which of the following statements regarding NSAIDs therapy is NOT true?

- (a) Diflunisal shows less gastrointestinal toxicity than aspirin.
- (b) Misoprostol may reduce indomethacin levels by 20 - 60%.
- (c) Sulindac may be an alternative drug in patients with a history of hemorrhage.
- (d) Piroxicam is more effective than aspirin in the treatment of osteoarthritis.

22. Which of the following NSAIDs should be avoided in patients with a history of psychosis?

- (i) Indomethacin.
- (ii) Sulindac.
- (iii) Tolmetin.
- (iv) Zomepirac.

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- (a) (i) only.
- (b) (i) and (ii) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

23. Which of the following antiemetic drugs is not recommended for use in children receiving chemotherapy?

- (a) Ondansetron.
- (b) Metoclopramide.
- (c) Prochlorperazine.
- (d) Dexamethasone.

24. What is/are the advantage(s) of ondansetron compared to the conventional antiemetic agents?

- (i) Effectiveness in preventing acute chemotherapy-induced emesis.
- (ii) Low incidence of extra pyramidal side effects (ESPSE).
- (iii) Simple administration regimen.
- (iv) Effectiveness in postoperative emesis.

- (a) (i) only.
- (b) (i) and (ii) only.
- (c) (i), (ii) and (iii) only.
- (d) (i), (ii), (iii) and (iv).

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25. Which of the following is correctly paired?

- (a) Ondansetron — Parkinsonism effects.
- (b) Metoclopramide — Headache and constipation.
- (c) Dexamethasone — Insomnia and mood change.
- (d) Prochlorperazine — Perioral itch.

26. Which of the following statements regarding infective endocarditis is NOT true?

- (a) It is now primarily a disease of the elderly and of drug abusers.
- (b) Open heart surgery may predispose to infective endocarditis either early or late in the postoperative period.
- (c) Hyperalimentation catheters may give rise to fungal sepsis that is a potential cause of nosocomial endocarditis.
- (d) There is a high female preponderance in infective endocarditis.

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27. Pharmacotherapy consideration in the treatment of infective endocarditis (IE) may include all of the following, except.....

- (a) Bactericidal activity in a 1:8 dilution of the patient's serum against the infecting organism is considered an acceptable level.
- (b) A two-weeks course of antibiotic therapy may be considered in cases where the infected focus can be identified.
- (c) The presence of fever in the face of adequate serum bactericidal activity could reflect drug reaction.
- (d) A high dose cloxacillin therapy is required in cases of IE cause by Staphylococcus epidermidis.

28. What is the appropriate choice of antibiotic in the treatment of penicillin allergic patient with Staphylococcus aureus endocarditis?

- (a) Erythromycin.
- (b) Cefazolin.
- (c) Vancomycin.
- (d) Ceftriaxone.

29. Which of the following pairs of antibiotics should not be used to treat enterococcal endocarditis?

- (a) Ampicillin + Gentamicin.
- (b) Vancomycin + Gentamicin.
- (c) Cloxacillin + Gentamicin.
- (d) Cefotaxime + Gentamicin.

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30. What is the most common organism causing endocarditis in drug abusers?
- (a) Streptococcus viridan.
 - (b) Enterococcus faecalis.
 - (c) Streptococcus bovis.
 - (d) Staphylococcus aureus.
31. What is the most likely organism causing meningitis in a 3 year-old child?
- (a) Klebsiella spp.
 - (b) Hemophilus influenzae.
 - (c) N. meningitidis.
 - (d) S. pneumoniae.
32. Which of the following factors does not affect the penetration of antibiotics into cerebrospinal fluids (CSF)?
- (a) Size of the molecule.
 - (b) Degree of protein binding.
 - (c) Volume of distribution.
 - (d) Drug half-life.

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33. Which of the following statements regarding the pharmacotherapy of bacterial meningitis is NOT true?

- (a) A high CSF concentration of penicillin and cephalosporin may predispose patients to neurotoxicity.
- (b) The peak antibiotic concentration in the CSF is the major variable that determines efficacy and not the antibiotic dosing schedule.
- (c) The antibiotic dose should be reduced when steroids are concomitantly administered.
- (d) The CSF antibiotic concentrations should be at least 10 fold more than the minimum bacteriacidal (MIC) of the infecting pathogens.

34. Which of the following antibiotics will likely achieve therapeutic CSF concentrations regardless of the state of meninges?

- (a) Gentamicin.
- (b) Sulfamethoxazole.
- (c) Cefotaxime.
- (d) Imipenem.

35. Which of the following antibiotics is not active against Listeria monocytogenes?

- (a) Penicillin G.
- (b) Ampicillin.
- (c) Cefotaxime.
- (d) Trimethoprim/Sulfamethoxazole.

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36. Which of the following drugs used in the treatment of hyperthyroidism also inhibit(s) the peripheral conversion of T4 to T3?

- (i) Methimazole.
- (ii) Propranolol.
- (iii) Iodide.
- (iv) Propylthiouracil.

- (a) (i) and (iii) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (iv) only.

37. Which of the following drugs is used to increase the firmness of thyroid gland before thyroidectomy?

- (a) Methimazole.
- (b) Propranolol.
- (c) Lugols solution.
- (d) Propylthiouracil.

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38. Which of the following would be the treatment of choice of hyperthyroidism in a pregnant woman?

- (a) ^{131}I Iodine.
- (b) Lugols solution.
- (c) Propylthiouracil.
- (d) Thyroidectomy.

39. Which of the following would be the best choice for initiating hypothyroid treatment in a 65 year old patient with cardiac problem?

- (a) 0.02 mg L-thyroxin OM x 1/52.
- (b) 0.01 mg Liothyronine OM x 1/52.
- (c) 0.1 mg L thyroxin OM x 1/52.
- (d) 0.05 mg Liothyronine OM x 1/52.

40. Which of the following is not commonly used to monitor patients receiving replacement therapy for hypothyroidism?

- (a) Thyrotropin stimulation test.
- (b) Total thyroxin.
- (c) Free thyroxin index.
- (d) Triiodothyronine resin uptake.

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41. Which of the following thyroid function tests is/are altered by oral contraceptives?

- (i) ^{131}I uptake.
- (ii) TSH.
- (iii) FT4I.
- (iv) RT3U.

- (a) (i) and (iii) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (iv) only.

42. The treatment regimens for thyroid storm usually include..

- (i) propylthiouracil.
- (ii) iodide.
- (iii) hydrocortisone.
- (iv) reserpine.

- (a) (i) and (iii) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (iv) only.

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43. Which of the following steroid preparations is recommended for correcting the cortisol deficit in adrenal crisis?

- (a) Desoxycorticosterone.
- (b) Hydrocortisone hemisuccinate.
- (c) Dexamethasone.
- (d) Fludrocortisone.

44. Which of the following drugs is employed in both the treatment as well as in the diagnosis of Cushing Syndrome?

- (a) Mitotane.
- (b) Metyrapone.
- (c) Aminoglutethimide.
- (d) Cyproheptadine.

45. The major adverse reaction of mitotane is

- (a) renal problem.
- (b) central nervous system reactions.
- (c) dermatological reactions.
- (d) gastrointestinal problems.

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46. Which of the following statements are true regarding chloramphenicol disposition?

- (i) It is distributed throughout the body.
 - (ii) Penetration across inflammed blood brain barrier is excellent.
 - (iii) It has a high protein binding.
 - (iv) It is stored in fatty tissues.
- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

47. Which of the following statements regarding adverse reactions (ADR) to chloramphenicol is/are true?

- (i) Aplastic anemia occurs only in genetically predisposed patients.
 - (ii) Close monitoring of blood levels can prevent aplastic anemia.
 - (iii) The gray baby syndrome is associated with the aplastic anemia induced by chloramphenicol.
 - (iv) Prolonged use will increase the risk of hematological side-effects.
- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

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48. Which of the following organisms is/are usually sensitive to chloramphenicol?

- (i) Gm(+)ve aerobic organisms.
- (ii) Gm(+)ve anaerobic organisms.
- (iii) Salmonella species.
- (iv) Rickettsia.

- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

49. For which of the following conditions is/are treatment(s) with trimethoprim/sulphamethoxazole appropriate?

- (i) Pneumocystis carinii pneumonia in immunocompromised patient.
- (ii) Community acquired urinary tract infection.
- (iii) Management of urinary tract infections caused by Pseudomonas.
- (iv) Chronic urinary tract infection in a female patient.

- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

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50. Which of the following statements regarding therapy of rheumatoid arthritis is/are true?

- (i) Combination of a NSAID and paracetamol is recommended for a new case.
- (ii) Steroids are more effective than NSAIDs.
- (iii) Combination of two NSAIDs is effective in resistant case.
- (iv) Gold therapy should be instituted only in resistant case.

- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

51. Which of the following is/are a goal(s) of therapy for rheumatoid arthritis?

- (i) To reduce joint inflammation.
- (ii) To prevent further joint deformities.
- (iii) To improve patient's social life.
- (iv) To cure the joint damage.

- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

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52. Which of the following statements is/are true regarding the use of chloroquine in rheumatoid arthritis?

- (i) It is useful in patient with psoriasis.
- (ii) It is used in a patient resistant to NSAID.
- (iii) It can cure the rheumatoid arthritis.
- (iv) Combination with steroid is always recommended.

- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

53. Which of the following factors is/are associated with osteoarthritis?

- (i) Gender.
- (ii) Age.
- (iii) Diet.
- (iv) Social life.

- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

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54. Which of the following statements are true regarding opportunistic fungal infections in patients with T-helper cell defect?

- (i) For HIV patients with cryptococcosis, maintenance therapy should continue indefinitely.
 - (ii) Initial treatment for coccidioidomycosis is amphotericin B.
 - (iii) Initial treatment for cryptococcosis is amphotericin B and fluconazole.
 - (iv) Initial treatment for histoplasmosis is fluconazole.
- (a) (i) and (ii) only
- (b) (i) and (iii) only
- (c) (ii) and (iv) only
- (d) (i), (ii), (iii) and (iv).

55. Which of the following statements regarding colchicine in the management of gout is/are true?

- (i) It is effective as an abortive therapy.
 - (ii) It is useful as a prophylaxis.
 - (iii) Excessive dose of colchicine causes cinchonism.
 - (iv) It acts by reducing uric acid production.
- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

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56. Which of the following statements regarding allopurinol in the management of gout is/are true?

- (i) It acts by reducing uric acid production.
- (ii) It is useful for prophylactic therapy.
- (iii) It is effective in abortive therapy.
- (iv) It is more effective than colchicine in the treatment of acute gouty arthritis.

- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

57. Which of the following is an appropriate indication of fluoroquinolones?

- (a) Empirical therapy of otitis media caused by Streptococcus pneumoniae.
- (b) Empirical therapy of anaerobic bacteremia.
- (c) Empirical therapy of pharyngitis caused by β -hemolytic streptococcus group A.
- (d) Empirical therapy of bacterial diarrhea.

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58. Which of the following quinolones produces the most pronounced interaction with theophylline?

- (a) Ciprofloxacin.
- (b) Norfloxacin.
- (c) Ofloxacin.
- (d) Enoxacin.

59. Which of the following quinolones is the most active in vitro against Pseudomonas aeruginosa?

- (a) Norfloxacin.
- (b) Enoxacin.
- (c) Temafloxacin.
- (d) Ciprofloxacin.

60. Which of the following statements regarding the fluoroquinolones is not true?

- (a) They inhibit bacterial DNA gyrase and are bactericidal.
- (b) All are contraindicated in children, adolescents and pregnant or breast-feeding women.
- (c) All have excellent absorption after oral administration.
- (d) Metabolism accounts for more than 70% of elimination and altered metabolism is likely to affect their clinical efficacy.

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61. Which of the following statements regarding aztreonam is true?

- (a) It has a greater antimicrobial spectrum than gentamicin.
- (b) It is more nephrotoxic than the aminoglycosides.
- (c) The recommended dosing interval in a patient with normal renal function is every 6 hourly.
- (d) The strictly gram-negative aerobic spectrum of aztreonam limits its usefulness as a single empirical agent.

62. Which of the following statements regarding the administration of vancomycin is/are true?

- (i) Intravenous vancomycin should not be given as a bolus.
- (ii) Intravenous vancomycin is ineffective against Clostridium difficile.
- (iii) Oral absorption is excellent.
- (iv) Oral vancomycin is always associated with pseudomembranous colitis.

- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

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63. Which of the following statements regarding the preparation of trimethoprim/sulfamethoxazole (TMP/SMX) is/are true?

- (i) They come in a fixed ratio of 1:5 (TMP/SMX).
 - (ii) The syrup contains 40 TMP and 200 SMX in each 5 ml.
 - (iii) The tablet contains 400 TMP and 80 SMX.
 - (iv) The parenteral preparation contains 400 TMP and 80 SMX in each 5 ml.
- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

64. Which of the following statements regarding rheumatoid arthritis is/are true?

- (i) All patients with a positive rheumatoid factor will develop rheumatic arthritis in life.
 - (ii) Joint inflammation usually begins in the small joint.
 - (iii) The joint pain is usually bilateral.
 - (iv) High uric acid is usually the main diagnostic parameter.
- (a) (i) and (ii) only.
- (b) (i), (ii) and (iii) only.
- (c) (i), (ii), (iii) and (iv).
- (d) (iv) only.

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65. Which of the following medical problems increases the risk of skin rash in patients who are taking penicillin?

- (a) Ulcerative colitis.
- (b) Septic arthritis.
- (c) Platelet dysfunction.
- (d) Infectious mononucleosis.

66. Which of the following penicillins can cause a significant increase in liver enzymes?

- (a) Ampicillin.
- (b) Azlocillin.
- (c) Piperacillin.
- (d) Cloxacillin

67. Which of the following penicillins is active against Pseudomonas aeruginosa?

- (a) Penicillin G.
- (b) Ampicillin.
- (c) Amoxicillin.
- (d) Ticarcillin.

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68. Which of the following statements regarding the penicillins is true?

- (a) Ampicillin is not acid-stable.
- (b) Penicillin G is acid-stable.
- (c) Natural penicillins are not active in vitro against Neisseria meningitidis.
- (d) Piperacillin is generally more active in vitro against some strains of citrobacter, enterobacter and serratia compared to amoxicillin.

69. Which of the following statements regarding penicillin therapy is true?

- (a) The incidence of cross-allergenicity between penicillin and cephalosporin is estimated to range from 3% to 7%.
- (b) Hypokalemia has occurred in patients receiving ampicillin and nafcillin.
- (c) All penicillins are contraindicated in pregnancy.
- (d) Intradermal penicilloyl-polylysine (PPL) can only predict types II, III and IV hypersensitivity reactions.

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70. Which of the following statements regarding imipenem is true?

- (a) It is a first line agent in documented infections due to enterobacter.
- (b) The most common side-effect is minor central nervous system reactions such as dizziness and confusion.
- (c) If renal function is normal, the dose of 250-500 mg every 12 hourly is adequate.
- (d) It is a potent inducer of beta-lactamase that can inactivate most of cephalosporins and penicillins.

71. Which of the following cephalosporins may potentially increase the risk of bleeding because of the N methylthiotetrazol(NMTT) side chain?

- (a) Cephalexin.
- (b) Cefuroxime.
- (c) Ceftriaxone.
- (d) Cefoperazone.

72. Which of the following third generation cephalosporins has good activity against Pseudomonas aeruginosa?

- (a) Cefotaxime.
- (b) Ceftizoxime.
- (c) Ceftriaxone.
- (d) Ceftazidime

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73. Which of the following cephalosporins has the longest half-life in patients with normal renal function?

- (a) Moxalactam.
- (b) Cephalexin.
- (c) Cefonicid.
- (d) Ceftriaxone.

74. Which of the following cephalosporins has no demonstrated activity against Bacteroides fragilis?

- (a) Cefoxitin.
- (b) Cefoperazone.
- (c) Cefotaxime.
- (d) Cefuroxime.

75. When selecting an antibiotic for definitive treatment, the antimicrobial agent must possess the following features except.....

- (a) activity against the likely organism.
- (b) broad spectrum of activity.
- (c) ability to reach the site of infection.
- (d) ability to attain a desired level at the target site.

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76. Which of the following is not an appropriate reason for starting combination antimicrobial therapy?
- (a) Need for synergistic effect to overcome the infection.
 - (b) Need to treat multiple pathogens.
 - (c) Need to prevent proliferation of drug-resistant organism.
 - (d) None of the above.
77. Which of the following combination antimicrobial therapies is given with the purpose of preventing proliferation of drug resistant organism?
- (a) Piperacillin and amikacin for Pseudomonas infection.
 - (b) Ampicillin and gentamicin for enterococcal infection.
 - (c) Fusidic acid and rifampicin for methicillin-resistant Staphylococcus aureus infection.
 - (d) None of the above
78. In which of the following conditions would the white blood cell count be inaccurate in monitoring for therapeutic response?
- (a) Elderly patient.
 - (b) Debilitated patient.
 - (c) Overwhelming infection.
 - (d) All of the above.

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79. Which of the following antimicrobial agents is least useful in treating infections caused by Bacteroides fragilis?

- (a) Cefotaxime.
- (b) Cefoxitin.
- (c) Metronidazole.
- (d) Clindamycin.

80. Which of the following is the drug of choice for inducing remission in a patient with severe ulcerative colitis?

- (a) Sulfasalazine.
- (b) Azathioprine.
- (c) Prednisone.
- (d) 5-Aminosalicylic acid.

81. Which of the following is the drug of choice for maintaining remission in patients with ulcerative colitis?

- (a) Prednisone.
- (b) Azathioprine.
- (c) Sulfasalazine.
- (d) Metronidazole.

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82. Which of the following is not an effect of cigarette smoking on peptic ulcer disease?

- (a) Delaying ulcer healing.
- (b) Increasing the risk and rapidity of relapse.
- (c) Decreasing emptying of stomach acid into the duodenum.
- (d) Decreasing biliary and pancreatic bicarbonate secretion.

83. Which of the following is/are not physiological defect(s) associated with duodenal ulcer?

- (i) Increased capacity to secrete gastric acid.
 - (ii) Decreased pyloric pressure at rest and in response to acid or fat in the duodenum.
 - (iii) Increased parietal cell responsiveness to gastrin.
 - (iv) Deficient mucosal resistance, direct mucosal injury or both.
-
- (a) (i) and (iii) only.
 - (b) (ii) and (iv) only.
 - (c) (i), (ii) and (iii) only.
 - (d) (iv) only.

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84. Which of the following statements is not true about diuretic therapy of ascites?

- (a) The onset of the diuretic action for spironolactone is slow.
- (b) Frusemide is the diuretic of choice.
- (c) The rate of weight loss should not exceed 1-2L/day.
- (d) The resolution of ascites may take as long as 35-40 days of continuous therapy.

85. Which of the following drug-indication pairs is incorrect for the management of liver cirrhosis?

- (a) Ethanolamine — portal hypertension.
- (b) Propranolol — portal hypertension.
- (c) Vasopressin — esophageal varices.
- (d) Ethanolamine — esophageal varices.

86. Which of the following is not a complication of vasopressin therapy of liver cirrhosis?

- (a) Severe vascular headaches.
- (b) Angina.
- (c) Strokes.
- (d) Arrhythmia.

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87. Which of the following does not help to reduce blood ammonia level in patients with liver cirrhosis?

- (a) Lactulose.
- (b) Spironolactone.
- (c) Neomycin.
- (d) None of the above.

88. Which of the following antimicrobial agents is active against most clinically significant anaerobes and coliforms?

- (a) Ciprofloxacin.
- (b) Gentamicin.
- (c) Imipenem.
- (d) Metronidazole.

89. Which of the following is/are (a) feature(s) of ulcerative colitis?

- (i) The inflammation usually involves the mucosal layer of the colon and rectum.
- (ii) The inflammation can affect any portion of the gastrointestinal tract and is patchy in nature.
- (iii) The inflammation does not extend beyond the submucosal layer.
- (iv) The inflammation is characteristically transmural with deep ulceration, adhesions and fistula formation.

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- (a) (i) and (iii) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (iv) only.

90. Which of the following describes the mode of action of amphotericin B?

- (a) It binds cytochrome P-450 enzymes and inhibits biosynthesis of ergosterol.
- (b) It binds ergosterol fungi membrane and alters its permeability.
- (c) It binds 50s ribosomal sub unit and inhibits protein synthesis.
- (d) It is deaminated to a metabolite that is toxic to the fungi.

91. Which of the following has not been implicated as a cause of hepatic encephalopathy in liver cirrhosis?

- (a) Elevated ammonia level.
- (b) Elevated aromatic amino acids.
- (c) Elevated branched chain amino acids.
- (d) None of the above.

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92. Amphotericin B is to be started in a patient with compromised renal function. You would....

- (a) reduce amphotericin B dose by 50% that of normal.
- (b) dose amphotericin B according to patients creatinine clearance.
- (c) not adjust dose and start with normal dose of Amphotericin B.
- (d) suggest to use fluconazole as an alternative since dosage adjustment in renal impairment is not required with this drug.

93. Which of the following is not true regarding antifungal drug interactions?

- (a) Concurrent antacid will reduce absorption of ketoconazole.
- (b) Cimetidine does not significantly affect the absorption of ketoconazole.
- (c) Fluconazole causes more than 50% increase in phenytoin level.
- (d) Antacid or cimetidine does not significantly affect absorption of fluconazole

94. Which of the following is not true regarding the pharmacokinetics of amphotericin B?

- (a) It is poorly absorbed from the gastrointestinal tract.
- (b) It has a large volume of distribution of approximately 4 L/kg.
- (c) It has a poor CSF penetration.
- (d) It can be removed by hemodialysis.

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95. Which of the following is/are (an) appropriate monitoring parameter(s) for amphotericin-b?

- (i) Daily and cumulative dose.
- (ii) Renal function.
- (iii) Serum electrolytes.
- (iv) Hemoglobin.

- (a) (i) and (ii) only.
- (b) (i) and (iii) only.
- (c) (ii) and (iv) only.
- (d) (i), (ii), (iii) and (iv).

96. Which of the following is true regarding amphotericin-b administration?

- (i) 500 ml to 1 L saline should be infused before its administration to reduce renal toxicity.
- (ii) It should be infused over 4-6 hours.
- (iii) Continuous irrigation of amphotericin-b can be used with minimal absorption and toxicity.
- (iv) Premedication is necessary before a test dose of amphotericin-b is given.

- (a) (i) and (ii) only.
- (b) (ii) and (iv) only.
- (c) (i), (ii) and (iii) only.
- (d) (I), (ii), (iii) and (iv).

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97. Which of the following patients are at risk of fungal infections?

- (i) Cancer patients (antineoplastic use).
- (ii) Patients given wide-spectrum antibiotic.
- (iii) Intravenous drug abusers.
- (iv) Diabetics.

- (a) (i) and (ii) only.
- (b) (i) and (iii) only.
- (c) (ii) and (iv) only.
- (d) (i), (ii), (iii) and (iv).

98. Which of the following is not true regarding invasive candidiasis?

- (i) The only proven effective treatment is amphotericin-b.
- (ii) It is the most common opportunistic fungal infection.
- (iii) The most common organism is Candida albicans.
- (iv) Candida tropicalis is more resistant to amphotericin-b than Candida albicans.

- (a) (i) and (ii) only.
- (b) (i) and (iii) only.
- (c) (ii) and (iv) only.
- (d) (i), (ii), (iii) and (iv).

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99. Which of the following is an appropriate measure in the management of infections with *Candida* spp. of indwelling intravenous catheters?

- (a) The removal of catheter.
- (b) The administration of amphotericin B whether or not patient is neutropenic.
- (c) The addition of flucytosine to amphotericin B if organism is *Candida tropicalis*.
- (d) All of the above.

100. Which of the following statements are true regarding invasive aspergillosis?

- (i) The drug of choice for its treatment is flucytosine.
 - (ii) Corticosteroid therapy is a risk factor for this infection.
 - (iii) Patients usually present with brain lesions.
 - (iv) Rifampicin may be added for synergistic effect.
-
- (a) (i) and (ii) only
 - (b) (i) and (iii) only
 - (c) (ii) and (iv) only
 - (d) (i), (ii), (iii) and (iv).

(50 marks)

...44/-

SECTION B**QUESTION 1**

HM, a 45 year old female, presented to the emergency room complaining of a fever, headache, fatigue, muscle weakness and mild drowsiness of one week duration. The symptoms were associated with early morning vomiting and sudden blurring of the vision. The medical and medication history was not significant for any chronic diseases, ear problem, or head trauma. On physical examination, she was found to be conscious and alert but neck stiffness was noted.

Initial laboratory results were as follows:

WBC	11200 mm ³ (PMN 83%; Lymph 16%; Mono 1%; Eos 0%)
RBC	440,000 mm ³
HB	12.2 g/dL
HCT	37.2 %
Platelet	448000 mm ³
Na	137 mmol/L
K	3.1 mmol/L
Urea	3.0 μmol/L
Creatinine	78 μmol/L

- A. What are your comments on the initial laboratory results?

(5 Marks)

On admission the patient was given the following therapy:

Intravenous Crystalline Penicillin	4 Mega Unit Q 6h.
Intravenous Chloramphenicol	1 gm Q 6h.
Intravenous Mannitol 20%	100 - 200 ml.
Mist. Potassium chloride	2 gm BID.
Intravenous Diazepam	5 mg stat.
Tab. Dexamethasone	2 mg TDS.

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- B. Why was the above antibiotic combination chosen for initial therapy?

(5 Marks)

Her CSF biochemistry and culture results were as follows:

Appearance	Clear.
Cell count	PMN 10, Lymph. 2
Gram stain	No organisms seen.
Indian Ink stain	No Cryptococcus seen.
Latex agglutination test	Negative for all primary bacteria
CSF culture	Cryptococcus neoformans.
Protein	70 mg/L.
Glucose	2.3 $\mu\text{mol/L}$
Globulin	-ve.

- C. What are your comments on the CSF results?

(5 Marks)

- D. Intravenous amphotericin B and intravenous 5-flucytocin were ordered for HM.

Was this an appropriate choice of an antibiotic?

Give your reasons and discuss how you would monitor the therapy prescribed.

(10 Marks)

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QUESTION 2

Mr. RL is a 29-year old (weight=55 kg, height=6 feet and 4 inches) man who presented to HUSM a day earlier. He complained of a two-month history of fatigue, malaise, anorexia and a two-week history of fever, chills, night sweats, nausea and vomiting. He formerly abused drugs and over the past week he noticed that his finger tips were swollen, tender and there were a small dark lesion on his palm. He lost about 10 kg of weight over the past two months.

Past Medical History:

1. Formerly abused intravenous cocaine but has completed a rehabilitation program.
2. Non-specific urethritis 6 months prior to admission.
3. History of "Shortness Of Breath", dizziness, numbness, tingling sensation and slurred speech 8 months prior to admission.

Social History:

Smokes 2 pack per day for past 15 years, now less than 1 pack per day.

Medication History:

Paracetamol tab. PRN headache.

Pharmacological review of system:

VS: BP 120/70 mm Hg
HR 100 /min.
T 38.5°C

HEENT: Negative for Roth spot and conjunctiva emboli.

CVS: DRNM, no JVP and bruits.
ECG-normal sinus rhythm.

CHEST: Clear unremarkable with normal heart size from Chest X-ray.

Extremities: Skin petechiae seen on dorsum of left hand, 2 mm lesions with purplish colour on palms bilaterally.

Reviews on other organ systems were unremarkable.

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Laboratory results:

Na ⁺	K ⁺	Cl ⁻	Urea	RBS
137 mmol/L	4.4 mmol/L	102 mmol/L	6.7 μmol/L	5.5 μmol/L

WBC	Hb	UA	ABG	PFT
7500/mm ³ PMN- 52 Band- 8 L- 31 M-8 E-1	14.6 g/dL	1+ protein 2+ Heme 3-5 RBC	pH 7.47 pCO ₂ 37.8 pO ₂ 69.8 HCO ₃ 27.6	normal

Culture and sensitivity: negative for blood and urine; Potassium Hydroxide for fungi also negative.
--

Medical Problems lists:

1. To rule out sub-acute endocarditis with sign and symptoms.
2. Abnormal arterial blood gas.

A. What are the antimicrobial-related problems in Mr. RL?

(1 Marks)

B. What would be the most likely pathogen to cause endocarditis in RL?

(1 Marks)

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- C. Provide a list of antimicrobial agents that would be useful to resolve the infectious problem in the patient.

(8 Marks)

- D. On the second day of hospital treatment Mr. RL developed urticaria and skin rash. This patient was most likely allergic to penicillin. Describe the type of allergic reactions that can be caused by penicillin.

(5 Marks)

- E. Recommend an appropriate antimicrobial combination to replace the penicillin therapy. Give your full recommendation and explain how you would monitor the treatment.

(10 Marks)

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AppendixNormal Laboratory Values

1.	Ammonia	80-110 mcg/dl	or	47-65 umol/L
2.	Amylase	4-25 IU/ml		
3.	Billirubin			
	- Direct	0-0.2 mg/gl		0-3 umol/L
	- Indirect	0.2-0.8 mg/dl		30-14 umol/L
	- Total	0.2-1 mg/dl		30-17 umol/L
4.	CO ₂	20-30 mEq/L		24-30 mMol/L
5.	pCO ₂	35-45 mmHg		
6.	Cl	100-106 mEq/L		100-106 mMol/L
7.	Cpk	50-170 U/L		
8.	Creatinine (SCr)	0.6-1.5 mg/dl		60-130 umol/L
9.	Random blood sugar	70-110 mg/dl		3-10 umol/L
10.	Iron	50-150 mcg/dl		9.0-26.9 umol/L
11.	Lactic dehydrogenase	70-210 IU/L		
12.	Magnesium	1.5-2.0 mEq/L		0.8-1.3 mMol/L
13.	pO ₂	75-100 mmHg		
14.	pH	7.35-7.45		
15.	Acid phosphatase			
	Male	0.13-0.63 IU/ml		36-176 nmol s ⁻¹ /L
	Female	0.101-0.65 IU/ml		2.8-156 nmol s ⁻¹ /L
16.	Alkaline phosphatase	39-117 IU/L		
17.	Phosphorous	3.0-4.5 mg/dl		1.0-1.5 mMol/L
18.	Potassium (K ⁺)	3.5-5.0 mEq/L		3.5-5.0 mMol/L
19.	Calcium (Ca ²⁺)	8.5-10.5 mg/dl		2.1-2.6 mMol/L
20.	Sodium (Na ⁺)	135-145 mEq/L		135-145 mMol/L
21.	Bicarbonate (HCO ₃ ⁻)	24-38 mEq/L		24-28 mMol/L

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22.	Protein		
-	Total	6.0-8.5 g/dl	60-85 g/L
-	Albumin	3.5-5.0 g/dl	35-50 g/L
-	Globulin	2.3-3.5 g/dl	23-35 g/L
-	Transferrin	200-400 mg/dl	2.0-9.0 g/L
23.	Transaminase (SGOT)	0-40 IU/L	0-0.32 $\mu\text{mol s}^{-1}/\text{L}$
24.	BUN	8-25 mg/dl	2.9-8.9 mMol/L
25.	Uric Acid	3-7 mg/dl	0.18-0.42 mMol/L
26.	Blood Pictures		
	Red blood cell (RBC)		
	Male	4.8-6.4 x 10 ⁶ /mm ³	
	Female	4.2-5.4 x 10 ⁶ /mm ³	
	White blood cell(WBC)	4.0-11.0 x 10 ³ /mm ³	
	P	60-75%	
	L	20-40%	
	M	4-8%	
	B	0-1%	
	E	1-3%	
	Platelate (Plt)	200-400 x 10 ³ /mm ³	
27.	ESR Male	0-10 mm/jam (Wintrobe)	
	Female	0-15 mm/jam (Wintrobe)	
28.	Hematocrit		
	Male	45-52%	
	Female	37-48%	
29.	Hemoglobine (Hgb)		
	Male	13-18 g/dl	
	Female	12-16 g/dl	
30.	Prothrombin time (PT)	75-100% baseline	
31.	APTT	25-37 sec.	
32.	Creatinine Clearance (CrCl)	105-150 ml/min/1.73 m ²	
33.	TT ₄	3.0-7.5 mcg/dl	
34.	RT ₃ U	25-35%	
35.	FTI	1.3-4.2	

...51/-

NORMAL HEMODYNAMIC VALUES AND DERIVED INDICES

Normal Value Units			
BP S/D/M	Blood Pressure Systolic/Diastolic/Mean	120/80/93	mm Hg
CO	Cardiac Output	4-6	Liters/min.
RAP	Right Atrial Pressure (Mean)	2-6	mm Hg
PAP S/D/M	Pulmonary Artery Pressure Systolic/Diastolic/Mean	25/12/16	mm Hg
PCWP	Pulmonary Capillary Wedge Pressure (mean)	5-12	mm Hg
CI	Cardiac Index	2.5-3.5	Liters/min/m ²
	$CI = \frac{CO}{\text{Body Surface Area}}$		
SV	Stroke Volume	60 - 80	ml/beat
	$SV = \frac{CO}{\text{Heart Rate}}$		
SVI	Stroke Volume Index	30 - 50	ml/beat/m ²
	$SVI = \frac{SVI}{\text{Body Surface Area}}$		
PVR	Pulmonary Vascular Resistance	< 200	dynes.sec.cm ⁻⁵
	$PVR = \frac{MPAP - PCWP}{CO} \times 80$		
TPVR	Total Peripheral Vascular Resistance	900-1400	dynes.sec.cm ⁻⁵
	$TPVR = \frac{MBP - RAP}{CO} \times 80$		
LVSWI	Left Ventricular Stroke Work Index	35-80	gm-m/m ² /beat
	$LVSWI = (MBP-PCWP) (SVI) (.0136)$		