

UNIVERSITI SAINS MALAYSIA

First Semester Examination
Academic Session of 1994/95

October/November 1994

FCP 551 : Pharmacotherapeutics I

(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.

Answer to Section A must be entered into the scripts provided.

...2/-

INDEX NUMBER: _____

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 statements regarding drug dosing in the elderly is true?
 - (a) The dose for digoxin should be based on total body weight.
 - (b) The dose of frusemide should be about twice that used in younger patients.
 - (c) The dose of hydrochlorothiazide should be reduced when creatinine clearance is 30 ml/min.
 - (d) Digoxin loading dose should be reduced by 50% in patients receiving concomitant quinidine therapy.

2. Which of the following can be a cause of the increased incidence of falls in the elderly?
 - (a) Thickening of the arterial walls.
 - (b) Reduction in plasma renin levels.
 - (c) Alteration of baroreceptor responsiveness.
 - (d) Changes in cardiac output.

...3/-

INDEX NUMBER: _____

6. What is the creatinine clearance value for an 85-year old female, weighing 56 kg. with a serum creatinine of 106 $\mu\text{mol/L}$ (1.2 mg/dl)?

- (a) 25 ml/min.
- (b) 29 ml/min.
- (c) 35 ml/min.
- (d) 38 ml/min.

7. Which of the following changes occur(s) in the aging cardiovascular system?

- (a) Increased peripheral resistance.
- (b) Attenuated increase in heart rate during exercise.
- (c) Decreased sensitivity and reactivity of β -1 receptors.
- (d) All of the above.

8. Which of the following cause(s) an increased risk for adverse effects with diuretics among the elderly?

- (a) Electrolyte abnormalities.
- (b) Diminished dietary intake of potassium.
- (c) Consumption of multiple drugs including NSAIDs.
- (d) All of the above.

...5/-

INDEX NUMBER: _____

3. Which of the following drugs shows a reduced response in the aging heart?

- (a) Isosorbide dinitrate.
- (b) Digoxin.
- (c) Dopamine.
- (d) Lidocaine.

4. Which of the following drugs should an elderly person be cautioned against if he manifests reduced baroreceptor sensitivity?

- (a) Psychotropic drugs.
- (b) Thyroid drugs.
- (c) Aspirin.
- (d) Sympathomimetic agents.

5. Which of the following changes occurs in the elderly patients?

- (a) Increased V_d of aminoglycoside antibiotics.
- (b) Increased free concentration of phenytoin.
- (c) Increased digoxin clearance.
- (d) Increased theophylline clearance.

...4/-

INDEX NUMBER: _____

9. Which of the following β -blockers is preferred in a hypertensive elderly with angina pectoris?

- (a) Acebutalol.
- (b) Atenolol.
- (c) Propranolol.
- (d) Labetalol.

10. Which of the following drugs is relatively contraindicated in elderly patients receiving enalapril?

- (a) Verapamil.
- (b) Digoxin.
- (c) Frusemide.
- (d) Methyldopa.

11. Which of the following antibodies is involved in a drug-induced bronchospasm caused by Type III hypersensitivity reaction?

- (a) IgE.
- (b) IgG.
- (c) IgM.
- (d) IgA.

...6/-

INDEX NUMBER: _____

12. Which of the following statements regarding dextran-induced bronchospasm is/are true?

- (i) Patients with asthma are particularly at risk.
- (ii) The bronchospasm is more common after dextran-70 than after dextran-40.
- (iii) The severity of the reaction increases with the quantity used.
- (iv) The severity of the reaction decreases with patient's age.

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

13. Which of the following statements regarding aspirin-induced bronchospasm is true?

- (i) There is a good relationship between clinical severity of preexisting asthma and the severity induced by aspirin.
- (ii) The frequency of aspirin-induced bronchospasm decreases with patient's age.
- (iii) The mechanism involved is postulated to be due to excessive production of leukotrienes C4 and D4.
- (iv) The reaction is usually mild.

...7/-

INDEX NUMBER: _____

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

14. Which of the following drugs is believed to cause bronchospasm via the liberation of histamine?

- (a) Griseofulvin.
- (b) Mefenemic acid.
- (c) Iodine containing contrast media.
- (d) Metoprolol.

15. Which of the following drug-induced pulmonary problems is associated with hypoxia?

- (a) Noncardiogenic pulmonary edema.
- (b) Fibrosis.
- (c) Pneumonitis.
- (d) Bronchospasm.

16. Which of the following conditions increase(s) the risk of cytotoxic-induced lung fibrosis?

- (i) Hypotension.
- (ii) Diabetes mellitus.
- (iii) Hyperthyroid.
- (iv) Emphysema.

..8/-

INDEX NUMBER: _____

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

17. Which of the following mechanisms is/are involved in bleomycin-induced lung fibrosis?

- (i) Increased collagen synthesis and deposition.
- (ii) Reduction of pulmonary inflammatory reactions.
- (iii) Generation of superoxide anions.
- (iv) Inhibition of glutathione reductase.

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

18. Which of the following tricyclic antidepressants (TCA) is preferred to treat depression in a patient with cardiac arrhythmia?

- (a) Doxepin.
- (b) Desipramine.
- (c) Amitriptyline.
- (d) Imipramine.

...9/-

INDEX NUMBER: _____

19. Which of the following conditions causes a prolongation of the QRS-complex by 100 milliseconds or more?

- (a) Overdosage of TCA.
- (b) Underdosage of TCA.
- (c) Correct dosage of TCA.
- (d) Total plasma TCA concentration of 500 ng/ml.

20. Which of the following is/are used to control arrhythmia induced by TCA?

- (i) Procainamide.
- (ii) Lidocaine.
- (iii) Disopyramide.
- (iv) Phenytoin.

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

...10/-

INDEX NUMBER: _____

21. Which of the following TCA is preferred for a depressed patient having a very long QT-interval?

- (a) Nortriptyline.
- (b) Desipramine.
- (c) Imipramine.
- (d) Amitriptyline.

22. Which of the following is not a risk factor for ischemic heart disease among women using oral contraceptives?

- (a) Accelerated platelet aggregation.
- (b) Increased platelet factor.
- (c) Decreased glucose tolerance.
- (d) Increased blood viscosity.

23. In a patient treated with adriamycin, the drug should be stopped permanently to prevent heart failure if the QRS-voltage is reduced by

- (a) 15%.
- (b) 20%.
- (c) 25%.
- (d) 30%.

...11/-

INDEX NUMBER: _____

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

27. Which of the following disorders can lead to acquired hypercholesterolemia?

- (i) Nephrotic syndrome.
- (ii) Hyperthyroidism.
- (iii) Diabetes mellitus.
- (iv) Addison's disease.

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

28. Which of the following statements is/are true regarding familial combined hyperlipidemia?

- (i) There is an elevated low density lipoprotein (LDL).
- (ii) There is an elevated very low density lipoprotein and LDL.
- (iii) It follows an autosomal recessive pattern of inheritance.
- (iv) There is a family history of hyperlipidemia.

...13/-

INDEX NUMBER: _____

24. Which of the following is a risk factor for digitalis-induced arrhythmia?

- (i) Hypoxia.
- (ii) Hypothyroidism.
- (iii) Renal failure.
- (iv) Hypocalcemia.

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

25. Which of the following drugs is/are best avoided in the treatment of digoxin-induced arrhythmia?

- (a) Quinidine.
- (b) Phenytoin.
- (c) Lidocaine.
- (d) Quinidine and lidocaine.

26. Which of the following statements is/are true about apoprotein?

- (i) It is necessary for the stability of lipids in the blood.
- (ii) It regulates lipid catabolism.
- (iii) It acts as a ligand for lipoprotein binding to receptors.
- (iv) Each lipoprotein contains only one apoprotein.

...12/-

INDEX NUMBER: _____

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

29. Which of the following statements is/are true regarding gemfibrozil?

- (i) It stimulates lipoprotein lipase activity.
- (ii) It increases HDL-cholesterol.
- (iii) It is useful in patients with triglyceridemia.
- (iv) Its use is accompanied by an increased risk of cholelithiasis.

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

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

- (i) Lovastatin increases plasma creatinine kinase.
- (ii) HMG-CoA reductase inhibitor is not useful in non-familial hypercholesterolemia.
- (iii) The combination of lovastatin and colestipol leads to improved efficacy.
- (iv) Lupus-like syndrome is a complication of HMG-CoA reductase inhibitors.

...14/-

INDEX NUMBER: _____

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

31. Which of the following statements regarding coronary arteries is/are true?

- (i) The anterior descending artery supplies the majority of the septum.
- (ii) In the majority of cases the sinus node receives a dual supply.
- (iii) Occlusion of the left main coronary artery produces an extensive myocardial infarction.
- (iv) The right coronary artery mainly supplies the right ventricle.

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

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

- (i) The sino-atrial node is a primary pacemaker.
- (ii) Propranolol decreases the rate of sino-atrial node.
- (iii) The atrio-ventricular node is situated at the interatrial septum.
- (iv) Digoxin increases the effective refractory period of the atrio-ventricular node.

...15/-

INDEX NUMBER: _____

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

33. Which of the following is/are (a) symptom(s) of heart failure?

- (i) Dyspnea on exertion.
- (ii) Cough.
- (iii) Leg edema.
- (iv) Lethargy.

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

34. Which of the following is/are classified as (an) acyanotic congenital heart disease(s)?

- (i) Atrial septal defect.
- (ii) Tetralogy of Fallot.
- (iii) Patent ductus arteriosus.
- (iv) Ventricular septal defect.

...16/-

INDEX NUMBER: _____

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

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

- (i) Central chest pain is typical for angina.
- (ii) Metoprolol decreases ventricular contractility.
- (iii) Cardiac output is dependent on the heart rate.
- (iv) Pulmonary embolism results in hypotension.

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

36. In writing a SOAP format note in the medical chart, a trainee doctor recorded the following:

- S: Patient given triazolam 0.25 mg HS.
- O: Patient reported becoming drowsy 30 min. after receiving HS triazolam.
- A: Patient's restlessness appears to have resolved after receiving triazolam.
- P: Continue triazolam 0.25 mg HS.

...17/-

INDEX NUMBER: _____

What is wrong with this SOAP note?

- (a) The information in P is objective data.
- (b) The information in S is objective data.
- (c) The information in O is subjective data.
- (d) Both (b) and (c) are wrong.

37. Which of the following information is/are required to develop a patient data base?

- (a) Financial status.
- (b) Daily regimen.
- (c) Religion.
- (d) All of the above

38. Which of the following information should be obtained to evaluate a report of medication allergy?

- (a) A description of the reaction.
- (b) The dose and route of medication administration.
- (c) (a) and (b).
- (d) None of the above.

...18/-

INDEX NUMBER: _____

39. You would use information about a patient's daily regimen to determine.....

- (a) if the regimen could be simplified.
- (b) if timing of doses could be altered to avoid side-effects.
- (c) if doses are appropriately spaced.
- (d) all of the above.

40. All of the following are reasons for obtaining information regarding a patient's current symptoms except.....

- (a) to predict serum drug concentrations.
- (b) to recognize potential drug side-effects.
- (c) to determine response to therapy.
- (d) to detect possible self-treatment.

41. Which of the following is an example of subjective data?

- (a) Time of antibiotic administration.
- (b) Culture and sensitivity results.
- (c) Enlarged liver.
- (d) Abdominal pain.

...19/-

INDEX NUMBER: _____

42. Which of the following is an example of objective data?

- (a) Itchy eyes.
- (b) Aching joints.
- (c) Ringing in the ears.
- (d) Heart murmur.

43. The primary function of pharmacist's care plan in a pharmacist work-up of drug therapy (PWDT) is to

- (a) provide a tool for collecting and recording patient's specific data.
- (b) be patient-specific, with an individualized approach.
- (c) identify drug related problems without stating their resolution.
- (d) address solutions to the patient's health care needs.

Refer the following case for the next two questions.

Mr. P is a 54-year old man admitted to the hospital for pain in his right calf. Diagnostic studies found that Mr. P had a deep vein thrombosis and heparin was ordered. Your goals as the pharmacist were to dose the heparin appropriately and to guide the transition to warfarin therapy.

...20/-

INDEX NUMBER: _____

44. The medical information that should be gathered concerning Mr. P includes all of following except.....

- (a) medical history.
- (b) allergies or intolerances.
- (c) baseline coagulation studies.
- (d) occupation.

45. Which of the following agents is/are not associated with an increased mortality in the Cardiac Arrhythmia Suppression Trial (CAST)?

- (a) Amiodarone.
- (b) Bretylium.
- (c) Calcium channel blockers.
- (d) Moricizine.

46. Which of the following agents will not convert atrial fibrillation to normal sinus rhythm?

- (a) Quinidine.
- (b) Procainamide.
- (c) Disopyramide.
- (d) Digoxin.

...21/-

INDEX NUMBER: _____

47. Which of the following agents can be used to control both supraventricular and ventricular arrhythmias ?

- (a) Lidocaine.
- (b) Tocainide.
- (c) Mexiletine.
- (d) Procainamide.

48. Which of the following agents causes QT-prolongation and torsade de points?

- (a) Quinidine.
- (b) Sotalol.
- (c) Amiodarone.
- (d) Lidocaine.

49. Which of the following drugs is incorrectly matched with the arrhythmia it is used to treat?

- | | | | |
|-----------|-------------|---|-------------------------------------|
| (a) | Quinidine | — | Atrial fibrillation. |
| (b) | Verapamil | — | Atrial fibrillation. |
| (c) | Tocainide | — | Premature ventricular contractions. |
| (d) | Profafenone | — | Premature ventricular contractions. |

...22/-

INDEX NUMBER: _____

50. Which of the following ACE-inhibitors has a sulphhydryl group?

- (a) Enalapril.
- (b) Quinapril.
- (c) Lisinopril.
- (d) Captopril.

51. Which of the following is/are proven benefits of ACE-inhibitors in patients with heart failure?

- (a) Dyspnea is reduced.
- (b) Exercise tolerance is increased.
- (c) Life expectancy is extended.
- (d) All of the above.

52. Which of the following statements regarding nitrates in chronic heart failure is/are true ?

- (a) They mainly reduce pre-load.
- (b) Tolerance is more likely to occur with more frequent dosing.
- (c) Side-effects include headache, flushing and occasional tachycardia.
- (d) All of the above are true.

...23/-

INDEX NUMBER: _____

53. Which of the following statements regarding diuretics in heart failure is/are true?

- (a) They reduce pre-load and breathlessness.
- (b) They have no major impact on exercise nor do they lengthen life.
- (c) Their effects can be monitored based on daily weight loss of 0.5 kg/day.
- (d) All of the above are true.

54. Which of the following act(s) predominantly on the pre-load?

- (a) Lisinopril.
- (b) Prazosin.
- (c) Nitroprusside.
- (d) Nitrates.

The next eight questions (55 to 63) are based on the following case history:

MY is a 31-year-old bank officer admitted to the hospital for the complaints of severe chest pain, breathlessness and diaphoresis. His vital signs were stable but his blood pressure was elevated at 225/125 mm Hg. Physical examination was non-contributory and his laboratory findings were pending. A diagnosis of angina pectoris was made with the view of ruling out acute myocardial infarction.

...24/-

INDEX NUMBER: _____

55. Which of the following statements regarding the patient is true?

- (a) He is likely to be anxious.
- (b) His ECG is unlikely to be normal.
- (c) His cardiac enzymes are unlikely to be normal.
- (d) He should be reassured and sent home.

56. Which of the following drugs is the least likely to be useful in the immediate management of this patient?

- (a) Pethidine.
- (b) Frusemide.
- (c) Glyceryl trinitrate.
- (d) Potassium chloride.

57. Which of the following conditions may complicate his hospital course?

- (i) Heart failure.
- (ii) Heart block.
- (iii) Fever.
- (iv) Death.

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

...25/-

INDEX NUMBER: _____

The patient was admitted to the coronary care unit and the following therapy was instituted:

Morphine IV 4 mg Q 4 H PRN
Metoprolol PO 100 mg stat and BD
Nifedipine PO 10 mg stat and TDS
Aspirin PO 150 mg daily
Syrup Agarol 15 ml TDS
Diazepam PO 5 mg TDS

58. Which of the following are true about the mechanisms of actions of the drugs used in this patient?

- (i) Metoprolol reduces myocardial oxygen demand by lowering blood pressure and heart rate.
- (ii) Nifedipine increases myocardial oxygen supply by dilating the coronary arteries.
- (iii) Aspirin alleviates chest pain through its analgesic property.
- (iv) Morphine relieves chest pain by reducing pulmonary congestion.

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

...26/-

INDEX NUMBER: _____

59. Which of the following statements are true about the therapy of this patient?

- (i) Metoprolol is useful because it can lower the patient's blood pressure as well as act as an anti-angina agent.
- (ii) Both metoprolol and nifedipine are negatively inotropic and can precipitate heart failure.
- (iii) Agarol is useful to prevent constipation that can occur due to the administration of morphine.
- (iv) Metoprolol can aggravate the bradycardia induced by nifedipine.

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

60. Which of the following tests are least likely to be abnormal in this patient?

- (a) Serum creatinine.
- (b) Cardiac enzymes.
- (c) Liver function test.
- (d) White blood cell count.

...27/-

INDEX NUMBER: _____

61. Which of the following is/are potential side-effects from the drug therapy for this patient?

- (i) Hypotension.
- (ii) Congestive cardiac failure.
- (iii) Facial flushing.
- (iv) Sedation.

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

62. Which of the following would be (a) suitable long-term objective(s) for the management of this patient?

- (i) Prevention of myocardial infarction.
- (ii) Improvement of survival.
- (iii) Minimizing side-effects from drug therapy.
- (iv) Prevention of heart failure.

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

...28/-

INDEX NUMBER: _____

63. Which of the following drugs would be the most appropriate to be added to this patient's therapy?

- (a) Captopril.
- (b) Digoxin.
- (c) Chlorothiazide.
- (d) Verapamil.

64. Which of the following antihypertensive drugs do(es) not alter lipid profile?

- (i) Chlortalidone.
 - (ii) Propranolol.
 - (iii) Diazoxide.
 - (iv) Captopril.
- (a) (i) and (ii) only.
 - (b) (i), (ii) and (iii) only.
 - (c) (i), (ii), (iii) and (iv).
 - (d) (iv) only.

65. Which of the following antihypertensive drugs is/are appropriate in asthma?

- (i) Enalapril.
- (ii) Nifedipine.
- (iii) Chlorothiazide.
- (iv) Propranolol.

...29/-

INDEX NUMBER: _____

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

66. Which of the following antihypertensive drugs is/are suitable in hyperthyroidism?

- (i) Diazoxide.
- (ii) Captopril.
- (iii) Chlorothiazide.
- (iv) Propranolol.

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

67. Which of the following antihypertensive drugs is/are contraindicated in heart failure?

- (i) Diazoxide.
- (ii) Captopril.
- (iii) Chlorothiazide.
- (iv) Propranolol.

...30/-

INDEX NUMBER: _____

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

68. Which of the following antihypertensive drugs is/are associated with reflex tachycardia?

- (i) Hydralazine.
- (ii) Diazoxide.
- (iii) Prazosin.
- (iv) Nitroprusside.

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

69. Which of the following antihypertensive drugs should be used with caution in diabetes?

- (i) Diazoxide.
- (ii) Propranolol.
- (iii) Verapamil.
- (iv) Captopril.

...31/-

INDEX NUMBER: _____

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

70. Which of the following antihypertensive drugs is/are contraindicated in patients with high renin levels?

- (i) Diazoxide.
- (ii) Propranolol.
- (iii) Verapamil.
- (iv) Captopril.

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

71. Which of the following statements regarding the selection of patients for hydralazine therapy is/are true?

- (i) Penicillin-sensitive patients should be excluded.
- (ii) Patients on nitroglycerin tablets should be excluded.
- (iii) High blood pressure secondary to acute glomerulonephritis should be excluded.
- (iv) High blood pressure secondary to renal problems should be excluded.

...32/-

INDEX NUMBER: _____

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

72. Which of the following conditions is/are an indication(s) for antihypertensive therapy?

- (i) A patient with a blood pressure of more than 140/90 mm Hg on a screening test.
- (ii) An asthmatic patient treated with tablet prednisolone who shows a BP of 160/90 mm Hg on a screening test.
- (iii) An obese patient who has a BP of 160/90 mm Hg.
- (iv) A patient with acute glomerulonephritis with a BP of 160/90 mm Hg.

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

73. Which of the following conditions require(s) a reduction of blood pressure within hours?

- (i) A hypertensive patient with a BP of 200/130 mm Hg.
- (ii) A hypertensive patient who develops an acute blurring of the vision.
- (iii) A hypertensive patient who develops renal failure.
- (iv) A patient with a BP of 180/110 mm Hg.

...33/-

INDEX NUMBER: _____

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

74. Which of the following statements regarding the stepped-care antihypertensive therapy is/are true?

- (i) Hydralazine is the initial therapy of choice for a patient with angina pectoris.
- (ii) Verapamil is the initial therapy of choice for a patient with cardiac failure.
- (iii) Either propranolol or chlorothiazide should be used for the initial therapy in all cases.
- (iv) Captopril is the best drug to be used in a patient with a history of myocardial infarction.

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

75. Which of the following statements regarding the use of calcium channel blockers is/are true?

- (i) They should be used with caution in a patient with a history of asthma.
- (ii) Combination with a β -blocker is recommended for a patient with ventricular septal defect.
- (iii) Combination with an ACE-I inhibitor is recommended in a patient with a high renin level.
- (iv) Combination with a diuretic is beneficial.

...34/-

INDEX NUMBER: _____

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

76. Which of the following conditions cause(s) recurrent cough in children?

- (i) Asthma.
- (ii) Acute pneumonia.
- (iii) Aspiration of foreign body.
- (iv) Acute epiglottitis.

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

77. Which of the following conditions is/are associated with wheezing?

- (i) Bronchiolitis.
- (ii) Asthma.
- (iii) Pneumonia.
- (iv) Acute epiglottitis.

...35/-

INDEX NUMBER: _____

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

78. Which of the following is true regarding the management of acute asthma in children?

- (a) Sodium chromoglycate is the drug of choice.
- (b) Salbutamol inhaler or nebulizer is effective.
- (c) Intravenous aminophylline is always indicated.
- (d) Inhaled steroid is effective.

79. Which of the following is/are true regarding acute bronchiolitis in infancy?

- (i) Wheezing is a feature.
- (ii) Chest X-rays will show hyperinflated lung.
- (iii) Respiratory syncytial virus is the commonest cause.
- (iv) Intravenous antibiotic is usually indicated.

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

...36/-

INDEX NUMBER: _____

80. Which of the following statements is/are true regarding bacterial pneumonia in children?

- (i) Pneumococcus is a known cause.
- (ii) Antibiotic is indicated.
- (iii) Lung abscess is a known complication.
- (iv) Stridor is a common presenting symptom.

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

81. Which of the following cause(s) cyanotic congenital heart disease?

- (i) Small ventricular septal defect.
- (ii) Atrial septal defect.
- (iii) Patent ductus arteriosus.
- (iv) Fallot tetralogy.

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

...37/-

INDEX NUMBER: _____

82. Which of the following is/are thought to have a significant etiologic role in congenital heart diseases?

- (i) Chromosomal abnormalities.
- (ii) Drugs.
- (iii) Infections.
- (iv) Thyrotoxicosis.

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

83. Which of the following is/are (a) clinical feature(s) of cardiac failure in infancy?

- (i) Increased respiratory rate.
- (ii) Failure to thrive (failure to gain weight).
- (iii) Hepatomegaly.
- (iv) Tachycardia (increased heart rate).

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

...38/-

INDEX NUMBER: _____

84. Which of the following drugs is/are commonly used for the treatment of cardiac failure in children?

- (i) Diuretics.
- (ii) Digoxin.
- (iii) Captopril.
- (iv) Nifedipine.

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

85. Which of the following is/are true regarding digoxin toxicity?

- (i) Low blood potassium accelerates the onset of arrhythmia.
- (ii) Nausea, vomiting and diarrhea are the early symptoms.
- (iii) Cardiac arrhythmias can occur.
- (iv) It is mandatory to continue the treatment.

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

...39/-

INDEX NUMBER: _____

86. Which of the following factors can alter an abnormally raised intra-cranial pressure (ICP)?

- (i) Overhydration.
- (ii) Raised P_aCO_2 .
- (iii) Supine or head down position.
- (iv) Dexamethasone.

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

87. Which of the following is/are true about the respiratory system?

- (i) Respiratory center is situated in the brain stem.
- (ii) Hypercarbia (high PCO_2) is a strong respiratory stimulant for the central receptors.
- (iii) Drugs and smoking can inhibit ciliary movement lining the bronchus.
- (iv) The alveoli is poorly supplied with capillaries.

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

...40/-

INDEX NUMBER: _____

88. Which of the following statements is/are true regarding the management of shock?

- (i) Volume replacement is given before starting inotropic support.
- (ii) Oxygen therapy is given in all cases.
- (iii) A central venous line is preferred for effective fluid and drug administration.
- (iv) High serum lactate level is associated with severe shock.

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

89. Which of the following statements regarding shock is/are true?

- (i) Gram-negative septicemia is a common cause among hospitalised patient.
- (ii) Hypovolaemia is seen in septicemic shock.
- (iii) Shock following an acute myocardial infarction is often associated with arrhythmia.
- (iv) Airway obstruction is less likely in anaphylactic shock.

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

...41/-

INDEX NUMBER: _____

90. Which of the following statements regarding drug administration during cardio-pulmonary resuscitation is/are true?

- (i) IV lidocaine is always given in arrhythmia notwithstanding blood pressure reading.
- (ii) Intra-cardiac injection of adrenaline is the method of choice for adrenaline.
- (iii) Dextrose 50% is always given.
- (iv) Intravenous digoxin is often utilized for post-myocardial infarction arrest.

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

91. Which of the following routes of drug administration is/are utilized during cardio-pulmonary resuscitation?

- (i) Intravenous.
- (ii) Intra-osseous.
- (iii) Intra-cardiac.
- (iv) Intra-tracheal.

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

...42/-

INDEX NUMBER: _____

92. Which of the following drugs can be given through the endotracheal route?

- (i) Adrenaline.
- (ii) Sodium bicarbonate.
- (iii) Atropine.
- (iv) Lidocaine.

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

93. Which of the following clinical signs is/are seen during an episode of anaphylactic shock?

- (i) Hypotension.
- (ii) Cyanosis.
- (iii) Skin rash and facial edema.
- (iv) Bronchospasm.

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

...43/-

INDEX NUMBER: _____

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

- (i) Low central venous pressure is associated with hypovolaemia.
- (ii) High pulmonary wedge pressure is associated with left ventricular failure.
- (iii) Frequent weight measurements is important in assessing hydration status.
- (iv) Normal urine output is 3 to 4 ml per kg. body weight per hour.

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

95. Which of the following is seen on the ECG of an acute myocardial infarction?

- (i) S-T segment elevation.
- (ii) Deep Q-wave.
- (iii) Ventricular ectopics as seen by its wide QRS-complex.
- (iv) Improvement of the ST-segment elevation with thrombolytic therapy.

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

...44/-

INDEX NUMBER: _____

96. Which of the following conditions can impair effective ventilation?

- (i) High oxygen therapy in chronic obstructive airway disease.
- (ii) Poor surfactant in babies.
- (iii) Weakness of the diaphragm.
- (iv) Muscle relaxant administration.

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

97. Which of the following features can be seen in acute respiratory failure?

- (i) Hypoxia.
- (ii) Arrhythmia.
- (iii) Hypercarbia.
- (iv) Hypotension.

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

...45/-

INDEX NUMBER: _____

98. Which of the following is/are true regarding the use of mannitol in the treatment of raised intracranial pressure (ICP)?

- (i) Rebound cerebral edema can occur following its cessation.
- (ii) Urine output must be monitored.
- (iii) Serum osmolarity of 350 mOsm/kg. is an ideal target.
- (iv) Hypertension can occur.

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

99. Which of the following is/are true regarding multiple organ failures?

- (i) They are associated with a high morbidity and mortality.
- (ii) Septicemia is common.
- (iii) A fall in urine output and raised serum creatinine is indicative of renal failure.
- (iv) Monitoring of drug level is less important.

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

...46/-

INDEX NUMBER: _____

100. Which of the following is/are true of adult respiratory distress syndrome?

- (i) There is hypoxaemia.
- (ii) Pulmonary edema is present.
- (iii) Overhydration must be avoided.
- (iv) Inotropic support is rarely utilized in its treatment.

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

(50 marks)

...47/-

Section B

Question 1

CS is a 55-year old male admitted to the hospital with a 2-week history of progressive respiratory distress. He claimed to experience lung tightness, shortness of breath (SOB) and increased production of greenish sputum.

Past Medical History

CS has had asthma and chronic obstructive pulmonary disease (COPD) for 20 years. He was diagnosed with hypertension (HTN) 10 years ago and has had congestive cardiac failure (CCF) for 3 years (currently controlled). Additionally, he has had angina for 5 years.

Medication History

1. Salbutamol inhaler 2 puffs QID and PRN SOB
2. Theophylline SR 300 mg PO BD
3. Prednisolone 20 mg PO daily
4. Digoxin 0.125 mg PO daily
5. Chlorothiazide 500 mg PO daily
6. Nitroglycerin tab SL PRN chest pain

On history CS was also found to have an inadequate knowledge and skill of inhalation technique.

Social History

Still smoking with history of 45 pack-years.

Allergies

Penicillin.

Pharmacological Review of System

Body weight: 65 kg., Height: 5'6".
 BP 130/85 mm Hg; HR 130/min.; RR 30/min; T 38.0 °C
 HEENT: Mild AV nicking, no masses, no thyromegally
 CVS: S1, S2, no S3, no S4.
 CHEST: Left lower lobe crackles, rales and rhonchi, expiratory and inspiratory wheezes.
 ABDOMEN: Diffusely tender, especially mid-epigastrium.

...43/-

Rectum: Guaiac-negative and good tone.

Kidneys and urinary tract: normal renal function.

Extremities: Mild cyanosis and mild clubbing.

Nervous system: Intact.

Result of laboratory Tests

Na⁺ 137 mmol/L
K⁺ 4.6 mmol/L
Blood Urea 6.5 μmol/L
Serum creatinine 70 μmol/L

Hb 15.0 G%
Hct 44.9%
WBC 16,800/mm³

Digoxin concentration 1.6 ng/ml

ABG on room air:
pH: 7.36
pCO₂: 54 mm Hg
pO₂: 45 mm Hg
HCO₃: 27 mmol/L.

PFT: Pre-bronchodialator FEV₁ + 700 ml;
Post-bronchodialator FEV₁ + 1000 ml

Medical Problem list

1. Acute exacerbation of asthma and chronic bronchitis
2. Hypertension
3. Cardiac failure
4. Angina pectoris.

Drug Treatment in The Ward

1. Salbutamol nebulizer. 1:1 4 hourly
2. Hydrocortisone 200 mg IV 6 hourly
3. Aminophylline 250 mg IV 8 hourly
4. Erythromycin 500 mg IV QID
5. Digoxin tab. 0.25 mg PO daily
6. Chlorothiacide tab. 25 mg PO OM
7. Nitroglycerine tab 1 SL PRN chest pain
8. Oxygen 2L/min.

...49/-

- A. Construct a drug therapy assessment for CS and list all potential and/or actual drug-related problems.

(5 Marks)

- B. Give your drug therapy recommendations for each identified problem in (A).

(5 Marks)

- C. What is the desired therapeutic outcome for acute exacerbation of asthma/COPD in CS?

(5 marks)

- D. Describe how would you monitor therapeutic response and undesirable effects of drugs used in controlling the acute attack of asthma/COPD in this case.

(5 Marks)

- E. How would you educate CS on how to use his inhalers correctly?

(5 Marks)

...50/-

Question 2

Mr. AA is a 60-year-old man admitted to HUSM with the complaints of headache, difficulty in breathing and lethargy for the past 3 days. He has had hypertension since the age of 30 and was well controlled with:

Inderal^R (propranolol) tablet 80 mg twice daily
Minipress^R (prazosin) tablet 2 mg twice daily

Physical examination:

Blood pressure	180/110 mm Hg.
Pulse rate	100 beats/min.
Temperature	37°C.
Respiratory rate	30/ min.
JVP	2 cm.
Lungs	A/E equal and good. Bilateral crepitation.
Heart	DRNM.
Abdomen	Liver 2 cm S°K°.
Other systems	NAD.

Provisional diagnosis:

Uncontrolled hypertension
Heart failure

Plan:

Chest X-ray	
ECG	
I/O chart	
vital sign q 6 hourly	
Chlorothiazide	500 mg daily
Propranolol	80 mg BD
Prazosin	2 mg BD

...51/-

- A. Set the goal of therapy for Mr. AA.

(5 Marks)

- B. List the monitoring parameters useful to assess the progress of Mr. AA and when do you expect to achieve your desired therapeutic outcome?

(5 Marks)

- C. Two days later Mr. AA still complained of SOB despite the treatment given. Chest X-ray showed slight enlargement of the left heart. Explain the most possible cause for this abnormality.

(5 Marks)

- D. On day 3, Mr. AA fainted in the bath room. On examination the doctor found that his BP was 130/60 mm Hg. Explain the most possible reason for Mr. AA's problem.

(5 Marks)

- E. The doctor asked for your comments on the management of Mr. AA and asked your opinion on the possibility of using enalapril. Briefly explain how you would respond to the doctor's question.

(5 Marks)

...52/-

Appendix

Normal 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.	CI	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

...53/-

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 $\times 10^6/\text{mm}^3$	
	Female	4.2-5.4 $\times 10^6/\text{mm}^3$	
	White blood cell(WBC)	4.0-11.0 $\times 10^3/\text{mm}^3$	
	P	60-75%	
	L	20-40%	
	M	4-8%	
	B	0-1%	
	E	1-3%	
	Platelite (Plt)	200-400 $\times 10^3/\text{mm}^3$	
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	

...54/-

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
	$SVI = \frac{SV}{\text{Body Surface Area}}$		
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
	$LVSWI = (MBP-PCWP) (SVI) (.0136)$		