

UNIVERSITI SAINS MALAYSIA

PEPERIKSAAN PERTAMA  
PROGRAM SARJANA FARMASI  
1993/94

NOVEMBER 1993

FCP 551.4 : PHARMACOTHERAPEUTIC I  
( 3 HOURS )

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This examination consists of two sections and 53 printed pages

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/-

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**SECTION A**

Mark (/) all answers 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 beclomethasone dipropionate aerosol is true?
  - ..... (a) It should only be used in the treatment of an acute asthmatic attack.
  - ..... (b) It should not be used in patients who is currently using a theophylline product.
  - ..... (c) Inhaled bronchodilator should be used prior to the administration of the steroid aerosol.
  - ..... (d) It is also useful in the treatment of status asthmaticus.
  
2. Which of the following statements best describes the mechanism of action of antihistamine?
  - ..... (a) They interfere with the synthesis of histamine in the body.
  - ..... (b) They form inactive complexes with histamine.
  - ..... (c) They block the histamine receptor sites.
  - ..... (d) They stimulate the metabolism of endogenous histamine.

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3. Which of the following glucocorticoids has the highest antiinflammatory activity?
- ..... (a) Cortisone.
  - ..... (b) Hydrocortisone.
  - ..... (c) Prednisone.
  - ..... (d) Dexamethasone.
4. Which of the following statements regarding ipratropium bromide inhaler is true?
- ..... (a) The recommended maximum dose is 800 mcg/day.
  - ..... (b) It has similar undesirable systemic side effect with atropine.
  - ..... (c) The efficacy of nebulized ipratropium bromide is five times higher than its inhaler form.
  - ..... (d) Its onset of action is faster than B-agonist.
5. Which of the following drugs will result in additive anticholinergic effects when used concurrently with ipratropium bromide?
- ..... (a) Salbutamol.
  - ..... (b) Theophylline.
  - ..... (c) Dexamethasone.
  - ..... (d) Pethidine.

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6. Which of the following predisposing factors for aspiration pneumonia is/are true?

- (i) Head injury.
- (ii) Frusemide therapy.
- (iii) Nasogastric feeding.
- (iv) Total Parenteral Nutrition.

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

7. Antibiotic of choice in the treatment of pneumonia due to *Legionella* spp is .....

- ..... (a) cefazolin.
- ..... (b) ampicillin.
- ..... (c) tetracycline.
- ..... (d) erythromycin.

8. Which of the following bacterial pathogens is the most commonly found in hospital-acquired pneumonia?

- ..... (a) *Legionella* spp.
- ..... (b) *Pseudomonas* spp.
- ..... (c) Enterobacteriaceae.
- .,... (d) *Streptococcus* spp.

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9. Which of the following statements regarding drug therapy in allergic rhinitis is/are true?

- (i) Most of the currently available antihistamines are able to cross the blood brain barrier and may cause sedation.
- (ii) Prolong use of oral decongestants are associated with rebound congestion.
- (iii) Antihistamine reduces the symptoms of allergic rhinitis by competing with histamine at its receptor sites.
- (iv) Antiviral agents are effective in patient with severe symptoms.

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

10. What does the hemodynamic parameter indicates if central venous pressure (CVP) is less than 2 cm H<sub>2</sub>O?

- ..... (a) Severe hypotension.
- ..... (b) Hemorrhage.
- ..... (c) Hypovolemia.
- ..... (d) Pulmonary edema.

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11. Which of the following statements best describes the pharmacist workup of drug therapy (PWDT)?
- ..... (a) A form to specifically check prescribing error by doctors.
  - ..... (b) A form for physical assessment of patients who have medical problems.
  - ..... (c) A form to calculate the cost-effectiveness of a pharmacist clinical activities.
  - ..... (d) A tool for documenting pharmacist's activities.
12. Which of the following is not an outcome of the pharmaceutical care?
- ..... (a) Curing the disease.
  - ..... (b) Diagnosing the patient's disease.
  - ..... (c) Preventing a disease or it's symptoms.
  - ..... (d) Reducing or eliminating symptoms.
13. Which of the following statements regarding medication history taking in PWDT is/are true?
- (i) To obtain information on prescription and non-prescription drugs that the patient is taking.
  - (ii) To assess the need for patient drug education such as medication error, inappropriate belief on medication and other related problems.
  - (iii) To assess patient response toward recent and/or previous drug therapy.
  - (iv) To identify and accurately assess patient medical problems.

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

14. Which of the following factors is the most important variable that place a drug on the list of feasible pharmacotherapeutic alternative?

- ..... (a) Efficacy and safety.
- ..... (b) Cost of alternative.
- ..... (c) Dosage practicality.
- ..... (d) Drug-disease interaction.

15. Which of the following statements regarding the role of pharmacist in pharmaceutical care is/are true?

- (i) Both unit dose drug distribution and drug information services are considered support services in delivering pharmaceutical care.
- (ii) Major function of pharmacists in pharmaceutical care is to identify actual or potential drug related problems.
- (iii) Drug related problem is define as an undesirable event, a patient experience that involves or is suspected to involve drug therapy, and that actually or potentially interferes with a desired patient outcome.
- (iv) Documentation of clinical pharmacy acitivities are done retrospectively to justify additional staff.

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- ..... (a) (i) and (ii) only.
  - ..... (b) (i), (ii) and (iii) only.
  - ..... (c) (i), (ii), (iii) and (iv).
  - ..... (d) (iv) only.
16. Which of the followings is not regarded as a major component of afterload?
- ..... (a) Diastolic blood pressure.
  - ..... (b) Systemic vascular resistance.
  - ..... (c) Atrial volume.
  - ..... (d) Diameter of the ventricle.
17. Which of the following statements regarding vasodilator therapy for CHF is/are true?
- (i) CONSENSUS study by Cooperative North Scandinavian Enalapril Survival Group was the first to show improve survival in CHF patients treated with ACE inhibitor.
  - (ii) Veteran's Administration Cooperative Study Group showed that combined hydralazine/isosorbide dinitrite treatment reduce mortality to a greater extent than either prazosin or placebo in patient with New York Heart Association (NYHA) class III or IV CHF.
  - (iii) Combined hydralazine/isosorbide dinitrite appear to be better tolerated than ACE inhibitors by patients.
  - (iv) Captopril - Digoxin Multicenter Research Group trial showed improved mortality in CHF patient with NYHA class II.

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

18. Which of the following sets of antiarrhythmic drug-therapeutic range is not true?

- ..... (a) Amiodarone : 0.5 - 2.5 mcg/ml
- ..... (b) Lidocaine : 1.5 - 10.0 mcg/ml.
- ..... (c) Procainamide : 3.0 - 15.0 mcg/ml.
- ..... (d) Mexiletine : 5.0 - 20.0 mcg/ml.

19. Which of the following statements regarding route of elimination of antiarrhythmic drugs is true?

- ..... (a) Procainamide is mainly metabolize in the liver and only 10% - 20% excreted unchange in the urine.
- ..... (b) Lidocaine is 100 percent metabolized by the liver.
- ..... (c) Bretylium is mainly metabolized by the liver.
- ..... (d) Flecainide is only 25% metabolized by the liver and 75% excreted unchange in the urine.

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20. Which of the following statements best describes the role of antiarrhythmic drug in prevention of sudden cardiac death?
- ..... (a) The Cardiac Arrhythmia Suppression Trial (CAST) showed that total mortality in the flecainide or encainide group was lower than placebo group.
  - ..... (b) Routine treatment of asymptomatic arrhythmias recorded at the time of discharge in post-MI patients is not considered rational.
  - ..... (c) Antiarrhythmics had been used because sudden cardiac death is caused by supraventricular arrhythmias, primarily atrial fibrillation preceded by atrial tachycardia.
  - ..... (d) The role of antiarrhythmic agents in prevention of sudden cardiac death is predictable based on their electrophysiologic effects.
21. Which of the following statements are true?
- (i) The heart's own blood supply come from two major coronary arteries.
  - (ii) Starling's law of the heart states that as left ventricular end diastolic pressure increases then cardiac output will increased in line with this provided the peripheral resistance is unchanged.
  - (iii) Stroke volume reduces as the heart rate increases.
  - (iv) The parasympathetic discharge reduce the heart rate.
- ..... (a) (i) and (ii) only.
  - ..... (b) (i), (ii) and (iii) only.
  - ..... (c) (i), (ii), (iii) and (iv).
  - ..... (d) (ii) and (iv) only.

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22. Which of the followings could cause an increase in cardiac output of a healthy person?

- (i) Increase temperature.
- (ii) Administration of dopamine.
- (iii) Exercise.
- (iv) Calcium channel blockers.

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

23. Which of the following statements regarding dyspnoea are true?

- (i) Breathlessness at rest in grade 4 of New York Heart Association grading system.
- (ii) Orthopnoea is the sense of breathlessness when lying flat.
- (iii) In a typical episode of paroxysmal nocturnal dyspnoea the patients awake from his sleep gasping for breath.
- (iv) Dyspnoea due to heart disease is never associated with wheezing.

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

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24. Which of the followings is/are characteristic of cardiac pain?

- (i) Crushing in nature.
- (ii) Chest pain comes during exercise.
- (iii) It often radiating to the neck.
- (iv) It become worst on deep breathing.

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

25. Which of the following statements regarding blood pressure are true?

- (i) Very high a blood pressure may be recorded in a fat people.
- (ii) In patients in whom dizziness is a symptom, lying and standing blood pressure should be taken.
- (iii) It is necessary to take more then one reading for the confirmation of hypertension.
- (iv) The blood pressure is relatively lower in elderly subject.

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

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26. Which of the following statements regarding investigation of patients with suspected heart disease are true?

- (i) Electrocardiogram (E.K.G) is useful in diagnosis of ischaemic heart.
- (ii) X-ray of the chest showed enlarged heart in patients with congestive heart failure.
- (iii) Hyponatraemia is commonly due to diuretic therapy.
- (iv) Coronary angiogram is performed prior to valvular surgery.

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

27. Which of the followings are the major risk factors of coronary artery disease?

- (i) Smoking.
- (ii) Exercise.
- (iii) Hypertension.
- (iv) Diet.

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

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28. Which of the followings are usefull in the management of angina pectoris?

- (i) Beta blocker.
- (ii) Stop smoking.
- (iii) Calcium antagonist.
- (iv) Benzafibrate.

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

29. Which of the following statements regarding glyceryl trinitrate (GTN) are true?

- (i) It is less effective, taking GTN after the pain has developed.
- (ii) The duration of action is about 30 min.
- (iii) Patient should be told to swallow the tablet once the chest pain dissappeared.
- (iv) Facial flushing is a major side effect.

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

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30. Which of the following statements regarding the treatment of patient with acute myocardial infarction are true?

- (i) Diazepam is necessary for the very anxious patients.
- (ii) Intravenous frusemide should be used in patients with left ventricular failure.
- (iii) Dopamine infusion is used if the blood pressure falls below 100 mmHg.
- (iv) Pentazocine is used to decrease venous pooling.

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

31. Which of the following statements regarding the anatomy of respiratory tract is/are true?

- (i) Alveoli are the distal most air sacs.
- (ii) Bronchi divides into bronchioles.
- (iii) Bifurcation of trachea is called larynx.
- (iv) Right lung is larger than the left.

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

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32. Which of the following statements regarding the function of respiratory system is/are true?

- (i) Gaseous exchange occur between atmospheric air and alveoli.
- (ii) Gaseous exchange occur between alveoli and capillary blood.
- (iii) Circulation of blood through body systems.
- (iv) Formation of haemoglobins.

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

33. Which of the following changes will occur if the respiratory system fails?

- (i) Increased tension of  $O_2$  in blood.
- (ii) Decreased tension of  $PCO_2$  in blood.
- (iii) Acidosis.
- (iv) Depression of the central nervous system.

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

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34. Bronchospasm is induced by .....

- (i) increase cholinergic activity.
- (ii) histamine released.
- (iii) increased cyclic AMP.
- (iv) increase beta-2 adrenergic activity.

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

35. Which of the followings is/are the cause(s) of recurrent chronic cough in children?

- (i) Bronchial asthma.
- (ii) Immunodeficiency.
- (iii) Foreign body aspiration.
- (iv) Cardiac failure.

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

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36. Which of the followings is/are sign(s) of respiratory distress?

- (i) Subcostal recession.
- (ii) Oedema.
- (iii) Anaemia.
- (iv) Clubbing

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

37. Which of the following statements regarding bronchial asthma in childhood is/are true?

- (i) Bronchial hypersensitivity is a feature.
- (ii) Most of the children improve after puberty.
- (iii) Bronchial inflammation as well as bronchospasm are the pathology of this disorder.
- (iv) Anticholinergic is a mode of treatment.

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

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38. Which of the following microorganisms is/are the common cause of pneumonia in a 2 year old child?

- (i) Group A streptococcus.
- (ii) Haemophilus influenzae.
- (iii) Pneumococcus pneumoniae.
- (iv) Proteus vulgaris.

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

39. Which of the following drugs is/are commonly used for the treatment of pneumonia in children?

- (i) Amoxycillin.
- (ii) Tetracycline.
- (iii) Erythromycin.
- (iv) Chloramphenicol.

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

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40. Which of the following manifestations is/are common in childhood tuberculosis?

- (i) Cervical lymphadenopathy.
- (ii) Miliary tuberculosis.
- (iii) Meningitis.
- (iv) Hepatitis.

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

41. Which of the following statements regarding antituberculosis drugs is/are true?

- (i) Isoniazid can kill intracellular organisms.
- (ii) Red colouration of body fluid is a side effect of ethambutol.
- (iii) Ethambutol is recommended for the full course of nine month therapy in a two year old child.
- (iv) Pyridoxine supplement is given with a high dose isoniazid.

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

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42. Which of the following statements regarding respiratory diseases in neonates is/are true?

- (i) Group B streptococcus is a cause of pneumonia.
- (ii) Hyaline membrane disease occur in preterm babies.
- (iii) Pneumococci is a common cause of nosocomial pneumonia.
- (iv) Lipid component in TPN is reduced in cases with severe respiratory disease.

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

43. Which of the following beta-agonists has the shortest duration of action?

- ..... (a) Salbutamol.
- ..... (b) Metaproterenol.
- ..... (c) Isoproterenol.
- ..... (d) Terbutaline.

44. Which of the following combinations of drug and side-effects is true?

- ..... (a) Intravenous theophylline - tremors.
- ..... (b) Inhaled salbutamol - hyperkalemia.
- ..... (c) Inhaled ipratropium bromide - CNS depression.
- ..... (d) Inhaled beclomethasone dipropionate - oral candidiasis.

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45. Which of the following therapeutic agents is not indicated for the prevention of exercise-induced asthma?
- ..... (a) Sodium cromoglycate.
  - ..... (b) Salbutamol.
  - ..... (c) Ipratropium bromide.
  - ..... (d) Beclomethasone dipropionate.
46. Which of the following factors contributes to the cause of asthma death?
- ..... (a) Inhaled corticosteroid adverse effects.
  - ..... (b) Overuse of beta-agonist aerosols.
  - ..... (c) Overdose of IV salbutamol.
  - ..... (d) Arrhythmia from anticholinergic therapy.
47. Which of the following is the drug of choice in asthmatic patients with mild hypertension?
- ..... (a) Metoprolol.
  - ..... (b) Prazocin.
  - ..... (c) Nifedipine.
  - ..... (d) Methyldopa.

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48. The increase sensitivity of antihypertensive agents in the elderly is probably due to .....

- ..... (a) the reduction in plasma renin.
- ..... (b) the altered baroreceptor response.
- ..... (c) the lowering of the cardiac index.
- ..... (d) the increase in vessels elasticity.

49. Which of the following class of drugs increases the incidence of falls in the elderly?

- ..... (a) Non-steroidal antiinflammatory drugs.
- ..... (b) Sympathomimetic agents.
- ..... (c) Psychotropic drugs.
- ..... (d) Calcium channels blockers.

50. Which of the following statements is true?

- ..... (a) In most cases, the rate and extent of drug absorption are altered in the elderly.
- ..... (b) Younger patients have a larger volume of distribution (Vd) of diazepam compared to the elderly.
- ..... (c) Serum creatinine values do not reflect the true picture of the renal status in the elderly.
- ..... (d) Generally, beta-receptors response and sensitivity is increased in the elderly.

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51. Which of the following statements regarding pharmacotherapy of asthma is true?

- ..... (a) Anticholinergic agents are clinically more effective in chronic bronchitis and emphysema compared to beta-agonist.
- ..... (b) Inhaled budesonide is more effective compared to inhaled beclomethasone dipropionate.
- ..... (c) The Spinhaler<sup>R</sup> preparation of cromolyn is more effective than the metered-dose inhaler in the prophylaxis of exercise-induced asthma.
- ..... (d) The trough is preferred rather than peak theophylline serum concentration in monitoring therapy particularly with the sustained-release products.

52. Which of the following clinical assessments is appropriate for monitoring of beta-2 agonist therapy?

- ..... (a) State of agitation.
- ..... (b) Onset and frequency of tremors.
- ..... (c) Mental status.
- ..... (d) Pulse pressure and respiratory rate.

53. Which of the following symptoms is likely to occur in Prinzmetal angina?

- ..... (a) Pain occurs during physical exertion.
- ..... (b) Pain occurs when the patient lay down.
- ..... (c) Pain is easily provoked and persist for a longer than usual duration.
- ..... (d) None of the above.

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54. Which of the following types of angina is usually associated with heart failure?
- ..... (a) Classical angina.
  - ..... (b) Decubitus angina.
  - ..... (c) Unstable angina.
  - ..... (d) Variant angina.
55. Which of the following types of angina usually fails to respond readily to drug therapy?
- ..... (a) Exertional angina.
  - ..... (b) Variant angina.
  - ..... (c) Unstable angina.
  - ..... (d) Nocturnal angina.
56. Electrocardiographic feature of ST segment elevation that developed during chest pain is characteristic of .....
- ..... (a) exertional angina.
  - ..... (b) prinzmetal's angina.
  - ..... (c) unstable angina.
  - ..... (d) nocturnal angina.
57. Which of the following risk factors is least associated with coronary artery disease?
- ..... (a) Obesity.
  - ..... (b) Diabetes mellitus.
  - ..... (c) Hypertension.
  - ..... (d) Hyperlipidemia.

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58. Which of the following is not useful in the treatment of variant angina?
- ..... (a) Metoprolol.
  - ..... (b) Nitroglycerin.
  - ..... (c) Isosorbide dinitrate.
  - ..... (d) Nifedipine.
59. Which of the following is less definitely linked with an increased risk of coronary atherosclerosis?
- ..... (a) High values of total cholesterol.
  - ..... (b) High values of low density lipoproteins.
  - ..... (c) Low values of high density lipoproteins.
  - ..... (d) High values of triglycerides.
60. Which of the following is least likely to be associated with nitrates tolerance?
- ..... (a) PRN sublingual nitroglycerin.
  - ..... (b) Isosorbide dinitrate one tablet t.i.d.
  - ..... (c) Nitroglycerin given as a continuous infusion.
  - ..... (d) Transdermal nitroglycerin transdermal patch b.d.
61. Which of the following drugs may cause significant bradycardia when used in combination with a beta-blocker?
- ..... (a) Nitroglycerin.
  - ..... (b) Isosorbide dinitrate.
  - ..... (c) Nifedipine.
  - ..... (d) Verapamil.

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62. Which of the following nitroglycerine effects is the least important in relieving myocardial pain?
- ..... (a) Venous dilatation.
  - ..... (b) Tachycardia.
  - ..... (c) Increased coronary blood flow to the subendothelial region.
  - ..... (d) Dilatation of the coronary artery.
63. Which of the following conditions requires a rapid onset vasodilator?
- (i) Hypertensive crisis.
  - (ii) Severe congestive heart failure.
  - (iii) Hypovolemic shock.
  - (iv) Cor pulmonale.
- ..... (a) (i) and (ii) only.
  - ..... (b) (i), (ii) and (iii) only.
  - ..... (c) (i), (ii), (iii) and (iv)
  - ..... (d) (ii) and (iv) only.
64. Which of the following statements regarding vasodilator therapy are true?
- (i) Hydralazine is useful in the management of hypertension secondary to nephrotic syndrome.
  - (ii) Prazosin is commonly associated with first dose hypotensive effect.
  - (iii) All vasodilators will produce a metallic taste.
  - (iv) Systemic Lupus Erythematosus is the most serious adverse reaction with the use of vasodilators.

...28/-

INDEX NUMBER : \_\_\_\_\_

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

65. Which of the following statements regarding the criteria for the selection of antihypertensive agents are true?

- (i) The presence of other clinical problems.
- (ii) The ability of the drugs to penetrate central nervous system.
- (iii) The ability of the drugs to induce postural hypotension.
- (iv) The route of administration.

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

66. Which of the following drugs should be avoided in the treatment of hypertension associated with ischemic heart disease?

- (i) Beta blockers.
- (ii) Calcium channel blockers.
- (iii) Hydralazine.
- (iv) Diazoxide.

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INDEX NUMBER : \_\_\_\_\_

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

67. Which of the following drugs are indicated in the management of hypertensive crisis?

- (i) Clonidine.
- (ii) Sodium nitroprusside.
- (iii) Propranolol.
- (iv) Guanethidine.

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

68. Which of the following statements regarding ventricular septal defect (VSD) are true?

- (i) VSD is characterized by the left to right shunting.
- (ii) VSD with pulmonary obstruction is characterized with right to left shunting.
- (iii) Cyanosis associated with VSD is a characteristic of left to right shunting.
- (iv) All patients with VSD will eventually requires surgery.

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INDEX NUMBER : \_\_\_\_\_

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

69. Which of the following statements regarding the use of Angiotensin converting enzyme inhibitors (ACEI) in hypertension are true?

- (i) ACEI is the drug of choice in hypertensive patients complicated with renal problems.
- (ii) ACEI is beneficial in hypertensive patients complicated with heart failure.
- (iii) ACEI is useful in the treatment of hypertensive emergency.
- (iv) ACEI should be used with caution in patient with hypertension.

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

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INDEX NUMBER : \_\_\_\_\_

70. Which of the following statements regarding the use of indomethacin in Patent Ductus Arteriosus (PDA) are true?

- (i) The mechanism of action of indomethacin in PDA is by shunting the blood flow from left to right heart.
- (ii) Indomethacin will inhibit the prostaglandin synthesis that is responsible for the closure of PDA.
- (iii) Antiinflammatory activity is the determining factor for the effect of indomethacin in PDA.
- (iv) Indomethacin should be administered as soon as possible once PDA is diagnosed.

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

71. Which of the following statements regarding Rheumatic Heart Disease (RHD) are true?

- (i) RHD is a consequence of streptococcal throat infection.
- (ii) RHD occurs more frequently in children.
- (iii) Coagulation disorders is the most common complication of RHD.
- (iv) Long term antibiotic prophylaxis is required in all RHD patients.

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INDEX NUMBER : \_\_\_\_\_

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

72. Which of the following statements regarding hypertensive emergency are true?

- (i) Management should be directed to reduce the blood pressure to the normal value as soon as possible.
- (ii) The use of rapid onset and short acting antihypertensive drug is preferred in hypertensive emergency
- (iii) Clonidine and ACEI are the drug of choice in the management of hypertensive emergency.
- (iv) Vasodilator that act only on the venous side may increased the risk of renal failure in hypertensive patient.

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

73. Which of the following statements regarding drug-induced hypersensitive lung disease is/are not true?

- (i) Its prognosis is very poor.
- (ii) It only happens after chronic drug exposure.
- (iii) It decreases the number of eosinophil in the blood.
- (iv) The chest radiograph shows a diffuse acinar infiltrate and pleural effusion.

...33/-



INDEX NUMBER : \_\_\_\_\_

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

74. The type of antibody usually involved in drug-induced Type 1 hypersensitivity reaction is.....

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

75. Which of the following is the most common type of drug-induced pulmonary/respiratory problem?

- ..... (a) Pulmonary eosinophilia.
- ..... (b) Pulmonary fibrosis.
- ..... (c) Bronchospasm.
- ..... (d) Noncardiogenic pulmonary edema.

76. Which of the following mechanisms is/are not involved in bleomycin-induced lung fibrosis?

- (i) Generation of superoxide anions.
- (ii) Increased collagen deposition.
- (iii) Induction of pulmonary inflammatory reaction.
- (iv) Inhibition of glutathione reductase.

...34/-

INDEX NUMBER : \_\_\_\_\_

- ..... (a) (i) and (iii) only.
  - ..... (b) (ii) and (iii) only.
  - ..... (c) (i), (ii) and (iii) only.
  - ..... (d) (iv) only.
77. The ability of NSAID to induce bronchospasm is proportional to its capacity to inhibit ..... synthesis.
- ..... (a) histamine
  - ..... (b) leucotrienes C<sub>4</sub> and D<sub>4</sub>
  - ..... (c) eosinophilic chemotactic factor of anaphylaxis.
  - ..... (d) prostaglandin E<sub>2</sub>
78. The mode of action of dextran in inducing asthma is .....
- ..... (a) it's antigenic property.
  - ..... (b) it causes the release of mediators.
  - ..... (c) it has the properties of the mediators.
  - ..... (d) it affects the autonomic receptor sites.
79. Noncardiogenic pulmonary edema is most commonly caused by.....
- ..... (a) vinblastin.
  - ..... (b) heroine.
  - ..... (c) ethchlorynol.
  - ..... (d) terbutaline.

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80. Which of the following could be employed as a prophylaxis against bronchospasm in patients receiving iodine containing contrast medium?
- ..... (a) Aminophylline
  - ..... (b) Phenylbutazone.
  - ..... (c) Chlorpheniramine.
  - ..... (d) Salbutamol.
81. Which of the following tricyclic antidepressant (TCA) causes the least cardiovascular problems when used in therapeutic doses?
- ..... (a) Amitriptyline.
  - ..... (b) Doxepine.
  - ..... (c) Imipramine.
  - ..... (d) Nortriptyline.
82. Which of the following tricyclic antidepressant would be the best choice in patients with prolonged QT interval?
- ..... (a) Protriptyline.
  - ..... (b) Nortriptyline.
  - ..... (c) Amitriptyline.
  - ..... (d) Desipramine.

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88. In pulmonary edema .....

- (i) morphine is used for its potent analgesic property.
- (ii) aminophylline may be useful to correct bronchospasm.
- (iii) nitroglycerine is contraindicated.
- (iv) oral frusemide is as effective as intravenous frusemide.

- ..... (a) (i) and (ii) only.
- ..... (b) (i), (ii) and (iii) only.
- ..... (c) (i), (ii), (iii) and (iv).
- ..... (d) None of the above.

89. Which of the followings is/are sign(s) of cardiac failure in children?

- (i) Excessive sweating.
- (ii) Bradycardia.
- (iii) Paroxysmal nocturnal dyspnoea.
- (iv) Hepatomegaly.

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

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90. Which of the following statements regarding cardiac perfusion is/are true?

- (i) Calcium channel blockers improve cardiac perfusion.
- (ii) Poor perfusion leads to accumulation of lactic acid in the myocardium.
- (iii) It is reduced in anemic state.
- (iv) It is increased in polycythaemia.

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

91. Which of the following conditions lead(s) to acute respiratory failure?

- (i) Bronchial asthma.
- (ii) Multiple trauma.
- (iii) Drug overdose.
- (iv) Adult respiratory distress syndrome.

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

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92. Which of the followings is/are associated with acute respiratory failure?

- (i) Alveolar hypoventilation.
- (ii) Intrapulmonary venoarterial shunt.
- (iii) Diffusion impairment.
- (iv) Ventilation-perfusion imbalance.

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

93. Which of the following is/are the sign(s) and symptom(s) of respiratory failure?

- (i) Dyspnoea.
- (ii) Restlessness.
- (iii) Cyanosis.
- (iv) Cardiac arrhythmias.

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

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94. Which of the following statements regarding therapy for a severe attack of bronchial asthma is/are true?

- (i) I.V. aminophylline is contraindicated if the patient has been on theophylline tablets.
- (ii) Steroid therapy is not helpful.
- (iii) Increasing hypercapnea is a good sign.
- (iv) Close serum drug level monitoring is important.

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

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

- (i) Oxygen content in the blood falls in anemia.
- (ii) The more acidic the blood is the more readily haemoglobin gives up its oxygen to the tissues.
- (iii) Low 2, 3-DPG as in stored blood will shift the oxyhaemoglobin curve to the left.
- (iv) Shifting of the oxyhaemoglobin dissociation curve to the left will deliver more oxygen to the tissue.

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

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96. Which of the followings is/are symptom(s) and signs of hypovolemic shock?

- (i) Low central venous pressure.
- (ii) Thirst.
- (iii) Reduced urine output.
- (iv) Bradycardia.

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

97. Which of the following statements regarding dopamine is true?

- ..... (a) Low doses increase renal perfusion.
- ..... (b) Its action is potentiated by metabolic acidosis.
- ..... (c) It causes hypotension.
- ..... (d) It is effective in hypovolemia.

98. Which of the following statements regarding congestive cardiac failure is true?

- ..... (a) It can lead to hyponatremia.
- ..... (b) It commonly causes hypertension.
- ..... (c) It usually involves only one side of the heart.
- ..... (d) Its most prominent feature is facial edema.

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99. Which of the following statements regarding the use of thiazide is true?

- ..... (a) It causes less hypokalemia compared to frusemide.
- ..... (b) It is not useful in congestive cardiac failure.
- ..... (c) It can precipitate gouty arthritis.
- ..... (d) High doses are required when creatinine clearance is less than 30 ml/min.

100. Which of the following statement(s) regarding sulphonylurea induced hypoglycemia is/are true?

- (i) Admission to the hospital is necessary for the patient on long acting agents.
  - (ii) Hydrocortisone is used in a severe case.
  - (iii) Diazepam is used to treat the seizure.
  - (iv) Oral glucose is useful in unconscious patients.
- 
- ..... (a) (i) and (ii) only.
  - ..... (b) (i), (ii) and (iii) only.
  - ..... (c) (i), (ii), (iii) and (iv)
  - ..... (d) (ii) and (iv) only.

( 50 Marks )

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**Section B**

**Question 1**

- A. Mr. GK is a 60 year old man admitted to Hospital USM on 20/6/93 for the management of his uncontrolled hypertension and chest pain.

HPI/PMH : GK is a known case of hypertension and diabetes since the past 10 years. He is on regular therapy at the Outpatient Department (OPD) and was treated with hydrochlorothiazid 100mg p.o b.d., propranolol 40 mg p.o tds and glibenclamide 1 mg p.o b.d. One day prior to admission, he developed severe chest pain and which was relieved with rest.

Family History : GK is a nonmarried man, and he live alone at Pondok Pasir Tumbuh. His father and mother died of old age last 20 and 10 years, respectively.

Social History : Smoke 2 packs per day.  
Nondrinkers.

**Review Of System :**

General Condition : fair.

BP : 170/100 mmHg, PR : 100 beat/min, RR : 30/min  
and T : 37°C.

HEENT : Blurring vision of both eyes, retina examination showed haemorrhage at both eyes.

Extremities : Numbness, cold at both upper and lower extremities.

Others : Noncontributory.

**Laboratory Finding :**

Na<sup>+</sup> : 135 mMol/l, K<sup>+</sup> : 3.5 mMol/l,  
Urea: 3 mMol/l and Glucose : 11 mMol/l

Provisional diagnosis : (i) Uncontrolled hypertension  
(ii) Uncontrolled diabetes.  
(iii) Angina.

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Plan :      Hydrochlorothiazide      100 mg p.o b.d.  
                 Propranolol                      40 mg p.o tds.  
                 Glibenclamide                      1 mg p.o b.d.  
                 GTN                                      1 tab s.l p.r.n.

- (i) Discuss briefly the appropriateness of the current drug treatment of Mr. G.K.

( 4 Marks )

- (ii) Comment on the possible relationship between Mr. GK previous drug therapy and his angina.

( 4 Marks )

- (iii) Discuss the controversy on the use of stepped care approach in the management of hypertension.

( 4 Marks )

- B. CT ,a 56-year old Malay male, come to the clinic complaining of lightheadedness and mild dyspnea on exertion (DOE) . The history of present illness includes intermittent light headedness and DOE over the last three weeks, but was otherwise noncontributory. Past medical history was negative for rheumatic heart disease, myocardial infarction, chest pain, diabetes, pulmonory embolus or thyroid diseases. Medication history includes psyllium two times per week plus multivitamins. He denied smoking now but stated he quit four years ago after smoking for 20 years.

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Pharmacologic review of system of CT showed that :

BP ; 130/85 mmHG PR: 140/min RR: 18/min T:37 C BW:70 Kg.  
HEENT: no jugular venous distention (JVD)  
CHEST: the chest was clear to auscultation. The chest X-ray was consistent with mild chronic obstructive airway disease (COAD) and blood gas analysis showed the following result :

pH 7.35, pCO<sub>2</sub> 45, pO<sub>2</sub> 85.

CVS : an irregularly irregular rhythm without murmur or gallops, but S1 varied in intensity. ECG showed atrial fibrillation.  
KUT : serum creatinine was 95 mmol/L and urea was 6 mmol/L  
ABDO : no hepatosplenomegally  
EXTR : without edema  
Other systems are within normal limit.

- (i) What are the subjective and objective findings of atrial fibrillation that are demonstrated by CT ?

( 2 marks )

- (ii) What are the desired therapeutic outcome of atrial fibrillation in this patient ?

( 2 marks )

- (iii) List the possible pharmacotherapeutic alternatives that can be used to achieve the desired end point.

( 2 marks )

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- (iv) What would you recommend to treat CT's atrial fibrillation ?

( 3 marks )

- (v) Discuss the clinical drug monitoring plan for your recommended regimen in question (iv).

( 4 marks )

Question 2

A. Write short notes on the following topics:

- (i) The rational and justification for pharmacist's involvement in cardiopulmonary resuscitation (CPR) team.

( 4 Marks )

- (ii) The toxicities associated with sodium bicarbonate overdosage during CPR.

( 6 Marks )

- (iii) The problems associated with epinephrine administration during CPR.

( 3 Marks )

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- B. Miss PP, a 16 year old schoolgirl was admitted to HUSM emergency and accident unit by her father after having severe shortness of breath and failed to response to several doses of inhaled salbutamol and sodium cromoglycate.

HPI : She had been well in recent weeks and the present attack was 'out of the blue'. According to her father, Miss PP had been waking most nights with dry cough and a tight chest. Last night she had severe cough, very wheezy and her chest felt tight. Several doses of inhaled salbutamol and sodium cromoglycate were tried with no effect. The GP was called and 5 mg of salbutamol was nebulized and produce a response within 30 minutes. However, a second dose of salbutamol produce no improvement.

PMH : Bronchial asthma since infancy.

Allergies : Household pets.

Medication history :

Sodium cromoglycate 20 mg QID.  
Salbutamol inhaler ii puffs PRN.

On examination :

General : appeared distress, rapid respiratory rate and audible wheeze.

Vital signs : PR 120 beats/mins,. BP 140/85 mmHg., afebrile.

- (i) What is your comments on the steps taken by Miss PP's father to overcome the attack?

( 2 Marks )

- (ii) Was the therapy administered by Miss PP's GP appropriate? What is your recommendation? (Give your reasons).

( 5 Marks )

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- (iii) You were requested to suggest an appropriate intravenous bronchodilator therapy. What were your options, IV theophylline or IV salbutamol? What would be an appropriate dosage regimen for your drug of choice?

( 5 Marks )

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Appendix

Normal Laboratory Values

1.	Ammonia	80 - 110 mcg/dl	or	47 - 65 umol/L
2.	Amylase	4 - 25 IU/ml		
3.	Bilirubin			
	- Direct	0 - 0.2 mg/dl		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 <sub>2</sub>	20 - 30 mEq/L		24 - 30 mMol/L
5.	pCO <sub>2</sub>	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 <sub>2</sub>	75 - 100 mmHg		
14.	pH	7.35 - 7.45		
15.	Acid phosphatase			
	Male	0.13 - 0.63 IU/ml		36 - 176 nmol/s <sup>-1</sup>
	Female	0.101 - 0.65 IU/ml		2.8 - 156 nmol s <sup>-1</sup> /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 <sup>+</sup> )	3.5 - 5.0 mEq/L		3.5 - 5.0 mMol/L
19.	Calcium (ca <sup>2+</sup> )	8.5 - 10.5 mg/dl		2.1 - 2.6 mMol/L
20.	Sodium (Na <sup>+</sup> )	135 - 145 mEq/L		135 - 145 mMol/L
21.	Bicarbonate (HCO <sub>3</sub> <sup>-</sup> )	24 - 38 mEq/L		24 - 28 mMol/L

...51/-



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 (Pit)	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% nilai asas	
31.	APTT	25 - 37 saat	
32.	Creatinine Clearance (CrCI)	105 - 150 ml/min/1.73 $\text{m}^2$	
33.	TT <sub>4</sub>	3.0 - 7.5 mcg/dl	
34.	RT <sub>3</sub> U	25 - 35%	
35.	FTI	1.3 - 4.2	

..52/-

NORMAL HEMODYNAMIC VALUES AND DERIVED INDICES

Hemodynamic Parameters			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 <sup>2</sup>
		$CI = \frac{CO}{\text{Body Surface Area}}$		
SV		Stroke Volume	60 - 80	ml/beat
		$SV = \frac{CO}{\text{Heart Rate}}$		
SVI		Stroke Volume Index	30 - 50	ml/beat/m <sup>2</sup>
		$SVI = \frac{SV}{\text{Body Surface Area}}$		
PVR		Pulmonary Vascular Resistance	< 200	dynes.sec.cm <sup>-5</sup>
		$PVR = \frac{MPAP - PCWP}{CO} \times 80$		

...53/-

Hemodynamic Parameters		Normal Value	Units
TPVR	Total Peripheral Vascular Resistance	900 - 1400	dynes.cm <sup>-5</sup>
	$TPVR = \frac{MBP - RAP}{CO} \times 80$		
LVSWI	Left Ventricular Stroke Work Index	35- 80	gm-m/m <sup>2</sup> /beat
	$LVSWI = (MBP - PCWP) (SVI) (.0136)$		

ooOoo