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M.B.B.S. II Professional Examination

1102

113/GMC/19

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M.B.B.S. II Professional Examination

MB-II/12(R)

234071

Pharmacology

Paper - I

(New Course)

Time Allowed : 3 Hours

Maximum Marks : 100

ALL Questions are Compulsory. Please Attempt In Sequence.

SECTION - A

(Multiple Choice Questions)

(20×1=20)

1. Bioavailability of an agent is maximal when the drug has which of the following qualities?

- ☒ a) Highly lipid soluble
- b) More than 100 Daltons in molecular weight
- c) Highly bound to plasma proteins
- d) Highly ionized

2. A 25-year-old medical student is given a prescription for asthma, which the physician states has a very high therapeutic index. Which of the statements best characterizes the drug as it relates to the therapeutic index.

- ☒ a) The drug's serum levels will likely need to be carefully monitored
- b) The drug is likely to cross the blood-brain barrier
- c) The drug is likely to have extensive drug-drug interactions
- ☒ d) The drug is unlikely to have any serious adverse effects

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3. Which of the following best describes the cellular action of epinephrine?
- a) Activation of adenylyl cyclase
  - b) Decreased activity of cAMP-dependent protein kinases
  - c) Increased intracellular stores of  $\text{Ca}^{2+}$
  - d) Inhibition of the activity of phospholipase
4. Which of the following is the most accurate statement?
- a)  $\alpha$ -Adrenoceptor sympathomimetic agonists are used to reduce mucous membrane congestion.
  - b)  $\alpha$ -Adrenoceptor agonists are used to treat bronchospasm.
  - c)  $\beta$ -Adrenoceptor agonists are used to reduce surgical bleeding.
  - d)  $\beta_2$ -Adrenoceptor agonist agents are used to prolong local anaesthesia.
5. A 65-Year-old male with CHF exacerbation is given IV furosemide. Which of the following adverse events are not associated with this medication?
- a) Transient neurotoxicity from high dose
  - b) Hypotension
  - c) Worsening renal function
  - d) Hyperkalemia
6. Which of the following is an advantage of losartan over enalapril?
- a) Better efficacy in lower blood pressure
  - b) Better prevention of secondary myocardial events

(3)

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- c) Less cost  
☒ d) Less incidence of angioedema
7. Which of the following drugs may be used to increase cardiac output in a patient with pulmonary edema secondary to MI?  
a) Captopril  
b) Dobutamine ☒  
c) Metoprolol  
d) Verapamil
8. Which of the following best describes a pharmacologic property of amiodarone?  
a)  $\alpha$ -Adrenergic agonist  
b)  $\beta$ -Adrenergic agonist  
c) Activation of  $\text{Ca}^{2+}$  channels  
d) Inhibition of  $\text{K}^{+}$  channels
9. A 42-year-old woman is noted to have Type II diabetes for 20 years. She is noted to have hypertension with BP in the 150/94 range. The urinalysis shows mild proteinuria. Which of the following drugs would be the best to treat the hypertension in this individual?  
a) Enalapril  
b) Propranolol  
c) Hydrochlorothiazide  
☒ d) Nifedipine
10. Which of the following is a usual effect of niacin?  
☒ Increases HDL

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- b) Increases LDL
  - c) Increases total cholesterol
  - d) Increases triglycerides
11. A 45-Year-old man has hypertension. A thiazide diuretic agent had been prescribed with continued elevated blood pressure. The inclusion of spironolactone to the thiazide diuretic is done to achieve which of the following?
- a) Reduce hyperuricemia
  - b) Reduce Mg + loss
  - ☒ c) Decrease the loss of Na +
  - d) Reduce K + loss
12. Which of the following is the most common adverse effect of omeprazole?
- a) Black stools
  - b) Constipation
  - c) Headache
  - d) Nausea
13. Zileuton is effective in treating asthma because it performs which of the following?
- a) Antagonizes leukotriene receptors
  - b) Inhibits cyclooxygenase
  - c) Inhibits 5-lipoxygenase
  - d) Inhibits mast cell degranulation
14. A 25-year-old man has bronchospasm that is exercise induced, particularly in the cold weather. He takes his medication 15 minutes prior to anticipated exercise, which will help to prevent the asthmatic attack but does

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not produce bronchodilation. Which drug does he take?

- a)  $\beta$ -Agonist inhaler ✓
- b) Chromone agent ✓
- c) Glucocorticoid inhaler
- d) IgE inhibitor

15. A 34-year-old man complains of nasal congestion and a "runny nose." Which of the following would be the best for long-term management of a patient with allergic rhinitis?

- a) Diphenhydramine
- b) Inhaled glucocorticoids
- c) Oral glucocorticoids
- d) Oral pseudoephedrine ✓

16. Metoclopramide acts to achieve which of the following.

- a) Increase gastric emptying ✓
- b) Decrease transit through the small intestine
- c) Decrease lower esophageal sphincter pressure
- d) Stimulate vomiting

17. A fisherman uses a transdermal scopolamine patch to assist with the nausea associated with being on a boat. What is the most likely side effect he will experience?

- a) Acute dystonic reaction
- b) Euphoria
- c) Sedation ✓
- d) Tremor

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18. Which of the following reactions represents Phase II of drug metabolism?
- Amidation
  - Hydrolysis
  - Oxidation
  - Sulfation
19. Which of the following must bind to heparin in order to exert its anticoagulant effect?
- GP IIb/IIIa receptor
  - Thrombin
  - Antithrombin III
  - Von Willebrands factor
20. Which of the following is the most common adverse effect of antihyperlipidemic drug therapy?
- Elevated blood pressure
  - Gastrointestinal disturbance
  - Neurologic problems
  - Heart palpitations

### SECTION - B

(Long Answer Questions/MEQ)

(15+15+10)

1. A 12-year-old female with an unremarkable past medical history presents with fever, sore throat, and a tender cervical lymphadenopathy. She is diagnosed with streptococcal Group A pharyngitis and is treated with intramuscular penicillin. Within a few minutes of the injection, the patient is dyspnoeic, tachycardic, and hypotensive, and is noted to have wheezing on



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examination. She also complains of dysphagia. Intramuscular epinephrine is administered immediately for her anaphylactic reaction.

- a) Discuss pharmacotherapy of anaphylactic reaction? (4)
  - b) Enumerate receptors on which epinephrine acts and produces beneficial effects? (2)
  - c) Explain pharmacological effects of epinephrine on cardiovascular and respiratory system in give (12) medical condition? (4)
  - d) Discuss five important clinical uses of Epinephrine? (5)
2. a) Classify drugs used in heart failure and discuss mechanism of action of digoxin in heart failure with suitable diagramme? (3+4)
- b) Explain pharmacological actions of digoxin on cardiovascular system and mention about (1) clinical status of digoxin in CHF. (3+2)
- c) Enumerate four adverse effects and four drug interactions of digoxin? (3)
3. Classify drugs used in management of acid peptic disease. Briefly discuss mechanism of action, therapeutic uses and adverse effects of omeprazole? (2+3+3+2)

### Short Answer Questions

What is bioavailability? Explain its clinical significance? (6×5=30) (20)

(3+2)

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5. Describe enzyme induction? Mention its clinical significance? (3+2)
6. Compare and contrast competitive and non competitive antagonism (5)
7. Enumerate at least eight antiplatelet drugs used clinically? Describe briefly GPIIb/IIIa receptor antagonists? (1+4)
8. Outline the management of acute myocardial infarction (5)
9. Enumerate four principles of Bioethics? Discuss briefly principle of Autonomy and Principle of Beneficence? (1+2+2)

*provide***Very Short Answer Questions (5×2=10)**

10. Why therapeutic index is not a good guide for safety of a drug? (2)
11. What is a phase IV clinical trial? (2)
12. Why is pralidoxime not used as antidote for carbamate anticholinesterase poisoning? (2)
13. Explain why alpha blocker is given before beta blocker in pheochromocytoma? (2)
14. A healthy 25 year old male is undergoing a brief surgical procedure. He was given I/V succinylcholine and halothane. During surgery he developed muscle rigidity and tachycardia and increased body temperature rapidly: What reaction is occurring in this patient? Write MOA of the drug given to treat this reaction? (1+1)