**PHARMACOLOGY**

**Model Answer**

**Question (1) :**

a. What is the significance of hepatic microsomal enzyme induction and inhibition with examples (1 example for induction & 1 for inhibition)?

- Affect metabolism and action of some drugs
  - b. Inhibitor: Estrogen.
- Tolerance (+HME $\rightarrow$ ↓ some drugs actions)
- Toxicity (Acetaminophen with +HME $\rightarrow$ ↑NABQI “Hepatotoxic”)
- Jaundice ttt in newborn (Barbiturate $\rightarrow$ +HME $\rightarrow$ ↑bilirubin metabolism)

b. What is the effect of changing urinary PH on drug excretion?

- Acidification of urine (By ASA) $\rightarrow$ ↑ excretion of basic drugs.
- Alkalization of urine (By NaHCO3) $\rightarrow$ ↑ excretion of Acidic drugs.

**Question (2) :**

a. How to treat a patient with organo-phosphorus poisoning?

- Gastric lavage (+charcoal)
- Atropine 2mg every 5-10m till pupil dilates or tachycardia
- Skin wash
- Mechanical ventilation (severe cases)
- Cholinesterase reactivators: pralidoxime (in 1st 24 h)

b. Discuss the mechanism of action of beta blockers in treatment of hypertension?

- ↓CO (-ve ionotropic & chronotropic action)
- ↓ peripheral resistance (after 2 weeks)
- Some BB has additional $\alpha$ blocking effect
- ↓ renin release .
- ↓NA release by blocking of presynaptic $\beta$1.
- Reset baroreceptor sensitivity to the lower blood pressure
Question (3):

c. **What are the uses of ACEI (Angiotensin converting enzyme inhibitor)?**
   
   - Hypertension
   - Heart failure
   - Myocardial infarction
   - Diabetic nephropathy

d. **What are the side effects of Digitalis (clinical picture of Digitalis toxicity)?**
   
   - Early: Bradycardia / Vomiting.
   - Late:
     1. Bradyarrhythmia: Bradycardia & heart block
     2. Tachyarrhythmia: Atrial tachycardia, junctional arrhythmia, ventricular (bigeminy & trigeminy & tachycardia & fibrillation).
     3. Anorexia, nausea & vomiting.
     5. Blurring of vision, abnormal colored vision

c. **Question (4):**

a. **What are the uses of cortisone?**
   
   - Adrenocortical insufficiency.
   - Congenital adrenal hyperplasia.
   - Cushing syndrome: during & after adrenalectomy.
   - Adrenal suppression (diagnostic)
   - Lung maturation in fetus (↑ pulmonary surfactant).
   - Hypercalcemia.
   - Anti-inflammatory & immunosupression

b. **Enumerate the side effects of Metformin?**
   
   - GIT irritation.
   - Lactic acidosis.
   - Megaloblastic anemia due to ↓ absorption of vitamin B12.
Question (5) :

c. What are the uses of morphine?
   - Analgesia: (For all pain except biliary pain). e.g. ……
   - Acute pulmonary edema:
   - Pre-anesthetic medication.
   - Anesthesia: IV, epidural, intrathecal

d. Enumerate the side effects of NSAID (Non-steroidal anti-inflammatory drugs)?
   - Acute toxicity (hyperpyrexia and dehydration, nausea and vomiting, acid/base disturbance, Hemorrhagic phenomenon, convulsions).
   - Salisalism (chronic toxicity)
   - Hypoprothrombinemia → bleeding
   - GIT → Nausea, vomiting, peptic ulcer
   - Gout.
   - Allergy → rash, bronchospasm (BA)
   - Respiration → may precipitate BA
   - Renal impairment (nephrotoxic → RF)
   - Rey syndrome (hepatic failure in children)

d. Question (6) :

a. Classify antibiotic according to their mechanism of action? Give one example for each mechanism.
   - Cell wall inhibitors: Penicillin, Cephalosporin.
   - Cell membrane inhibitors: Polymyxins.
   - DNA/RNA inhibitors: Quinolones, Rifampicin.
   - Protein synthesis inhibitors:
     o 50S: Chloramphenicol, Erythromycin
     o 30S: Aminoglycoside, Tetracyclin
   - Metabolic products: Suphonamide, Trimethoprim.

b. What are the side effects of Gentamycin (Aminoglycoside)?
   - Ototoxicity
   - Neuromuscular blockade
   - Nephrotoxicity
   - Hypersensitivity reactions
Clinical Exam – Model Answer

For each statement mark (√) or (X):

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>Answer</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Isoprenaline produces rise in both systolic and diastolic blood pressure and slow heart rate</td>
<td>X</td>
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<tr>
<td>2</td>
<td>Methyl-xanthine can be used in bronchial asthma but not cardiac asthma</td>
<td>X</td>
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<tr>
<td>3</td>
<td>Insulin can be used in treatment of type 2 diabetes mellitus with renal failure</td>
<td>√</td>
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<tr>
<td>4</td>
<td>Steroids are contraindicated in TB</td>
<td>√</td>
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<tr>
<td>5</td>
<td>Digoxin can be given in heart failure</td>
<td>√</td>
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<tr>
<td>6</td>
<td>Beta blockers can be used in acute attack of bronchial asthma</td>
<td>X</td>
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<tr>
<td>7</td>
<td>Adrenaline is contraindicated in anaphylactic shock</td>
<td>X</td>
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<tr>
<td>8</td>
<td>Captopril acts by inhibition of angiotensin converting enzyme</td>
<td>√</td>
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<tr>
<td>9</td>
<td>Paracetamol is an analgesic and antipyretic drug</td>
<td>√</td>
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<td>10</td>
<td>Sulphonylurea is not an effective treatment of type 1 diabetes mellitus</td>
<td>√</td>
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<td>11</td>
<td>Quinolones antibiotics is contraindicated in pregnancy</td>
<td>√</td>
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<tr>
<td>12</td>
<td>Chronic steroid therapy should not stopped suddenly</td>
<td>√</td>
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<tr>
<td>13</td>
<td>The intravenous route of administration is suitable for drugs with extensive 1st pass effect</td>
<td>√</td>
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<tr>
<td>14</td>
<td>Morphine is contraindicated in cancer pain</td>
<td>X</td>
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<tr>
<td>15</td>
<td>Patients with history of allergy to penicillin can be given cephalosporin safely</td>
<td>X</td>
</tr>
<tr>
<td>16</td>
<td>Beta blockers can mask manifestation of hypoglycemia</td>
<td>√</td>
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<tr>
<td>17</td>
<td>Nifidipine is used in treatment of hypertension</td>
<td>√</td>
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<tr>
<td>18</td>
<td>α-methyl-dopa is an anti-hypertensive drug that can be given safely during pregnancy</td>
<td>√</td>
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<tr>
<td>19</td>
<td>Insulin therapy cause bradycardia as a side effect</td>
<td>X</td>
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<tr>
<td></td>
<td>Aspirin is not an anti-pyretic drug</td>
<td>X</td>
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