**Course Title: General Pharmacology**

**Student Name:**

**Student ID:**

**Note:**

* **Paper is divided into 5 questions**
* **Each question carry equal marks (10) with grand total of 50 marks**
* **Each question is composed of specific parts, pay attention to each part of question or otherwise it will lead to mark deduction**
* **Avoid copy paste from slides, your answer may got canceled if it found a total copy**
* Define anthelmintics, write down MOA and side effects of Mebendazole, Praziquantel and Piperazine citrate.
* Ans: Anthelmintic is the term used to describe a drug used to treat infections of animals with parasitic worms.
* Mebendazole sometimes causes diarrhea, abdominal pain, and elevated liver enzymes. In rare cases, it has been associated with a dangerously low white blood cell count, low platelet count, and hair loss, with a risk of agranulocytosis in rare cases.
* Protein binding: 95%
* Metabolism: Extensive live.
* The drug's mode of action is not exactly known at present, but experimental evidence indicates praziquantel increases the permeability of the membranes of schistosome cells towards calcium ions. The drug thereby induces contraction of the parasites' muscle, resulting in paralysis in the contracted state.
* Headache, dizziness, stomach pain, nausea, tiredness, weakness, joint/muscle pain, loss of appetite, vomiting, and sweating may occur. These side effects are usually mild and temporary and may be symptoms of your parasite infection and/or the dying parasites.

(a) Differentiate between type I and type II diabetes mellitus

 People with type 1 diabetes don't produce insulin. You can think of it as not having a key. People with type 2 diabetes don't respond to insulin as well as they should and later in the disease often don't make enough insulin. You can think of this as having a broken key.

(b) As per your opinion which of the insulin delivery device is more effective and why?

 Pen devices are also more accurate than syringes in measuring insulin at very low doses (i.e., 1 or 2 units). Another advantage of insulin pens is that they are more portable than syringes. They are considered to be more discreet and may reduce embarrassment when injecting insulin in public

* Differentiate between general and local anesthesia, explain stages of anesthesia and write down MOA of local anesthetics in detail.

Ans: General anesthesia – for surgical procedure to render the patient unaware/unresponsive to the painful stimuli.Drugs producing General Anaesthesia – are called General Anaesthetics.Local anesthesia - reversible inhibition of impulse generation and propagation in nerves.

stages: There are four stages of general anesthesia, namely: analgesia - stage 1, delirium - stage 2, surgical anesthesia - stage 3 and respiratory arrest - stage 4. As the patient is increasingly affected by the anesthetic his anesthesia is said to become 'deeper'.

Mechanism of Action

Local anesthetics produce anesthesia by inhibiting excitation of nerve endings or by blocking conduction in peripheral nerves. This is achieved by anesthetics reversibly binding to and inactivating sodium channels

* Write down MOA, ADRs and examples of Alkylating agents, Antimetabolites, Plant alkaloids and monoclonal antibodies.
* Alkylating Agents:
* Common Characteristics of Alkylating Agents. Mechanism of Action: Aklylating agents directly damage DNA to prevent cancer cells from undergoing cell division. They have a chemical structure that contain a bifunctional nitrogen mustard moiety which includes two reactive alkyl groups (hence the term aklylation).
* Antimetabolites:

 Antimetabolites interfere with DNA and RNA synthesis by acting as false metabolites, which are incorporated into the DNA strand or block essential enzymes, so that DNA synthesis is prevented. Most agents are cell cycle phase specific for S phase.

 Listen to pronunciation. (AN-tee-meh-TA-boh-lite) A drug that is very similar to natural chemicals in a normal biochemical reaction in cells but different enough to interfere with the normal division and functions of cells.

Monoclonal Antibodies:

 Monoclonal antibodies are laboratory-produced molecules engineered to serve as substitute antibodies that can restore, enhance or mimic the immune system's attack on cancer cells. They are designed to bind to antigens that are generally more numerous on the surface of cancer cells than healthy cells.

* Explain the role of vitamin K in blood clotting and treatment of bleeding disorders.
* Vitamin K helps to regulate the process of blood coagulation by assisting in the conversion certain coagulation factors into their mature forms. Without vitamin K, our bodies would be unable to control clot formation.
* Some bleeding disorders may be treated with topical products or nasal sprays. Other disorders, including hemophilia, can be treated with factor replacement therapy. This involves injecting clotting factor concentrates into your bloodstream. These injections can prevent or control excessive bleeding
* What does thrombolytic agents mean? Explain with example.
* Thrombolytic agent: A drug that is able to dissolve a clot (thrombus) and reopen an artery or vein. Thrombolytic agents may be used to treat a heart attack, stroke, deep vein thrombosis (clot in a deep leg vein), pulmonary embolism, and occlusion of a peripheral artery or indwelling catheter.
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