NAME----------Abdullah khan
ID----------14557
SUBJECT—------General pharmacology II
INSTRUCTER----M.s Nadra

Q1.

(A) Differentiate between type I and type II diabetes mellitus?

Ans.

There are two main types of diabetes: type 1 and type 2. Both types of diabetes are chronic diseases that affect the way your body regulates blood sugar, or glucose. Glucose is the fuel that feeds your body's cells, but to enter your cells it needs a key. Insulin is that key.

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.

Both types of diabetes can lead to chronically high blood sugar levels. That increases the risk of diabetes complications.

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

Ans.

There are different ways to inject insulin into your body; this is called insulin delivery. Syringes, pens, pumps, and jet injectors give many persons with diabetes options for their insulin delivery.

But as per my opinion INSULIN PUMP is best delivery device and more effective because:

INSULIN PUMP:-

People with diabetes who have difficulty controlling blood glucose by other means (by using a syringe or pen) may find an insulin pump to be a good therapy option. Several companies manufacture insulin pumps that are computerized / motorized and flexible use devices. Some

models serve as a glucose monitor and insulin pump.

The pump is filled with rapid or short-acting insulin. Insulin is dosed before each meal, and there is also a small amount of insulin delivered for 24 hours. The patient learns to calculate how much insulin is needed based on the carbohydrate content (grams) meal or snack. The pump prevents overdosing.

Q2.
(A) Explain the role of vitamin k in blood clotting and treatment of bleeding disorders?

Ans.
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.

Imagine being unable to form blood clots effectively--that would mean that we would lose all of our blood volume from something as simple as a pinprick!

To prevent this extreme scenario- vitamin K must be ingested, metabolized, and utilized to create mature coagulation factors.

Now, to understand the regulation of clot formation, we first need to talk briefly about hemostasis--hemo referring to blood, and stasis meaning to halt or stop.

Hemostasis is divided into two phases: primary and secondary hemostasis.

Primary hemostasis involves the formation of a platelet plug around the site of an injured blood vessel, and secondary hemostasis reinforces the platelet plug with the creation of protein mesh called fibrin.

Treatment of bleeding disorders:-

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.

(B) What does thrombolytic agents mean? Explain with example:

Ans.

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. All thrombolytic agents are serine proteases (they digest protein) and convert plasminogen to plasmin which breaks

down the fibrinogen and fibrin and dissolves the clot.

EXAMPLE:-

The most commonly used clot-busting drugs-- also known as thrombolytic agents-- include: Eminase (anistreplase) Retavase (reteplase) Streptase (streptokinase, kabikinase)

Q3.

(A) Explain the effects and adverse effects of organic nitrates in angina pectoris.

Ans.

EFFECTS:-

Typical angina pectoris is a characteristic sudden, severe, crushing chest pain that may radiate to the neck, jaw, back, and arms. Patient may also present with

dyspnea or atypical symptoms such as indigestion, nausea, vomiting, or diaphoresis. Transient, self-limited episodes of myocardial ischemia (stable angina) do not result in cellular death

ADVERSE EFFECT:-

Headache is the most common adverse effect of nitrates' High doses of nitrates is also cause postural hypotension, facial flushing, and tachycardia.

Phosphodiesterase type 5 inhibitors such as sildenafil potentiate the action of the nitrate. To preclude the dangerous hypotension that may occur, this combination is contraindicated.

(B) Write down the treatment algorithm for improving symptoms of stable angina.

Ans.

1 Anti-Anginal Drugs

2 Atherosclerosis

Atherosclerotic lesions in coronary arteries can obstruct blood flow.

Leading to an imbalance in myocardial oxygen supply and demand that presents as stable angina or an acute coronary syndrome (myocardial infarction [MI] or unstable angina).

Spasms of vascular smooth muscle may also inhibit cardiac blood flow, reducing perfusion and causing ischemia and anginal pain.

3 Angina Pectoris Typical angina pectoris is a characteristic:

Sudden, severe, crushing chest pain that may radiate to the neck, jaw, back, and arms.

Patients may also present with dyspnea or Atypical symptoms such as indigestion, nausea, vomiting, or diaphoresis.

Angina different types caused by varying combinations of increased myocardial demand and decreased myocardial perfusion.

4 Treatment Strategies

Four types of drugs, used either alone or in combination, are commonly used to manage patients with stable angina:

B-blockers.

Calcium Channel Blockers.
Organic Nitrates.
The sodium channel–blocking drug, ranolazine.
These agents help to balance the cardiac oxygen supply and demand equation by affecting blood pressure, venous return, heart rate, and contractility.

Q4.

(A) Differentiate between primary and secondary hypertension:

Ans.

From another perspective, hypertension may be categorized as either essential or secondary. Primary (essential) hypertension is diagnosed in the absence of an

identifiable secondary cause.
Approximately 90-95% of adults with hypertension have primary hypertension, whereas secondary hypertension accounts for around 5-10% of the cases. [11] However, secondary forms of hypertension, such as primary hyperaldosteronism, account for 20% of resistant hypertension (hypertension in which BP is >140/90 mm Hg despite the use of medications from 3 or more drug classes, 1 of which is a thiazide diuretic).

(B) Explain the effect of renin hypertension.
Ans.

The renin-angiotensin (RAA) system is a group of related hormones that act together to regulate blood pressure. It is

called a system because each part influences the other parts and all are necessary for the whole to function correctly. The renin-angiotensin system, working together with the kidneys, is a vitally important part of the body's blood pressure regulation system.
While short-term blood pressure changes are caused by a variety of factors, almost all long-term blood pressure adjustments are the responsibility of the kidneys and the renin-angiotensin system.

(C) What is the importance of pharmacological treatment of hypertension?

Ans.
Cardiovascular disease (CVD) is the leading

cause of death in Russia. Hypertension and hyperlipidemia are important risk factors for CVD that are modifiable by pharmacological treatment and life-style changes. We aimed to characterize the extent of the problem in a typical Russian city by examining the prevalence, treatment and control rates of hypertension and hyperlipidemia and investigating whether the specific pharmacological regimes used were comparable with guidelines from a country with much lower CVD rates.

Q5.

(A) Differentiate between right heart failure and left heart failure.

Ans.

Right sided heart failure:-

When the heart fails to pump blood adequately to the body tissues owing to the decrease in the pumping capacity of the right heart chambers, that condition is identified as the right heart failure.

The right sided heart failure occurs secondary to the left sided heart failure on most occasions. When the left side of the heart, specifically the left ventricle, fails to pump blood sufficiently into the aorta, blood starts to pool inside the left heart chambers. Consequently the pressure inside these chambers increases. This impairs the drainage of blood into the left atrium from the lungs via the pulmonary veins. As a result, the pressure inside the

pulmonary vasculature also rises. Therefore, the right ventricle has to contract more vigorously against a higher resistive pressure to pump blood into the lungs. With the long-term prevalence of this condition, heart muscles of the right chambers start to wear down ultimately resulting in the right sided heart failure.

Left sided heart failure:-

The inability of the heart to pump blood to adequately fulfill the metabolic demand of the body is called a heart failure. When this failure is due to the faltering of the pumping capacity of the left heart chambers, this is known as left sided heart failure.

Q5.(B) Summarize the pharmacotherapy of heart failure.

Ans.

The goals of pharmacotherapy for heart failure are to alleviate symptoms, slow or reverse deterioration in myocardial function, improve patient's functional status and quality of life, minimize hospitalizations, and to reduce disease mortality. Medical care for heart failure includes management of contributing factors and associated conditions, lifestyle modification, pharmacologic, and invasive interventions to limit and reverse the cardinal manifestations. Lifestyle modification primarily focuses on smoking cessation, restriction of alcohol, salt and fluid intake, physical activity as deemed

appropriate and weight management.