

HEALTH SCIENCES FINAL EXAM STRUCTURE

TEAM (3)
GRADE (12)
Advance



Teacher : Amira Moustafa Gamea

Q السؤال	Learning Outcome/Performance Criteria**		Reference(s) in the Student Book	
			المراجع في كتاب الطالب	
	ناتج التعلم/ معايير الأداء .		Example/Exercise from Workbook	Page in textbook الصفحة
		تمرين/مثال		
1 2	Demonstrate an understanding of the history of systems of medicine, medicines, and pharmacy.		Textbook	12-15
	History of pharmacy تاريخ الصيدلة		PDF / Workbook	12-14
	Asclepius and Hygeia	masters of medicine أساتذة الطب Ancient (old) Greeks were the first ones used a plant to treat a wound (injury). اليونانيين القدماء أول من استخدم نباتاً لعلاج جرح (إصابة).		
	Islamic Golden Age العصر الاسلامي الذهبي	(8th century until 14th century) Pharmacy became separate from medicine (القرن الثامن حتى القرن الرابع عشر) أصبحت الصيدلة منفصلة عن الطب		
	Al Razi الرازي	Muslim doctor, scientist, and philosopher. During the Islamic Golden Age, he was the first to write books based on home treatments طبيب مسلم وعالم وفيلسوف. خلال العصر الذهبي الإسلامي ، كان أول من كتب كتباً تعتمد على العلاجات المنزلية		
	In ancient (old) Egypt, India, and China, في مصر القديمة والهند والصين	Doctors started treating sick people using natural plants and herbs. بدأ الأطباء في علاج المرضى باستخدام النباتات والأعشاب الطبيعية.		
	In the 16th century, a law (rule) قانون	didn't allow doctors (physicians) to prepare medicines for their patients لا يسمح للأطباء بإعداد الأدوية لمرضاهم		
3	Identify the evolving roles of the pharmacists in different disciplines.		Textbook	16
	Community pharmacist	who work in a pharmacy where you would go to buy medicines. صيدلي عام - الذي يعمل في صيدلية حيث تذهب لشراء الأدوية	PDF / Workbook	14
	Clinical pharmacist	who work in <u>hospitals</u> with doctors and nurses. <u>Specialize</u> in different areas. Such as <u>Oncology</u> : cancer / <u>geriatric</u> : old age / <u>pediatrics</u> : children / <u>psychiatry</u> : mental disorder صيدلي سريري - يعمل في المستشفيات مع الأطباء والممرضات		
	Home care pharmacist	who are responsible for preparing and sending medication to people who are home as they are very sick or old. صيدلي الرعاية المنزلية - المسؤول عن تحضير الأدوية وإرسالها إلى الأشخاص الموجودين في المنزل لأنهم مرضى أو كبار السن		
	Research pharmacist	pharmacists who develop new drugs in (<u>laboratory</u>) صيدلي البحث - الصيادلة الذين يطورون أدوية جديدة (في المختبر)		
4 5	Define pharmacology علم دراسة العقاقير Pharmacology (‘Pharma’ = drug عقار and ‘logy’ = study of دراسة) is a part of medicine and biology. It is the study of drug action and the effects that they have on our body. إنها دراسة تأثير. هو جزء من الطب وعلم لأحياء. الدواء وتأثيراته على أجسامنا.		Textbook PDF / Workbook	18-22 16-19

6	Define pharmacokinetics, and pharmacodynamics		Textbook	18-22
	Pharmacokinetics حركة	Pharmacodynamics آلية عمل	PDF / Workbook	16-19
	Study of what the body does to the drug هي دراسة ما يفعله الجسم بالعقار	What the drug does to the body the effects - receptors are activated. ماذا يفعل الدواء للجسم وآثاره وتنشيط المستقبلات		
7	discriminate between drugs, medicines, and excipients.		Textbook	18-22
	Drugs	Medicines	PDF / Workbook	16-19
	are chemical substances that are taken from plants, animals, microorganisms or minerals	Medicines are the result of a drug or drugs being mixed.		
	considered ingredients تعتبر مكونات	Used when making medicines. مادة توضع مع المكون النشط للدواء ، (يشار إليها غالبًا باسم "عوامل التكتل" ، "مواد حشو" ، أو "المخففات")		
8	Identify how different dose forms, routes of administration and dose adjustment impact upon the clinical outcome of drug administration.		Textbook	21
	Receptors: the parts of a cell that connect to a substance and cause chemical reaction in that cell When a drug connects with receptors in the cells, there are three level of response: 1- Full against: when a drug connects to a receptor and produces a <u>maximum</u> effect. 2- Partial against: when a drug connects to a receptor and produces <u>less than</u> a maximum effect. 3- Antagonist: when a drug connects to a receptor and produces but there is <u>NO</u> effect.		PDF / Workbook	20-23
Identify how different dose forms, routes of administration and dose adjustment impact upon the clinical outcome of drug administration.				
The route of administration: طرق ادارة الدواء tells us how the drug has entered the body. Each drug has a specific method in which it should enter the body .				

- Where the patient takes medication through the mouth.
- Most commonly used. الأكثر شيوعاً
- Are usually pills or capsules.
- The oral medication gets broken along its way to the intestine (**digestive system**) where it gets absorbed into the bloodstream. ينكسر الدواء الفموي على طول طريقه إلى الأمعاء حيث يتم امتصاصه في مجرى الدم
- Once in the blood, it can act on many organs.

Advantages المميزات

Disadvantages العيوب

- | | |
|--|--|
| <ul style="list-style-type: none"> • Easiest, safest and most cost-effective • Stable drugs: provide an accurate dose for the patient • Slower absorption than other routes • Slow-release forms available | <ul style="list-style-type: none"> • The unpredictable absorption of a drug - If there is food in any part of the digestive system • Slow absorption - It takes a while for the drug to start showing any effects. |
|--|--|

Sublingual and Buccal administration

Sublingual: under tongue تحت اللسان
Buccal : between the gum اللثة and cheek الخد



- also given through the mouth, but are not commonly used. Can be used in cases of **emergencies** (very fast absorption). These areas have a lot of small blood vessels where the drug gets dissolved and **absorbed to the blood without going through the digestive system**

Advantages

Disadvantages

- | | |
|--|---|
| <ul style="list-style-type: none"> • Lower doses can be given. • It is good If a patient is unable to swallow a tablet. • easy and alternative (way). | <ul style="list-style-type: none"> • It can be uncomfortable. • A patient can accidentally swallow the drug. Another dose cannot be given as this can lead to an overdose. • If the patient eats or drinks while the tablet is in their mouth, it can affect how the drug is absorbed and how well it works |
|--|---|

Topical administration الإدارة الموضعية

Cream or gel directly applied to the area that needs treatment. It includes areas such as the skin, eyes, ears and nose.

Advantages

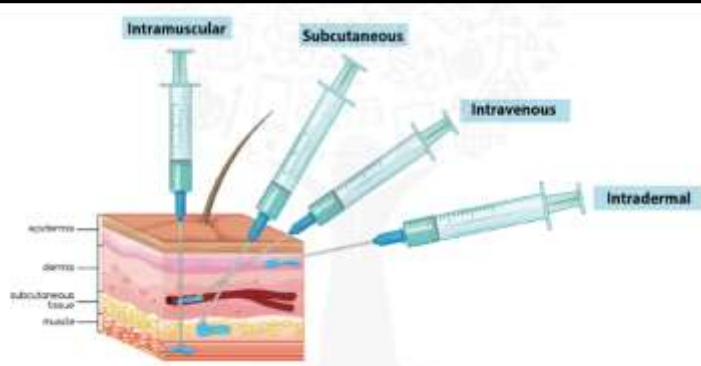
Disadvantages

- | | |
|---|--|
| <ul style="list-style-type: none"> • Easy to apply for any age. • Good if treatment is only needed in the specific area. • Low risk of side effects and affecting other drugs. | <ul style="list-style-type: none"> • Not well absorbed into deeper layers of the skin. • Absorption can be slow. • Creams and ointments مرهم applied to the skin can stain clothes. |
|---|--|

Parenteral administration الإدارة بالحقن

most commonly using injections. There are 4 types:

- ❖ **Intradermal**: داخل الجلد drug injected into layers of skin. Ex: **BCG vaccination**
- ❖ **Intravenous**: في الوريد drug injected into vein bloodstream. Ex: **morphine**
- ❖ **Subcutaneous**: الطبقة الدهنية drug injected into fat layer under the skin. Ex: **insulin**
- ❖ **Intramuscular**: عضلي drug injected into the muscle. Ex: **paracetamol**



Advantages

Disadvantages

- | | |
|---|---|
| <ul style="list-style-type: none"> • The drug action is faster • Suitable for use in an emergency. • It is useful in unconscious patients. • It is suitable when orally administered drugs do not work. | <ul style="list-style-type: none"> • preparation should be sterile. يجب أن يكون التحضير معقماً. • The equipment is expensive. غالية الثمن • Uncomfortable or painful for the patient. لا يمكن اعطاءها ذاتياً • They can be dangerous خطر if administered incorrectly. |
|---|---|

Identify the appropriate use of antibiotics. مضادات حيوية

Destroy or slow down the growth of bacteria.

They include a range of strong drugs that treat diseases caused by bacteria.

Normally when bacteria multiply in the body, the immune system can kill them and fight the infection.

In the UAE, you can only get antibiotics with a prescription from the doctor. It is illegal to buy antibiotics without a prescription.

It is important to complete the whole course of medication even after symptoms of the infection have improved.

It reduces the risk that the bacteria will become resistant to the antibiotic.

It is important to complete the whole course of medication even after symptoms of the infection have improved.

It reduces the risk that the bacteria will become

Resistant to the antibiotic: مقاومة المضاد الحيوي This means the antibiotics can become useless against the bacteria as the bacteria have improved their defenses.

Antibiotics should only be prescribed to treat conditions حالات وصف المضادات الحيوية

- Not very serious but are unlikely to clear up without the use of antibiotics. ليست خطيرة للغاية ولكن من غير المرجح أن تزول بدون استخدام المضادات الحيوية
- Not very serious but could spread if not treated. ليست خطيرة للغاية ولكنها يمكن أن تنتشر إذا لم يتم علاجها
- Where antibiotics can significantly speed up recovery time. حيث يمكن للمضادات الحيوية أن تسرع بشكل كبير من وقت الشفاء
- Where the risk of not prescribing antibiotics can lead to more dangerous complications. حيث يمكن أن يؤدي عدم وصف المضادات الحيوية إلى مضاعفات أكثر خطورة

Side effects of antibiotic الآثار الجانبية للمضادات الحيوية

common side effects آثار جانبية شائعة

- Diarrhea إسهال
- Nausea غثيان
- Vomiting قيء
- Rash طفح جلدي
- Upset stomach اضطرابات المعدة

less common side effects آثار جانبية أقل شيوعاً

- kidney stones حصى الكلى
- blood clotting جلطة
- blood disorders اضطرابات الدم
- Bowel inflammation التهاب الأمعاء

Textbook

30-33

PDF / Workbook

24-26

Interpret basic Latin prescription abbreviations الإختصارات

Textbook

24-39

PDF / Workbook

28-33

Measurements	
Abbreviation	Meaning
kg	kilogram
g	gram
mg	milligram
mcg	microgram
ml	millilitre
tsp	teaspoon (5ml)

Routes of administration	
Abbreviation	Meaning
IM	Intra <u>m</u> uscular
IV	Intra <u>v</u> enous
PO	Oral
SC	Sub <u>c</u> utaneous
SL	Sub <u>l</u> ingual
TOP	<u>T</u> opical

Prescription	
Abbreviation	Meaning
Rx	Prescription
Ac	Before meals
Pc	After meals
Hs	At bedtime
Prn	As needed
Stat	Give now
Ad	As desired / wanted
Bid	Twice a day

Prescription	
Abbreviation	Meaning
Tid	Three times a day
qid	Four times a day
Xr	X- ray
Dx	Diagnosis
Sx	Symptoms
Tx	Treatment
FBC	Full blood count
Bp	Blood pressure

Roman Number	
1	I or i
2	II or ii
3	III or iii

Examples: Read the prescriptions blows and Interpret the Latin abbreviations:

Clindamycin 300 mg PO , Tid, ac , for 7 days

Clindamycin 300 milligram oral / by mouth ,three times a day , before meals, for 7 days

“Rx Dexamethasone 4mg, ii, PO, bid, cancer Sx”

Prescription Dexamethasone 4 milligram ,2 tablets, oral / by mouth, twice a day, cancer Symptoms

Rx Zofran 4mg, IV, bid, PRN, nausea

Prescription Zofran 4 milligram, intravenous, twice a day, as needed, nausea

“ Amoxicillin , 1 tsp , Po , bid X 10 days “

1 Teaspoon by mouth 2 times in 10 days

Drug formulas in pharmacy

جرعة أقراص الدواء Tablet dosage

Desired dose ÷ stock strength = number of tablets needed

الجرعة المرغوبة ÷ قوة المخزون (قوة المادة المخزنة بحبة الدواء) = عدد الأقراص المطلوبة

1. Tablet dosage (EXAMPLE)

The doctor prescribed 120mg of drug. The drug is only available in 30mg tablets. How many tablets should be given to the patient?

Prescribe dose ÷ Stock strength = number of tablet needed

$$120 \div 30 = 4 \text{ tablets}$$

جرعة المحلول Mixtures and solution dosage

Desired dose ÷ stock strength x stock volume = amount of solution

الجرعة المطلوبة ÷ قوة المخزون × حجم المخزون = كمية المحلول

2. Mixture and solution (EXAMPLE)

The doctor prescribed 120mg paracetamol. The drug is only available in 250mg/5ml. How much liquid is needed per dose?

Desired dose ÷ Stock strength × Stock volume = amount of solution

$$120 \div 250 \times 5 = 2.4 \text{ ml per dose}$$

IV rate

Total IV volume ÷ time (hours or minutes) = ml administered per hour or minute

إجمالي حجم المغذي بالوريد ÷ الوقت (ساعات أو دقائق) = مليلتر في الساعة أو الدقيقة

3. IV rate (EXAMPLE)

A patient needs to be given two liters of saline over 16 hours. What is the rate in ml per hour?

Total IV volume ÷ time (hours or minutes) = ml administered per hour or minute

أولا : يجب تحويل اللتر إلى مليلتر

$$2000 \div 16 = 125 \text{ ml / hour}$$

$$2\text{L} = 2000 \text{ ml}$$

A patient needs to be given 50ml of saline over 90 minutes. What is the rate in ml per hour?

Total IV volume ÷ time (hours) = ml administered per hour or minute

أولا : يجب تحويل الدقائق إلى ساعات

$$50 \div 1.5 = 33.3 \text{ ml / hour}$$

$$90 \div 60 = 1.5 \text{ hour}$$

18	Demonstrate an understanding of essential communication skills applied to pharmacy. The 5 C's effective communication with patient خمس خطوات لتواصل فعال مع المريض 1. Clear واضحة what exactly do I want to communicate ? 2. Cohesive مترابطة Does all the information make sense 3. Complete متكاملة have I communicated all the information ? 4. Concrete محددة وملموسة am I being as specific as possible ? 5. Concise مختصرة am I being direct and brief ? or am I using words that are not needed ?	Textbook PDF / Workbook	46-50 38-41
19	List the causes of foodborne illness. The most common disease-causing microorganisms found in food are bacteria, parasites, fungi, viruses, or chemicals. أكثر الكائنات الحية الدقيقة المسببة للأمراض شيوع البكتيريا , الفيروسات , الفطريات , الطفيليات أو المواد الكيميائية <u>Bacteria need certain conditions to grow:</u> Time – bacteria double every 15 minutes Warmth – bacteria need warmth to multiply Food – bacteria need nutrients to grow Water – bacteria need moisture رطوبة to grow Some of illness – causing bacteria that are commonly found in food are : • Campylobacter • Escherichia coli (E . coli) • Salmonella • Listeria The infographic shows a thermometer with a scale from -10°C to 100°C. The 'Temperature danger zone' is highlighted in red, spanning from 5°C to 60°C, with the text 'Bacteria grow quickly'. Above 60°C is the 'Hot food zone' (yellow), with 'Bacteria are destroyed'. Below 5°C is the 'Cold food zone' (light blue), with 'Bacteria don't grow'. Below 0°C is the 'Frozen food zone' (dark blue). Text on the left notes that the danger zone is between 5°C and 60°C, which is the easiest for harmful bacteria to grow in, and advises minimizing time in this zone, keeping refrigerated food at 5°C or below, and hot food at 60°C or above.	Textbook PDF / Workbook	56-63 50-57

Explore the concept of cross-contamination.

• **Contamination** : is when food becomes dangerous because it contains harmful or unwanted substance like bacteria. ملوث : عندما يصبح الطعام خطراً بسبب احتوائه على مواد ضارة مثل البكتيريا

• **Cross-contamination** : is how bacteria can spread in food..It can result in food poisoning التلوث المتبادل : كيفية انتشار البكتيريا في الطعام مما يسبب التسمم الغذائي

• Three main types of cross-contamination:

1. Food-to-food

- This is the process of adding contaminated food to non-contaminated food
- Harmful bacteria spread and multiply
- Raw نيئ , undercooked or unclean food can contain large amounts of bacteria
- Example – adding unwashed, contaminated lettuce خس to a fresh salad can contaminate the other ingredients

1. Equipment-to-food

- Bacteria can live for a long time on surfaces like countertops, cutting boards لوحات التقطيع , utensils الأواني , storage containers, and factory equipment
- It is very important to wash all surfaces and equipment properly using soap and hot water

2. People-to-food

- It is easy for humans to transfer bacteria from their bodies or clothes to food
- This includes using dirty tea towels مناشف
- A person could cough into their hand and continue to prepare a meal without washing their hands

To prevent cross-contamination لمنع انتقال التلوث

Cutting board colours you should use for each food الوان لوحات التقطيع الذي يجب أن تستخدم لكل طعام

Prevent cross contamination

Use the correct colour coded chopping boards and knives

Raw meats and poultry only

Raw fish and shellfish only

Raw unwashed vegetables, salads and fruits only

Ready to eat and cooked foods only

Washed vegetables, salads and fruits only

Bakery and dairy products only



Identify the importance of proper hygiene practices. Q 20

Compare and contrast food allergies and food intolerances.

Food allergy	Food intolerance
- It usually comes on suddenly - Small amounts of food can trigger a reaction - A reaction happens every time the food is eaten - It can be life-threatening	- It usually comes on gradually - A reaction may only happen when a lot of the food is eaten - A reaction may only happen if the food is eaten often - Is not life-threatening

Symptoms of allergic reactions	Symptoms of food intolerances
- Rashes or hives طفح جلدي و حكة - Itchy mouth حكة بالفم - Swelling of face, tongue and lips تورم - Trouble breathing	- Gas - Stomach cramps/bloating انتفاخ - Heartburn حرقة بالمعدة - Headaches

Symptoms of both

- Nausea غثيان
- Abdominal pain ألم بالبطن
- Diarrhoea إسهال
- Vomiting قيء

Textbook

76-81

PDF / Workbook

70-75

Outline the purpose of therapeutic diets.

Therapeutic : relates to healing of disease

Diet: relates to the foods and drinks that you regularly eat

Therapeutic diet : نظام غذائي علاجي is a special diet plan given by a healthcare professional

It controls the intake of certain foods or nutrients based on the nutritional needs and health status of a person

فهو يتحكم في تناول بعض الأطعمة أو العناصر الغذائية بناءً على الاحتياجات الغذائية والحالة الصحية للشخص

Textbook

86-91

PDF / Workbook

82-85

Explain the dietary guidance for overweight individuals.

Low

- Saturated fats الدهون المشبعة
- Sugar
- Processed foods الأغذية المصنعة
- Sodium and foods that are high in salt

High

- Variety of foods each day
- enough fruit and vegetables every day
- high in protein, lean meat, fish, eggs and legumes البقوليات
- Make sure that the diet has enough cereals الحبوب and their products
- enough calcium – milk and dairy products
- high in fibre ألياف ; this will help with digestion and keep you feeling full for longer
- Consume enough water every day

Textbook

92-95

PDF / Workbook

86-90