NATIONAL UNIVERSITY OF LESOTHO
FACULTY OF HEALTH SCIENCES
BACHELOR OF PHARMACY (HONOURS)

PHA5301 – RATIONAL DRUG USE
FINAL EXAMINATION
JANUARY 2024

TOTAL MARKS: 100 MARKS   **DURATION: 3 HOURS**

This examination paper consists of two sections, Section A (40 marks) and Section B (60 marks).

INSTRUCTIONS
- Answer all questions.
- Start each question on a new page.
- The paper consists of 4 pages including the cover page

SECTION A   **40 MARKS**

1. **Rational drug use and Drug Use Indicators**   **[10 marks]**
   a. Define the concept of rational drug use according to WHO/INRUD [2 marks]
   b. The following results are extracted from a DUE study conducted across three network of Primary Health Care Clinics from January 1, 2018 – December 31, 2018

Table 1. WHO/INRUD prescribing Indicators (For DM patient (N=1500)

Prescribing indicators	A	B	C	WHO standard
1. Average number of drugs per encounter	1069 (2.13)	1018(2.03)	1112(2.2)	(1.6-1.8)
2. Percentage of encounter with antibiotics	222 (44.4)	241(48)	197(39.4)	(20.0-26.8)
3. Percentage of encounter with Injection	58 (11.6)	82 (16.4)	69(13.8)	(13.4-24.1)
4. Percentage of drugs prescribed by generic names	1047(98)	1008(99)	1082(97)	100
5. Percentage of drugs from essential list	100	100	100	100

    I.   By giving example to support your answers, discuss any two possible consequences of the indicator 3 results to the patients [4 marks]

    II.   By giving example to support your answers, discuss any two factors that could account for the differences between actual results and the optimal value (range) for indicator 1.   [4 marks]

2. **Ensuring Medicine Safety and Quality**   **[10 marks]**
A patient develops anaphylaxis after receiving ampicillin 500mg injection for treatment of septicemia. As a clinical pharmacist,

    a. Outline steps you will take to assess the ampicillin induced anaphylaxis [6 marks]

    b. Outline what should be done for prevention of future anaphylaxis in the same patients   [4 marks]

3. **Antimicrobial Stewardship Programs**   **[10 marks]**

A pharmacist led antimicrobial stewardship programs has contributed effectively in promoting antibiotic rational use and reducing antibiotic resistance in hospital settings. As new clinical pharmacist in QMMH, provide step by step development of antimicrobial stewardship program (ASP) targeting third generation and fluoroquinolones use in intensive care unit in QMMH [10 marks]

4. **Formulary manuals and Standard treatment guidelines**   **[10 marks]**
Outline step by step development of a formulary list for the first episode adult major depressive disorder in a hospital without a formulary list   [10 marks]

SECTION B   **60 MARKS**

1. P-drug Selection   **[20 marks]**
Lesotho STG 2022 does not provide stepwise treatment of chronic stable angina pectoris (1st line and 2nd alternative treatment). By applying the concept of P- drug selection;
   a. Provide a detailed outline of the steps you would follow in selecting a P-drug for treatment of newly diagnosed patient with chronic stable angina pectoris   [18 marks]
   b. Provide an alternative P-drug for treatment of the condition above   [2 mark]

Additional Information: Available Drugs

Table 2 [23 SEPTEMBER NDSO PRICE LIST]

Drug Name	Strength;;	Quantity (pack size)	price per pack
Isosorbide dinitrate	5 mg tablets (sublingual tablets)	50 tabs	M21.11
Glyceral trinitrate	0.5 mg sublingual tablet;	30 tabs	M32.08
Atenolol	50 mg tablet	30 tabs	M11.03
Acetyl salicylic acid	150 mg tablets	1000 tabs	M26.86
Simvastatin	10 mg	30 tabs	M18.66
Amlodipine	10 mg tablets	30 tabs	M38.09
Verapamil	40 mg tablets	30 tabs	M45.30
Nifedipine	10 mg (SR) tablets;	100 tabs	M48.75

2. Drugs and Therapeutics Committees and Antimicrobial stewardship [20 marks]

One of the role of the DTC is to optimize rational drug use by evaluating the clinical use of drugs and selecting drugs for formulary based on scientific evidence. You have been employed as a clinical pharmacist in a hospital ward managing deep vein thrombosis. Two doctors were making argument on the substituting warfarin sodium 5mg with Coumadin® 5mg (Bristol-Myers Squibb branded Warfarin. In order to break the argument;

   a. Develop a one-hour training session in a seminar for prescribers to assure them that patient started on Coumadin® 5mg (Bristol-Myers Squibb branded Warfarin) can be substituted with generic warfarin sodium 5mg for the benefit of the patient to promote rational drug use as directed by WHO/INRUD   [10 marks].

   b. One of the functions of a hospital DTC is to develop policies to promote the rational use of drugs. This may include, but is not limited to development of drug restriction policies. **Meropenam and morphine** are two drugs with a drug restriction policy implemented in various hospital.
      I.   Discuss the rationale for implementing a drug restriction policy for the given drugs above. (Do not give high cost/expensive drug as a reason) [6 marks]
      II. Give one example of a reasonable drug restriction policy for each drug above

[2 marks]

III. Name specific indication for each drug above/criteria for use to support your answers [2 marks]

3. Drug utilization/ drug use evaluation [20 marks]

TABLE 3; Shows a hospital facility AMR study from 1st January- 31st December 2020

VEN Category (VEN)	Drug Name Strength Package Size	Price Per Package [Maloti]	Quantity Dispensed in 2022 per pack	Total Cost Maloti	Total Cost %	Cumulative %
E	Amoxycillin (A) 250mg Capsules 100	M57.18	250	14, 295.00		
V	Amphotericin B 50mg 10ml Vial Injection 1	M178.70	50	8, 935.00		
E	Ampicillin 500mg (A) Injection 10	M159.14	40	6, 365.60		
V	Amikacin (A) 500mg/2 mL Injection 10	M236.81	25	5, 920.25		
E	Amoxicillin/Clavulanic (A) Acid 500/125mg Tablets 15	M63.07	150	9, 460.50		
V	Levofloxacin (W) 500mg tablets 400	M542.28	15	8, 134.20		
E	Ciprofloxacin (W) 500mg tablets 10	M17.05	250	4, 262.50		
V	Vancomycin (W) 500MG INJECTION 1	M50.26	30	1, 507.80		
E	Ceftriaxone (A) 1g Injection 10	M141.65	30	4, 249.50		
N	Tamoxifen 20mg Tablets 30	M107.38	10	1, 073.80		
E	Cloxacillin (A)250mg capsules 56	M35.17	200	7, 034.00		
N	Ganciclovir 500mg/1 vial	M 180.00	15	2, 700.00		
Total						

a. Complete the table by calculating the missing values in the table [14 marks]

b. Applying the ABC and VEN analysis to evaluate;

    I. the antimicrobial use within the hospital [3 marks]

    II. the hospital expenditure on the antimicrobials [3 marks]