



ZIMBABWE

**MINISTRY OF HIGHER AND TERTIARY EDUCATION,
INNOVATION, SCIENCE AND TECHNOLOGY
DEVELOPMENT**

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

PHARMACEUTICAL TECHNOLOGY

**MODULE: Pharmaceutical Communications and PAPER NO: 406/22/M03
Computer Applications**

DURATION: 3 hours

MAY/JUNE 2025 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

- 1) Answer all questions in Section A (40 marks).
- 2) In section B, question three (3) is compulsory and choose other two (2) from the remaining questions.
- 3) Each question in section B carries 20 marks.

This paper consists of 3 printed pages.

PAPER NO: 406/22/M03- PHARMACEUTICAL COMMUNICATIONS AND
COMPUTER APPLICATIONS

SECTION A (40 MARKS)

ANSWER ALL QUESTIONS

QUESTION 1

With the aid of a well labelled diagram, describe the communication process, clearly highlighting the main elements of communication as implied in the pharmaceutical environment. (20 marks)

QUESTION 2

- a) State any five (5) advantages and five (5) disadvantages of verbal communication. (10 marks)
- b) State and explain any three (3) factors to consider when choosing a channel of communication in the pharmacy. (9 marks)
- c) Define the term decoding. (1 mark)

SECTION B (60 MARKS)

QUESTION THREE (3) COMPULSORY AND CHOOSE ANY OTHER TWO (2) FROM THE REMAINING QUESTIONS.

QUESTION 3

- a) Select a work related document that involves calculations you can make using a spread sheet package. Illustrate using a suitable table the formula or functions that you can utilise for the calculations. (10 marks)
- b) State and briefly explain any five (5) ethical issues involved in the use of computers in the pharmaceutical industry. (10 marks)

QUESTION 4

- a) Explain the benefits of point of sale (POS) systems in a retail pharmacy. (5 marks)
- b) Identify any five (5) features of dispense ware or profam computer package and explain their uses. (10 marks)
- c) Briefly give the meaning of the following terms:
 - i) Intrapersonal communication. (3 marks)
 - ii) Interpersonal communication (2 marks)

PAPER NO: 406/22/M03- PHARMACEUTICAL COMMUNICATIONS AND
COMPUTER APPLICATIONS

QUESTION 5

- a) A patient walks into the pharmacy complaining of polyphagia and polydipsia. Upon patient examination and vital signs check up you record a blood sugar reading of 18 mmol/litre. Comment on the patient results.
(10 marks)
- b) Explain what a pharmacy technician is expected to do after completion of the Pharmaceutical Technology training as far as the pharmacists Council of Zimbabwe registration is concerned.
(5 marks)
- c) Explain the relevance of face to face communication in a pharmacy.
(5 marks)

QUESTION 6

- a) Explain what you understand by usual communication.
(3 marks)
- b) Name and explain any five (3) components of visual communication.
(9 marks)
- c) Describe the pharmacy structure under the following:
 - i) Over the counter section. (4 marks)
 - ii) Dispensary section. (4 marks)

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NATIONAL CERTIFICATE

IN

PHARMACEUTICAL TECHNOLOGY

MODULE: Pharmaceutical Formulations

PAPER NO: 406/22/M01

DURATION: 3 Hours

MAY/JUNE 2025 EXAMINATION

REQUIREMENTS

Calculator

INSTRUCTIONS TO CANDIDATE

- 1. This question paper comprises six (6) questions. Answer any five (5).**
- 2. Do not write your name on the answer booklet and question paper.**

This paper consists of 3 printed pages.

QUESTION 1

- a) Outline the four (4) factors that determine the appropriate route of drug administration. (4 marks)
- b) Complete the following table outlining the routes of drug administration that fall under each category.

ENTERAL ROUTE	PARENTERAL ROUTE	TOPICAL ROUTE
e.g Sublingual	Intravenous	Vaginal
i	i	i
ii	ii	ii
iii	iii	iii

(9 marks)

- c) Determine between the following oral liquid preparations:
- i) Suspensions and solutions (4 marks)
- ii) Gargles and mouth washes (3 marks)

QUESTION 2

- a) Suspensions are an ideal dosage form for palliative patients. For this specific dosage form outline the following:
- i) Ideal packaging (3 marks)
- ii) Ideal labelling (3 marks)
- b) State and explain the four (4) main advantages of emulsions as a dosage form. (8 marks)
- c) State and explain the three (3) main methods of detecting emulsion type. (6 marks)

QUESTION 3

- a) State any four (4) possible skin reactions associated with tinctures. (4 marks)
- b) Explain why alcohol is the best solvent to extract active pharmaceutical ingredients from plant parts. (3 marks)
- c) Highlight the ideal packaging for paints. (3 marks)
- d) Outline the advantages of using mouth washes as a dosage form. (4 marks)
- e) Explain the relevance of isotonicity in the preparation of instillations. (6 marks)

QUESTION 4

- a) Calculate the quantity of Sodium Chloride required for 500mls of 0.9% w/v solution. (5 marks)
- b) For the following classes of pharmaceutical balances, briefly describe their capacity, sensitivity and method of manipulation.
- i) Class A Balance (4 marks)
 - ii) Class B Balance (4 marks)
- c) How many millilitres of a 1:400 w/v stock solution should be used to make 4 litres of a 1:2000 w/v solution. (7 marks)

QUESTION 5

- a) Define the following terms as they are used in pharmaceutical packaging, giving appropriate examples:
- i) Primary packaging (3 marks)
 - ii) Secondary packaging (3 marks)
 - iii) Tertiary packaging (3 marks)
- b) Outline any four (4) ideal properties of a packaging material. (4 marks)
- c) Highlight any four (4) determinants of packaging material. (4 marks)
- d) Explain giving an appropriate example what multi-dose packaging means. (3 marks)

QUESTION 6

- a) For the following storage determinants, explain the required conditions ideal for pharmaceutical products:
- i) Temperature (3 marks)
 - ii) Humidity (3 marks)
 - iii) Light (3 marks)
- b) Explain any three (3) reasons why medicines should be stored away from moisture. (6 marks)
- c) State any five (5) examples of heat sensitive products. (5 marks)

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IN

PHARMACEUTICAL TECHNOLOGY

MODULE: Pharmaceutical Quality Control PAPER NO: 406/22/M02

DURATION: 3 Hours

MAY/JUNE 2025 EXAMINATION

REQUIREMENTS

- 1) Data booklet
- 2) Calculator

INSTRUCTIONS TO CANDIDATE

- 1) Answer all questions in section A.
- 2) Answer any three (3) questions in section B.

This paper consists of 4 printed pages.

SECTION A: ANSWER ALL QUESTIONS

QUESTION 1

- a) Write the electronic configuration of the following elements/ions:
- i) K (2 marks)
 - ii) Ca^{2+} (2 marks)
 - iii) Fe (2 marks)
 - iv) Cr^{2+} (2 marks)
 - v) Cl (2 marks)
- b) Define the following terms:
- i) Molarity (2 marks)
 - ii) Relative isotopic mass (2 marks)
 - iii) Strong acid (2 marks)
 - iv) Dynamic equilibrium (2 marks)
 - v) Accuracy (2 marks)

QUESTION 2

- a) State the following gas laws:
- i) Boyle's law (2 marks)
 - ii) Charle's law (2 marks)
- b) Explain the term inert pair effect. (2 marks)
- c) State four (4) characteristics of transition metals. (4 marks)
- d) Describe the shapes and bond angles of the following:
- i) H_2O (4 marks)
 - ii) CH_4 (4 Marks)
- e) Define the term sigma bond (2 marks)

SECTION B: ANSWER ANY THREE (3) QUESTIONS

QUESTION 3

- a) Describe the collision theory of chemical reactions. (4 marks)
- b) Describe how temperature affects the rate of chemical reaction. (6 marks)
- c) Describe how concentration affects the rate of a reaction. (4 marks)
- d) Differentiate an endothermic reaction and an exothermic reaction. (6 marks)

QUESTION 4

- a) State the ideal gas equation and explain fully what each term means and state their SI Units. (8 marks)
- b) Describe the Haber process explaining the following phenomenon:
 - i) The Haber process uses compromised production conditions. (6 marks)
 - ii) Sketch a diagram to show the behaviour of subatomic particles in an electric field. (6 marks)
- c) Sketch a diagram to show the behaviour of subatomic particles in an electric field. (6 marks)

QUESTION 5

- a) Five (5) replicates titration experiments were performed and the following results are obtained:

Experiment	1	2	3	4	5
Volume of acid (	10.08	10.11	10.09	10.12	10.10

Calculate the mean and standard deviation of the above titration experiments. (12 marks)

- b) A chemist obtained the following results for the alcohol content of a sample of human blood.
 C_2H_5OH percentage 0.084, 0.089, 0.079

Calculate the 95% confidence interval for the mean ($t=4.30$). (8 marks)

QUESTION 6

- a) Explain the common ion effect. (5 marks)
- b) Calculate the relative molecular masses of the following:
- i) Magnesium carbonate (2 mark)
 - ii) Zinc sulphate (2 marks)
 - iii) Aluminium Hydroxide (2 marks)
 - iv) Sulphuric acid (2 marks)
 - v) Carbon tetrachloride (2 marks)
- c) Discuss the ordering of elements in the periodic table? (5 marks)

QUESTION 7

- a) Sketch the following curves to illustrate pH changes during titration:
- i) Strong acid and strong alkali (3 marks)
 - ii) Weak acid and strong alkali (2 marks)
 - iii) Strong acid and weak alkali (3 marks)
 - iv) Weak acid and weak alkali (3 marks)
- b) Explain with the aid of relevant examples how a buffer works. (8 marks)

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IN

PHARMACEUTICAL TECHNOLOGY

SUBJECT: Dispensing Practice

PAPER NO: 406/22/M07

DURATION: 3 hours

OCTOBER/NOVEMBER 2024 EXAMINATION

REQUIREMENTS

A work sheet is provided.

INSTRUCTIONS TO CANDIDATE

- 1) Answer any four (4) questions.
- 2) Do not write anything on the question paper.
- 3) Do not write your name on the answer booklet.

This paper consists of 4 printed pages.

PAPER NO. 406/22/M07 DISPENSING PRACTICE

QUESTION 1

- a) Define a prescription according to MASCA) Medicines and Allied Substance Control Act. (4 marks)
- b) List the ten (10) important information that must appear on a prescription? (10 marks)
- c)
 - i) According to the EDLIZ drugs have been categorised using the VEN classification, what does VEN stand for? (3 marks)
 - ii) Give two (2) examples for each class. (6 marks)
- d) Define polypharmacy? (2 marks)

QUESTION 2

- a) Define the following terms:
 - i) Dispensing (2 marks)
 - ii) Accuracy (2 marks)
 - iii) Precision (2 marks)
 - iv) Tolerance (2 marks)
 - v) Decanting (2 marks)
- b) State five (5) requirements for an ideal packaging material. (5 marks)
- c) List five (5) reference books used in a pharmacy? (5 marks)
- d) Decipher the following abbreviations used by prescribers:
 - i) a.c (1 mark)
 - ii) ad lib (1 mark)
 - iii) mane (1 mark)
 - iv) po (1 mark)
 - v) qid (1 mark)

PAPER NO: 406/22/M07-DISPENSING PRACTICE

QUESTION 3

- a) Your hospital pharmacy receives an order for amoxycillin 50mg tid. You only carry 250mg tablets, how many tablets will be required for each dose? (5 marks)
- b) What are the tools and apparatus that can be used in an extemporaneous preparation in a pharmacy. (5 marks)
- c) How do you find a calculating factor. (2 marks)
- d) What are the special considerations when preparing a pharmaceutical extemporaneous preparation? (4 marks)
- e) Evaluate the four (4) types of errors in preparation of pharmaceuticals in a pharmacy. (8 marks)
- f) Outline one (1) way of verifying that the prepared pharmaceutical is correct. (1 mark)

QUESTION 4

- a) Using the work sheet provided, answer all the questions:
 R_x Paracetamol Elixir 120mg/5/sig 120mg tds po x5/7

Given the following master formula

Paracetamol -24g
Ethanol 95%-120mls
Propylene glycol-100mls
Chloroform-10mls
Amaranth solution-7.5ml
Purified water-100mls
Syrup-1000mls

- i) Write the formula for preparing 100mls of the elixir
 - ii) List the equipment you would use to prepare the Elixir.
 - iii) Write down the method of preparing this Elixir.
 - iv) Write down the dispensing label for this patient Ruth Ndlovu who visited UBH Hospital on the 15th April 2024. (20 marks)
- b) Distinguish between shelf-life and expiry date? (5 marks)

PAPER NO: 406/22/M07-DISPENSING PRACTICE

QUESTION 5

- a) Outline three (3) different scales used in a pharmacy. (6 marks)
- b) Define SABC categorisation in Zimbabwe and give one (1) example in each class. (8 marks)
- c) You receive a prescription from a skin clinic for 30g of 0.4%w/w hydrocortisone cream, to treat a baby with eczema. 1% w/w hydrocortisone cream is available in the pharmacy, which may be diluted with a suitable base. How many grams of a diluents base are required to prepare this prescription. (6 marks)
- d) Which examples of medicines must be taken after food? (5 marks)

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NATIONAL CERTIFICATE

IN

PHARMACEUTICAL TECHNOLOGY

**MODULE: Pharmaceutical Communications
And Computer Applications**

PAPER NO: 406/22/M03

DURATION: 3 hours

MAY/JUNE 2024 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

- 1. Answer any five (5) questions.**
- 2. Do not write anything on the question paper.**
- 3. Do not write your name on the answer booklet.**

This paper consists of 3 printed pages.

PAPER NO: 406/22/M06 - PHARMACEUTICAL COMMUNICATIONS AND
COMPUTER APPLICATIONS

QUESTION 1

With the aid of relevant pharmacy examples, describe the dispensing process to be followed by a pharmacy technician from the time a patient enters the pharmacy to when they exit with their medicine. (20 marks)

QUESTION 2

For the following barriers to effective communication, explain how they can be dealt within a pharmacy.

- a) Decoding barriers (5 marks)
- b) Encoding barriers (5 marks)
- c) Responding barriers (5 marks)
- d) Transmission barriers (5 marks)

QUESTION 3

- a) State and explain any five (5) Cs of communication in a pharmacy environment. (10 marks)
- b) Outline the advantages and disadvantages of written communication. (10 marks)

QUESTION 4

- a) Explain the benefits of face to face communication in a pharmacy. (5 marks)
- b) A patient enters the pharmacy requesting for an HIV test by the staff in the pharmacy. You observe a positive result. Explain how you would undertake patient counselling to calm her down. (5 marks)
- c) Explain how PCZ (Pharmacists Council of Zimbabwe) registration is important for a pharmacy technician. (4 marks)
- d) State any four (4) colleagues a pharmacy technician associates with on a frequent basis. (4 marks)
- e) Explain how attentiveness influences communication in a pharmacy. (2 marks)

PAPER NO: 406/22/M06 – PHARMACEUTICAL COMMUNICATIONS AND
COMPUTER APPLICATIONS

QUESTION 5

- a) Explain how you would perform the following:
- i) Copy a file from one folder to another (3 marks)
 - ii) Save an existing file in MS-Word (3 marks)
 - iii) Insert a footer in an MS-Word document (3 marks)
 - iv) Change line spacing in Ms-Word (3 marks)
 - v) Insert page numbers in Ms-Word. (3 marks)
- b) Give the purpose of the following:
- i) Communications software (3 marks)
 - ii) Presentation software (2 marks)

QUESTION 6

- a) With the aid of a relevant medicine example, explain how a stock card is filled in a pharmacy. (10 marks)
- b) State any five (5) key features of Profam computer package. (5 marks)
- c) List any two (2) inventory records used in a pharmacy and explain the use of each. (5 marks)

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IN

PHARMACEUTICAL TECHNOLOGY

**MODULE: Safety Health, Environment PAPER NO:406/22/M06
and Quality Maintenance**

DURATION: 3 Hours

OCTOBER/NOVEMBER 2024 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

1. Answer ALL questions in Section A.
2. Answer QUESTION 3 (COMPULSORY) and choose any 2 from Section B.

This paper consists of 3 printed pages.

SECTION A

40 MARKS

Answer All questions.

QUESTION 1

- (a) List ten (10) contents of a first aid box as prescribed by the Zimbabwe factories and Works Act? (10 marks)
- (b) With aid of clearly labelled diagram, illustrate the fire triangle/tetrahedron? (5 marks)
- (c) Give one major OSH international law and its full provision.

QUESTION 2

Define the terms as applied in occupational safety and health?

- (a) Exposure (2 marks)
- (b) Risk (2 marks)
- (c) Hazard (2 marks)
- (d) Illustrate and briefly explain the relationship amongst the three terms above (a, b, c).
- (c) With the aid of a clearly labelled diagram illustrate the hazard hierarchy of control. (5 marks)
- (f) Outline five effects of poor waste management? (5 marks)

SECTION B

60 MARKS

Answer question 3 (compulsory) and choose any two.

QUESTION 3

As a SHEQ officer, chose any five factors that you would consider in the selection of appropriate personal protective equipment for your workers?
(20 marks)

QUESTION 4

(a) Explain the terms/define

(i) Toxicology

(ii) Dose

(iii) Adverse effects

(iv) Toxicant

(v) Toxicity

(2 x 5 marks)

(b) Write concise notes on the three fold scope of occupational safety and health.
(10 marks)

QUESTION 5

Describe in detail the step by step standard operating procedure for cleaning processes

(a) Pharmacy floors

(b) Pharmacy shelves

(c) Chemical spill

(d) Pharmacy refrigerator

(4 x 5 marks)

QUESTION 6

Write brief notes on the following terms, use appropriate examples

(a) Encapsulation

(b) Inertisation

(c) Disinfection

(d) Sterilisation

(4 x 5 marks)

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IN

PHARMACEUTICAL TECHNOLOGY

MODULE: Pharmaceutical Stock Management PAPER NO: 406/22/M04

DURATION: 3 Hours

NOVEMBER / DECEMBER 2025 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

- 1. Answer any five (5) questions.**
- 2. Do not write anything on the question paper.**
- 3. Do not write your name on the answer booklet.**

This paper consists of 3 printed pages.

QUESTION 1

Describe the VEN and SABC systems used in prioritising the selection of medicines for acquisition in Zimbabwe, explaining how the systems support rational medicine use. (20 marks)

QUESTION 2

- a) Explain the principles of FIFO and FEFO in pharmaceutical stock management. (5 marks)
- b) How do these methods (FIFO, FEFO), along with maintaining optimal storage conditions help preserve the integrity of pharmaceuticals. (15 marks)

QUESTION 3

- a) Define Perpetual Inventory System. (3 marks)
- b) Outline the differences between Perpetual and Periodic systems. (4 marks)
- c) State the advantages and disadvantages of Perpetual inventory. (8 marks)
- d) Outline the importance of retaining prescription records for five years and updating records in line with standard protocols. (5 marks)

QUESTION 4

Explain the essential medicines concept and discuss how the Essential Medicines List (EML) is determined in Zimbabwe. (20 marks)

QUESTION 5

- a) Discuss the factors that influence the pricing of pharmaceuticals. (10 marks)
- b) Compare and contrast the different sources of health financing in Zimbabwe. (10 marks)

QUESTION 6

- a) Describe any five (5) pricing strategies used in the pharmaceutical industry. (10 marks)
- b) List the 10Cs of Carter's model of supplier evaluation. (10 marks)

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IN

PHARMACEUTICAL TECHNOLOGY

MODULE: Dispensing Practice

PAPER NO: 406/22/M07

DURATION: 3 Hours

NOVEMBER / DECEMBER 2025 EXAMINATION

REQUIREMENTS

1. Write up sheet
2. Calculator

INSTRUCTIONS TO CANDIDATE

1. Answer any five (5) questions.
2. Do not write anything on the question paper.
3. Do not write your name on the answer booklet.

This paper consists of 4 printed pages.

QUESTION 1

a) Decipher the following latin abbreviations:

i)	prn	(2 marks)
ii)	qid	(2 marks)
iii)	pa	(2 marks)
iv)	pc	(2 marks)
v)	tds	(2 marks)
vi)	nocte	(2 marks)
vii)	mane	(2 marks)

b) Your pharmacy has ibuprofen 100mg/5ml suspension. What dose can you give a 2 year old child with a body weight of 25kg, considering that the dosing regiment is 20mg/kg daily in divided doses. Express your answer in millilitres. (6 marks)

QUESTION 2

a) You receive a prescription requesting you to prepare 150m/s of Sodium Chloride Compound mouthwash BP. The British Phamacopoiea has the following Master formula.

Sodium Bicarbonate BP	10g
Sodium Chloride BP	15g
Peppermint BP	25mls
DS Chloroform BP	500mls
Portable water	to 1000mls

On a master formula sheet, show the calculating factor and indicate all quantities required to fill the prescription fill the prescription. (8 marks)

b) Draw a well detailed pharmaceutical label on the same master formula sheet given the following information:

Batch number	02365pN	
Manufacturing Date	03/09/24	
Expiry Date	04/10/28	(5 marks)

c) Sodium Chloride Compound Mouthwash BP is to be stored on an airtight, plain white glass jar with a chid resistant cap. The shelf life is one year before reconstitution and should always be in a cool dry place. Fit this information on the master Formula Sheet given. (4 marks)

d) Effectively describe the procedure you would follow to prepare the prescription. (3 marks)

QUESTION 3

- a) Outline the factors affecting the selection of packaging materials. (4 marks)
- b) Highlight any three (3) purposes of packaging pharmaceutical products. (3 marks)
- c) Differentiate, giving appropriate pharmaceutical examples, unit dose packaging and multi dose packaging. (4 marks)
- d) With the aid of a relevant medicine name, highlight the information required on a dangerous drugs register according to the Dangerous Drugs Act. (9 marks)

QUESTION 4

- a) Explain the effect of the following when co-administered with medicines to a patient.
 - i) Food (3 marks)
 - ii) Alcohol (3 marks)
 - iii) Smoking (3 marks)
- b) Outline the ten (10) requirements for licensing of pharmacies (retail pharmacies). (10 marks)
- c) Highlight what the abbreviations SABC stand for in classification of medicines. (1 mark)

QUESTION 5

- a) How many tablets / capsules would you dispense given the following prescriptions. Show your working:
 - i) Doxycycline 100mg po bd $\times \frac{5}{7}$ (you have 100mg capsules) (4 marks)
 - ii) Thyroxine 100mg pod od $\times \frac{1}{12}$ (you have 50mg tablets) (4 marks)
 - iii) Galvus met 50/1000mg po od $\times \frac{2}{52}$ (you have Galvus met $\frac{50}{1000}$ mg tablets) (4 marks)
- b) How much liquid would you dispense given the following prescriptions
 - i) Paracetamol 120mg po tds $\times \frac{5}{7}$ (you have 120mg/5ml elixir) (5 marks)
 - ii) Ciprofloxacin 5mls po bd $\times \frac{7}{7}$ (3 marks)

QUESTION 6

- a) Explain the ideal packaging for the following:
- i) Light sensitive products (2 marks)
 - ii) Temperature sensitive products (2 marks)
- b) Outline any 10 information you would find on a prescription from a medical practitioner. (10 marks)
- c) Explain what you understand by the term polypharmacy giving appropriate examples that explain it. (4 marks)
- d) Highlight the ideal temperature ranges for the storage of cold chain medicines. (2 marks)

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NATIONAL CERTIFICATE

IN

PHARMACEUTICAL TECHNOLOGY

**MODULE: Safety Health Environment Quality PAPER NO: 406/22/M06
Management**

DURATION: 3 Hours

NOVEMBER/DECEMBER 2025 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

- 1) Answer any five (5) questions.
- 2) Do not write anything on the question paper.
- 3) Do not write your name on the answer booklet.

This paper consists of 3 printed pages.

PAPER NO: 406/22/M06-SAFETY HEALTH ENVIRONMENT QUALITY
MANAGEMENT

QUESTION 1

- a) Define the terms?
- i) Occupational safety and health (2 marks)
 - ii) Health (2 marks)
 - iii) Safety culture (2 marks)
 - iv) Occupational health (2 marks)
 - v) Accident (2 marks)
 - vi) Occupational hygiene (2 marks)
- b) List five (5) examples hazard identification in Zimbabwe. (5 marks)
- c) Outline three (3) major hazard identification approaches? (3 marks)

QUESTION 2

Evaluate any five (5) obligations of occupational safety and health as a field of practice. (20 marks)

QUESTION 3

- a) With the aid of a clearly labelled diagram illustrate the fire triangle tetrahedron? (5 marks)
- b) Write brief notes on each of the four elements of fire? (8 marks)
- c) List four (4) examples of hazardous waste and three (3) non hazardous waste. (7 marks)

QUESTION 4

- a) Examine five (5) major roles of a SHEQ officer in ensuring a safe and health environment? (10 marks)
- b) Write concise notes on the following terms:
- i) Toxicology (2 marks)
 - ii) Dose (2 marks)
 - iii) Toxicity (2 marks)
 - iv) Toxicant (2 marks)
 - v) Adverse effects (2 marks)

QUESTION 5

- a) Using a clearly labelled diagram describe in detail the hierarchy of waste management and control? (15 marks)
- b) Write brief notes on the 5Rs of waste management. (5 marks)

QUESTION 6

- a) Evaluate the ABC principle of First Aid. (15 marks)
- b) Outline any five (5) priorities of First Aid. (5 marks)

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IN

PHARMACEUTICAL TECHNOLOGY

**MODULE: Pharmaceutical Communication PAPER NO: 406/22/M03
and Computer Applications**

DURATION: 3 Hours

NOVEMBER / DECEMBER 2025 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

- 1. Answer any five (5) questions.**
- 2. Do not write your name on the answer booklet.**
- 3. Do not write anything on the question paper.**

This paper consists of 3 printed pages.

QUESTION 1

- a) Explain the roles of the following in the communication cycle:
- i) Encoder (3 marks)
 - ii) Decoder (3 marks)
- b) List and describe any five (5) factors to consider when choosing a channel of communication. (10 marks)
- c) Highlight any two (2) advantages and two (2) disadvantages of written communication. (4 marks)

QUESTION 2

With the aid of relevant pharmacy examples, describe the four main barriers to effective communication. (20 marks)

QUESTION 3

- a) A patient tests positive after an HIV test in a health facility. Explain how you would undertake patient counselling effectively. (8 marks)
- b) Outline any five (5) benefits of face to face communication in a pharmacy. (5 marks)
- c) Analyse the relevance of registering with the Pharmacist Council of Zimbabwe as a Pharmacy Technician. (4 marks)
- d) Explain how you would resolve a conflict between a dispensary assistant and a patient in a pharmacy. (3 marks)

QUESTION 4

- a) A patient enters the pharmacy complaining of tension headache and blurred vision. Upon patient examination you record the following findings.

Blood pressure 204/110 mmHg

Blood sugar 12.4 mol/dl

Explain the steps you would follow to resolve this. (10 marks)

- b) Describe how the following factors influence face to face communication in a pharmacy

- | | | |
|------|-------------------|-----------|
| i) | Body language | (3 marks) |
| ii) | Eye contact | (3 marks) |
| iii) | Choice of wording | (3 marks) |
| iv) | Tone | (1 mark) |

QUESTION 5

- a) Explain each of the following:

- | | | |
|------|-----------------------------|-----------|
| i) | Text data input device | (3 marks) |
| ii) | Audio data input device | (3 marks) |
| iii) | Pictorial data input device | (3 marks) |
| iv) | Video data input device | (3 marks) |
| v) | Networking device | (3 marks) |

- b) Explain how you would perform the following:

- | | | |
|-----|--|-----------|
| i) | Insert page number in MS Word | (3 marks) |
| ii) | Insert a footer in an Ms Word document | (2 marks) |

QUESTION 6

Discuss the impact of cloud computing in a pharmacy environment, highlighting at least three (3) advantages and three (3) disadvantages of using cloud services. Provide specific pharmaceutical examples to support your answer. (20 marks)

...../pm

QUESTION 1

- (a) Explain some common challenges that managers face when performing the functions of management. (10 marks)
- (b) Explain how do the four (4) functions of management contribute to the overall success of an organisation. (10 marks)

QUESTION 2

- (a) Define the term disputes and identify the various types of disputes at work places. (8 marks)
- (b) Explain the importance of setting organisational policies. (12 marks)

QUESTION 3

Explain the effects of organisational policies and provide examples of how patient care policies are implemented in medical organisation. (20 marks)

QUESTION 4

- (a) Discuss the importance of strategic planning process in management. (10 marks)
- (b) Define the term deadline and outline how to adhere deadline. (5 marks)
- (c) Explain how managers effectively evaluate the performance of their subordinates. (5 marks)

QUESTION 5

Explain providing examples of specific targets that organisation commonly set and how should target be reviewed and adjusted. (20 marks)

QUESTION 6

- (a) Explain how a positive organisational culture can contribute to improve organisational performance. (10 marks)
- (b) Describe how can organisation measure employee engagement and track progress. (10 marks)

...../cn



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**HIGHER EDUCATION EXAMINATIONS COUNCIL
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NATIONAL CERTIFICATE

IN

PHARMACEUTICAL TECHNOLOGY

MODULE: Dispensing Practice

PAPER NO: 406/22/M07

DURATION: 3 Hours

JUNE 2026 EXAMINATION

REQUIREMENTS

1. Calculator.
2. Write up sheet*1.

INSTRUCTIONS TO CANDIDATE

1. Answer all questions in Section A-40 marks
2. Answer any three (3) question in Section B-60 marks
3. Do not write your name on the answer booklet.
4. Do not write anything on this question paper.

This paper consists of 3 printed pages.

SECTION A – Answer all questions

QUESTION 1

- a) According MASCA define the term prescription. (5 marks)
- b) Briefly outline the key elements of an authentic prescription. (10 marks)
- c) State any five (5) requirements of a good dispensing environment. (5 marks)

QUESTION 2

- a) Outline ten (10) important steps in dispensing. (10 marks)
- b) State five (5) properties of a packaging material. (5 marks)
- c) Explain any five (5) reasons for compounding in pharmacy. (5 marks)

SECTION B- Answer any three (3) questions.

QUESTION 3

- a) How many tablets, capsules or milligrams would you dispense given the following prescriptions.
 - i) Aspirin 600mg tds $\times \frac{3}{7}$ (you have 300mg tablets). (5 marks)
 - ii) Rifambicin 600mg od $\times \frac{1}{12}$ (you have 150mg capsules) (5 marks)
 - iii) Liquid paraffin oral solution 125mg/5ml. sig .5ml q6h $\times$ 10d. (5 marks)
 - iv) Paracetamol 120mg tds $\times \frac{3}{7}$ (you have 120mg/5ml elixir). (5 marks)

QUESTION 4

You received prescription order to prepare hand sanitiser 500mls

Ingredients	Quantity
Chlorhexidine	0,5ml
Glycerine	0,15ml
Alcohol	70ml
Distilled water to	100ml

- i) Using the formula sheet complete the required quantities and the use in this preparation. (5 marks)
- ii) Write an appropriate label for the product and the instruction for use of the product by the patients. (5 marks)
- iii) Indicate the appropriate storage conditions and container for the product. (5 marks)
- iv) Describe the preparation procedure for preparing procedure for preparing the hand sanitizer. (5 marks)

QUESTION 5

Describe the following types of errors than can occur during pharmaceutical preparation.

- i) Systematic error (5 marks)
- ii) Environmental error (5 marks)
- iii) Random errors (5 marks)
- iv) Simplification errors (5 marks)

QUESTION 6

- a) Differentiate between expiry date and shelf life. (5 marks)
- b) State and give examples of levels of health care in Zimbabwe. (10 marks)
- c) State any five (5) apparatus used in pharmacy. (5 marks)

.../dk



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NATIONAL CERTIFICATE

IN

PHARMACEUTICAL TECHNOLOGY

MODULE: Pharmaceutical Quality Control

PAPER NO: 406/22/M02

DURATION: 3 Hours

JUNE 2026 EXAMINATION

REQUIREMENTS

Data booklet
Calculator

INSTRUCTIONS TO CANDIDATE

1. Section A: Answer ALL Questions
2. Section B: Answer any Three (3) Questions
3. Do not write anything on any part of the paper

This paper consists of 5 printed pages.

SECTION A: ANSWER ALL QUESTIONS

QUESTION 1

a) Define the following terms:

- | | | |
|------|---------------------|-----------|
| i) | Morality | (2 marks) |
| ii) | Strong acid | (2 marks) |
| iii) | Accuracy | (2 marks) |
| iv) | Sigma bond | (2 marks) |
| v) | Exothermic reaction | (2 marks) |

b) In a given 75g sample of calcium phosphate $Ca_3(PO_4)_2$, Calculate:

- | | | |
|------|-----------------------------------|-----------|
| i) | The mass of calcium. | (2 marks) |
| ii) | The mass of oxygen. | (2 marks) |
| iii) | The percentage of phosphate ions. | (2 marks) |

c) State the following gas laws:

- | | | |
|-----|--------------|-----------|
| i) | Boyle's law | (2 marks) |
| ii) | Charle's law | (2 marks) |

QUESTION 2

a) Use the kinetic theory to explain the following processes:

- | | | |
|-----|-------------|-----------|
| i) | Melting | (3 marks) |
| ii) | Evaporation | (3 marks) |

b) Give the electronic configuration of:

- | | | |
|------|----|-----------|
| i) | V | (2 marks) |
| ii) | Cr | (2 marks) |
| iii) | Mn | (2 marks) |
| iv) | Cu | (2 marks) |

c) State any four characteristics of transition metals. (4 marks)

d) Explain the term 'inert pair effect'. (2 marks)

SECTION B: ANSWER ANY THREE (3) QUESTIONS

QUESTION 3

Describe with the aid of relevant examples the following types of bonding:

- a) Ionic bonding (5 marks)
- b) Covalent bonding (5 marks)
- c) Metallic bonding (5 marks)
- d) Coordinate bonding (5 marks)

QUESTION 4

- a) Explain the following phenomenon:
 - i) The Haber process uses compromised production conditions. (4 marks)
 - ii) Ammonia dissolves in methanol but does not dissolve in carbon tetrachloride. (4 marks)
 - iii) Graphite exists as a solid whilst carbon dioxide exists as a gas. (4 marks)
- b) With the aid of a relevant example explain how a buffer works. (8 marks)

QUESTION 5

- a) Discuss the collision theory of chemical reactions. (4 marks)
- b) Describe how temperature affects rate of chemical reactions. (6 marks)
- c) Calculate the relative molecular masses of the following:
 - i) Magnesium carbonate (2 marks)
 - ii) Zinc sulphate (2 marks)
 - iii) Aluminium hydroxide (2 marks)
 - iv) Sulphuric acid (2 marks)

- v) Carbon tetrachloride (2 marks)

QUESTION 6

Sketch the following curves to illustrate pH changes during titration.

- a) i) strong acid and strong alkali. (3 marks)
ii) Weak acid and strong alkali. (3 marks)
iii) Strong acid and weak alkali. (3 marks)
iv) Weak acid and weak alkali (3 marks)
- b) Replicate samples of a new cream formulation were analysed and determined to contain 95.67; 95.62, 95.74 and 95.62% of the active ingredient. Calculate:
- i) Mean (2 marks)
ii) The standard deviation (6 marks)

QUESTION 7

- a) Examine the requirements of a primary standard volumetric analysis. (10 marks)
- b) A solution of sodium hydroxide of concentration 0.25M and volume 25.0cm³ required 22.5cm³ of a hydrochloric acid solution for complete neutralisation.
- i) Write the equation for the titration reaction. (2 marks)
ii) Calculate the moles of sodium hydroxide neutralised. (2 marks)
iii) Calculate the moles of hydrochloric acid neutralised. (2 marks)
iv) Calculate the concentration of the hydrochloric acid in mol dm^{-3} . (3 marks)



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NATIONAL CERTIFICATE

IN

PHARMACEUTICAL TECHNOLOGY

MODULE: Pharmaceutical Formulation

PAPER NO: 406/22/M01

DURATION: 3 Hours

JUNE 2026 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

Answer all questions.

This paper consists of 3 printed pages.

QUESTION 3

- a) Explain the meaning of the following terms as they are used in mixing techniques?
- | | |
|-------------------|-----------|
| i) Trituration | (3 marks) |
| ii) Levigation | (3 marks) |
| iii) Spatulation | (3 marks) |
| iv) Pulverization | (3 marks) |
- b) List five (5) packaging materials used for pharmaceutical products. (5 marks)
- c) Outline the standard product label requirements? (8 marks)

QUESTION 4

- a) Give any two (2) examples of products that should be stored under the following, explaining the reasons why they should be stored in such:
- | | |
|-----------------------------------|-----------|
| i) Away from direct sunlight | (4 marks) |
| ii) In a refrigerator | (4 marks) |
| iii) In a dangerous drug cupboard | (4 marks) |
- b) Tabulate what you understand the following, giving relevant examples?
- | | |
|----------|-----------|
| i) FEFO | (4 marks) |
| ii) FIFO | (4 marks) |
- c) Highlight any five (5) attributes of a good storeroom arrangement and storage. (5 marks)

...../pm



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IN

PHARMACEUTICAL TECHNOLOGY

**SUBJECT: Safety Health Environmental PAPER NO: 406/22/M06
and Quality**

DURATION: 3 Hours

NOVEMBER/DECEMBER 2023 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

Section A: Answer ALL questions.

**Section B: Answer Question 3 and choose any other 2 from
this Section.**

This paper consists of 3 printed pages.

SECTION A

40 MARKS

Answer ALL questions.

QUESTION 1

- (a) Outline ten (10) ideal properties of a good disinfectant. (10 marks)
- (b) Write brief notes on five methods applied in hazard identification. (10 marks)

QUESTION 2

- (a) Describe the four (4) concepts of occupational health. (8 marks)
- (b) Write brief notes describing / explaining the following OSH waste management aspects?
 - (i) Extended provider responsibility (2 marks)
 - (ii) Pollutes pay principles (2 marks)
 - (iii) Cradle to death (2 marks)
 - (iv) Life cycle (2 marks)
 - (v) Precautionary principle (2 marks)
 - (vi) Waste hierarchy (2 marks)

SECTION B

60 MARKS

QUESTION 3 (COMPULSORY)

Answer ANY OTHER TWO

QUESTION 3

Complete the fire (5) classification table below:

Type of fire	Description and examples	Type of fire extinguisher(s)
Fire class A	?	?
Fire class B	?	?
Fire class C	?	?
Fire class D	?	?
Fire class F	?	?

(20 marks)

QUESTION 4

- (a) Outline five (5) important safety measures that can be implemented to mitigate the effects of disinfectants within an organisation. (10 marks)
- (b) List five (5) examples of disinfectants and for each give a brief description? (10 marks)

QUESTION 5

- (a) Briefly describe the following sterilisation methods.
- (i) Thermal (heat) method (5 marks)
- (ii) Filtration method (5 marks)
- (b) What five (5) major pharmaceutical benefits of sterilisation. (10 marks)

QUESTION 6

With the aid of a clearly labelled diagrams, describe the modern waste management hierarchy? (20 marks)

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NATIONAL CERTIFICATE

IN

PHARMACEUTICAL TECHNOLOGY

SUBJECT: Biology

PAPER NO: 406/18/S02

DURATION: 3 hours

MARCH/APRIL 2023 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

Answer all questions.

This paper consists of 3 printed pages.

QUESTION 1

Distinguish between prokaryotic and eukaryotic cells.

(25 marks)

QUESTION 2

Discuss the functions of the following cell organelles:

- a) Lysosomes (5 marks)
- b) Golgi apparatus (5 marks)
- c) Mitochondria (5 marks)
- d) Nucleus (5 marks)
- e) Endoplasmic reticulum (5 marks)

QUESTION 3

a) Explain the following means of transport in and out of the cell:

- i) Phagocytosis (3 marks)
- ii) Active transport (3 marks)
- iii) Facilitated diffusion (3 marks)
- iv) Osmosis (3 marks)
- v) Pinocytosis (3 marks)

b) Describe the functions of the following animal tissues:

- i) Nervous (3 marks)
- ii) Muscular (3 marks)
- iii) Connective (3 marks)
- iv) Epithelial (3 marks)

QUESTION 4

- a) With the aid of a well labelled diagram, discuss the structure and function of the nerve cell. (10 marks)
- b) Distinguish between the sympathetic and parasympathetic nervous system. (6 marks)
- c) The skeletal system is significant for protection, movement and cell generation. Explain the importance of these in detail. (9 marks)

.../jl



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IN

PHARMACEUTICAL TECHNOLOGY

MODULE: Pharmaceutical Quality Control PAPER NO: 406/22/M02

DURATION: 3 Hours

JUNE 2023 EXAMINATION

REQUIREMENTS

1. Data booklet.
2. Calculator.

INSTRUCTIONS TO CANDIDATE

1. Section A: Answer all questions.
2. Section B: Answer any three (30 questions).
3. Do not write anything on any part of the question paper.

This paper consists of 4 printed pages.

SECTION A

Answer all questions.

QUESTION 1

- a) Write the electronic configuration of the following elements / ions.
- | | | |
|------|------------------|-----------|
| i) | K | (2 marks) |
| ii) | Ca ²⁺ | (2 marks) |
| iii) | Fe | (2 marks) |
| iv) | Cr ²⁺ | (2 marks) |
| v) | Cl | (2 marks) |
- b) Define the following terms:
- | | | |
|------|------------------------|-----------|
| i) | Relative atomic mass | (2 marks) |
| ii) | Relative isotopic mass | (2 marks) |
| iii) | Dynamic equilibrium | (2 marks) |
| iv) | Reversible reaction | (2 marks) |
| v) | Molarity | (2 marks) |

QUESTION 2

Describe the shapes and bonds angles of the following:

- | | | |
|----|------------------|-----------|
| a) | H ₂ O | (4 marks) |
| b) | SF ₆ | (4 marks) |
| c) | NH ₃ | (4 marks) |
| d) | CH ₄ | (4 marks) |
| e) | CO ₂ | (4 marks) |

SECTION B**Answer any three (3) questions.****QUESTION 3**

- a) Sketch a diagram to show the behaviour of subatomic particles in an electric field. (4 marks)
- b) Explain in terms of the collision theory how the following factors affect rate of a reaction:
- i) Concentration (4 marks)
 - ii) Catalyst (4 marks)
- c) Describe the Haber process as an example of chemical equilibrium. (8 marks)

QUESTION 4

- a) i) State the ideal gas equation. (2 marks)
- ii) Explain fully the meaning of the terms in the ideal gas equation and their S.I units (6 marks)
- b) Differentiate the following terms:
- i) Acidic buffer and alkaline buffer (4 marks)
 - ii) Endothermic reaction and exothermic reaction (4 marks)
- c) State any four (4) characteristics of transition elements. (4 marks)

QUESTION 5

- a) Five replicates titration experiments were performed and the following are results obtained.

Experiment	1	2	3	4	5
Volume of acid used (cm ³)	10.08	10.11	10.09	10.12	10.10

Calculate the mean and standard deviation of the above titration experiments (12 marks)

- b) A chemist obtained the following results for the alcohol content of a sample of human blood

C_2H_5OH percentage: 0.084, 0.089, 0.079

Calculate the 95% confidence interval for the mean. (8 marks)

QUESTION 6

- a) Explain the common ion effect. (5 marks)
- b) Deduce the relevant equilibrium constants for the following chemical reactions.
- i) $BaSO_{4(s)} \rightleftharpoons Ba^{2+}_{(aq)} + SO^{2-}_{4(aq)}$ (2 marks)
- ii) $2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)}$ (2 marks)
- iii) $CO_{2(g)} + H_2O_{(l)} \rightleftharpoons H^{+}_{(aq)} + HCO^{-}_{3(aq)}$ (2 marks)
- iv) $CO_{(g)} + 2H_2_{(g)} \rightleftharpoons CH_3OH_{(g)}$ (2 marks)
- v) $2NaHCO_{3(s)} \rightleftharpoons Na_2CO_{3(s)} + H_2O_{(g)} + CO_{2(g)}$ (2 marks)

QUESTION 7

- a) Discuss the ordering of elements in the periodic table. (8 marks)
- b) Examine periodicity of exemplified by period 3 elements under the following headings:
- i) Electrical conductivity (6 marks)
- ii) Ionisation energy (6 marks)

...../pm



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NATIONAL CERTIFICATE

IN

PHARMACEUTICAL TECHNOLOGY

**SUBJECT: Safety Health Environmental PAPER NO: 406/22/M06
and Quality**

DURATION: 3 Hours

NOVEMBER/DECEMBER 2023 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

Section A: Answer ALL questions.

**Section B: Answer Question 3 and choose any other 2 from
this Section.**

This paper consists of 3 printed pages.

SECTION A

40 MARKS

Answer ALL questions.

QUESTION 1

- (a) Outline ten (10) ideal properties of a good disinfectant. (10 marks)
- (b) Write brief notes on five methods applied in hazard identification. (10 marks)

QUESTION 2

- (a) Describe the four (4) concepts of occupational health. (8 marks)
- (b) Write brief notes describing / explaining the following OSH waste management aspects?
 - (i) Extended provider responsibility (2 marks)
 - (ii) Pollutes pay principles (2 marks)
 - (iii) Cradle to death (2 marks)
 - (iv) Life cycle (2 marks)
 - (v) Precautionary principle (2 marks)
 - (vi) Waste hierarchy (2 marks)

SECTION B

60 MARKS

QUESTION 3 (COMPULSORY)

Answer ANY OTHER TWO

QUESTION 3

Complete the fire (5) classification table below:

Type of fire	Description and examples	Type of fire extinguisher(s)
Fire class A	?	?
Fire class B	?	?
Fire class C	?	?
Fire class D	?	?
Fire class F	?	?

(20 marks)

QUESTION 4

- (a) Outline five (5) important safety measures that can be implemented to mitigate the effects of disinfectants within an organisation. (10 marks)
- (b) List five (5) examples of disinfectants and for each give a brief description? (10 marks)

QUESTION 5

- (a) Briefly describe the following sterilisation methods.
- (i) Thermal (heat) method (5 marks)
- (ii) Filtration method (5 marks)
- (b) What five (5) major pharmaceutical benefits of sterilisation. (10 marks)

QUESTION 6

With the aid of a clearly labelled diagrams, describe the modern waste management hierarchy? (20 marks)

...../cn



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IN

PHARMACEUTICAL TECHNOLOGY

MODULE: Pharmacy Stock Management

PAPER NO: 406/22/M04

DURATION: 3 Hours

OCTOBER/NOVEMBER 2024 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

Answer all questions

This paper consists of 2 printed pages.

QUESTION 1

Read the passage and answer the questions.

- TEO $C \sim \$100 (100) AMC = 7$
- Ceftriaxone $C \sim \$400 (400) AMC = 100$
- Naloxone $B \sim \$100 (50) AMC = 20$
- Vitamin D $B \sim \$200 (200) AMC = 10$
- Paracetamol 500mg $C \sim \$500 (50) AMC = 3$
B/1000

You are the Supply Chain Manager for Glen Norah Satellite Clinic. You received \$500 only for the above requisition.

- a) Write in full VEN. (3 marks)
- b) State any facility which correspond to the SABC. (4 marks)
- c) Write in full AMC. (3 marks)
- d) Discuss the essential medicine concept. (15 marks)

QUESTION 2

Refer to question a passage.

- a) Outline how you are going to spend your money. (10 marks)
- b) Receive one product you purchased on (a) above on a stock card. (15 marks)

QUESTION 3

Procurement is an important step in supply chain management. Outline the procurement steps. (25 marks)

QUESTION 4

Discuss any five (5) methods/strategies for pricing pharmaceutical products. (25 marks)

.....fk