CUET PG 2026 Pharmacy Question Paper with Solutions(Memory Based)

Time Allowed :1 Hour 30 Mins	**Maximum Marks :**300	**Total Questions :**75

General Instructions

Read the following instructions very carefully and strictly follow them:

- The exam lasts 90 minutes (1 hour 30 minutes).
- There are 75 Multiple Choice Questions (MCQs) to be answered.
- +4 marks for every correct answer. -1 mark (negative marking) for every incorrect answer. 0 marks for unanswered or un-attempted questions.
- For any discrepancy in questions, the English version is considered final (except for language-specific papers).
- Click one of the four options to choose an answer.
- You must click "Save & Next" to confirm your response. Only saved answers are considered for evaluation.
- Use "Mark for Review & Next" to flag a question for later. You can unselect or change your answer using the "Clear Response" button.
- All calculations must be done on the Rough Sheets provided at the centre. These must be returned to the invigilator after the exam.

1. Which part of a prescription contains instructions to the pharmacist?
(A) Superscription
(B) Inscription
(C) Subscription
(D) Signa

Correct Answer: (3) Subscription

Solution:
Concept: A **prescription** is a written order from a registered medical practitioner to a pharmacist for the preparation and dispensing of medicines to a patient. A standard prescription contains several important parts, each serving a specific purpose.
The main parts of a prescription include:

- **Superscription**
- **Inscription**
- **Subscription**
- **Signa (or Signatura)**

Among these, the **subscription** contains the instructions given by the physician to the pharmacist regarding how the medicine should be prepared and dispensed.
Step 1: Understanding the components of a prescription.

- **Superscription:** This part contains the symbol Rx, which means "take thou" and indicates that the document is a prescription.
- **Inscription:** This part includes the name of the drug and its strength or quantity. It specifies what ingredients are required in the medication.
- **Subscription:** This section provides **instructions to the pharmacist** regarding the preparation, compounding, and dispensing of the medication.
- **Signa (Signatura):** This contains directions for the patient about how and when to take the medicine.

Step 2: Identifying the section meant for the pharmacist.
The part of the prescription that specifically tells the pharmacist how to prepare or dispense the medication is the **Subscription**. It may include instructions such as the quantity to dispense or the method of compounding.
Step 3: Evaluating the options.

- **Superscription:** Contains the Rx symbol.
- **Inscription:** Lists the drug and its composition.
- **Subscription:** Contains instructions to the pharmacist. (Correct)
- **Signa:** Contains directions for the patient.

Therefore, the correct answer is:

Subscription

Quick Tip

Remember the parts of a prescription:

- **Superscription** → Rx symbol
- **Inscription** → Drug name and strength
- **Subscription** → Instructions to pharmacist
- **Signa** → Instructions to patient

Subscription = Pharmacist instructions.

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2. What is the exact temperature maintained for dissolution testing according to the Indian Pharmacopoeia?
(A) $35 \pm 0.5°C$
(B) $36.5 \pm 0.5°C$

(C) $37 \pm 0.5^{\circ}C$
(D) $38 \pm 0.5^{\circ}C$

Correct Answer: (3) $37 \pm 0.5^{\circ}C$

Solution:
Concept: Dissolution testing is an important quality control test used in pharmaceutical analysis to determine the rate and extent at which a drug substance dissolves from a dosage form, such as tablets or capsules, into a dissolution medium.
According to the **Indian Pharmacopoeia (IP)**, dissolution testing is performed under carefully controlled laboratory conditions to simulate the environment of the human gastrointestinal tract. One of the critical parameters in this test is the **temperature of the dissolution medium**.
The standard temperature maintained during dissolution testing is:

$$37 \pm 0.5^{\circ}C$$

This temperature is chosen because it closely resembles the **normal human body temperature**, ensuring that the test conditions mimic the physiological environment in which the drug will dissolve after administration.
Step 1: Understanding the purpose of dissolution testing.
Dissolution testing helps in:

- Evaluating the **drug release rate** from solid dosage forms.
- Ensuring **batch-to-batch consistency**.
- Predicting the **bioavailability** of the drug.
- Maintaining **quality control** during pharmaceutical manufacturing.

Step 2: Importance of temperature control.
Temperature is a crucial factor affecting drug dissolution because it influences:

- Solubility of the drug
- Diffusion rate of drug molecules
- Stability of the dissolution medium

Therefore, the temperature must be precisely controlled at:

$$37 \pm 0.5^{\circ}C$$

This ensures that the test conditions simulate the temperature inside the **human gastrointestinal tract**.
Step 3: Evaluating the options.

- $35 \pm 0.5^{\circ}C$ – Lower than physiological temperature.
- $36.5 \pm 0.5^{\circ}C$ – Close but not the pharmacopoeial standard.
- $37 \pm 0.5^{\circ}C$ – Correct temperature according to the Indian Pharmacopoeia.

- $38 \pm 0.5^{\circ}C$ – Higher than the specified standard.

Thus, the correct answer is:

$$37 \pm 0.5^{\circ}C$$

Quick Tip

Key parameters for dissolution testing (Indian Pharmacopoeia):

- **Temperature:** $37 \pm 0.5^{\circ}C$
- **Purpose:** To measure the rate of drug release from dosage forms
- **Simulates:** Human gastrointestinal conditions

Remember: **Dissolution temperature = Body temperature**.

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3. Which schedule of the Drugs and Cosmetics Act covers Good Manufacturing Practices (GMP)?
(A) Schedule H
(B) Schedule M
(C) Schedule K
(D) Schedule X

Correct Answer: (2) Schedule M

Solution:
Concept: The **Drugs and Cosmetics Act, 1940** and the **Drugs and Cosmetics Rules, 1945** regulate the manufacture, distribution, and sale of drugs and cosmetics in India. To ensure the quality, safety, and efficacy of pharmaceutical products, the Act contains several schedules that specify standards and regulatory requirements.
One of the most important schedules related to pharmaceutical manufacturing is **Schedule M**. This schedule provides guidelines for **Good Manufacturing Practices (GMP)** and requirements for the manufacturing premises, plant, equipment, documentation, and quality control of pharmaceutical products.
Step 1: Understanding Good Manufacturing Practices (GMP).
Good Manufacturing Practices (GMP) are a set of guidelines that ensure medicines are consistently produced and controlled according to quality standards. GMP aims to minimize risks involved in pharmaceutical production that cannot be eliminated through testing alone.
Key objectives of GMP include:

- Ensuring **product quality and safety**
- Maintaining **proper manufacturing conditions**
- Preventing **contamination and errors**
- Ensuring **consistent production standards**

Step 2: Understanding Schedule M.
Schedule M specifies detailed requirements related to:

- Location and design of manufacturing premises
- Equipment and machinery used in drug production
- Sanitation and hygiene
- Quality control laboratories
- Documentation and record keeping
- Personnel qualifications and training

These standards ensure that pharmaceutical products manufactured in India meet internationally accepted quality requirements.
Step 3: Evaluating the options.

- **Schedule H:** Lists prescription drugs that must be sold only with a doctor's prescription.
- **Schedule M:** Contains guidelines for **Good Manufacturing Practices (GMP)**. (Correct)
- **Schedule K:** Lists drugs exempted from certain provisions of the Act.
- **Schedule X:** Includes narcotic and psychotropic drugs with strict regulations.

Therefore, the correct answer is:

Schedule M

Quick Tip

Important schedules in the Drugs and Cosmetics Act:

- **Schedule M** → Good Manufacturing Practices (GMP)
- **Schedule H** → Prescription drugs
- **Schedule X** → Narcotic and psychotropic drugs
- **Schedule K** → Drugs exempted from certain provisions

Remember: **GMP = Schedule M**.

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4. Which of the following drugs is a selective serotonin reuptake inhibitor (SSRI)?
(A) Fluoxetine
(B) Amitriptyline
(C) Haloperidol
(D) Diazepam

Correct Answer: (1) Fluoxetine

Solution:
Concept: Selective Serotonin Reuptake Inhibitors (SSRIs) are a class of antidepressant drugs commonly used to treat mental health disorders such as depression, anxiety disorders, obsessive–compulsive disorder (OCD), and panic disorders.
SSRIs work by **inhibiting the reuptake of serotonin (5-HT)** in the brain. Normally, serotonin released into the synaptic cleft is reabsorbed back into the presynaptic neuron. SSRIs block this reuptake process, thereby **increasing the availability of serotonin in the synaptic space**. This enhanced serotonin activity improves mood and emotional stability.
Common examples of SSRIs include:

- Fluoxetine
- Sertraline
- Paroxetine
- Citalopram
- Escitalopram

Step 1: Understanding the mechanism of SSRIs.
SSRIs selectively inhibit the serotonin transporter responsible for reuptake. As a result:

- Serotonin concentration in the synaptic cleft increases.
- Neurotransmission of serotonin is prolonged.
- Symptoms of depression and anxiety are reduced.

Because of their selectivity, SSRIs generally produce fewer side effects compared with older antidepressants.
Step 2: Identifying the SSRI among the given drugs.

- **Fluoxetine:** A well-known SSRI antidepressant used for depression, OCD, and anxiety disorders.
- **Amitriptyline:** A tricyclic antidepressant (TCA), not an SSRI.
- **Haloperidol:** A typical antipsychotic used in schizophrenia.
- **Diazepam:** A benzodiazepine used as an anxiolytic and sedative.

Thus, the drug belonging to the SSRI class is **Fluoxetine**.
Step 3: Conclusion.
Since Fluoxetine selectively inhibits serotonin reuptake and is widely used as an antidepressant, the correct answer is:

Fluoxetine

Quick Tip

Common **SSRIs** to remember for exams:

- **Fluoxetine**
- **Sertraline**
- **Paroxetine**
- **Citalopram**
- **Escitalopram**

Mnemonic: **"FSPCE"** (Fluoxetine, Sertraline, Paroxetine, Citalopram, Escitalopram).

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5. What is the mechanism of action for the drug Omeprazole?
(A) H_2 receptor antagonist
(B) Proton pump inhibitor
(C) Anticholinergic agent
(D) Antacid

Correct Answer: (2) Proton pump inhibitor

Solution:
Concept: Omeprazole is a widely used drug for the treatment of acid-related disorders such as **peptic ulcer disease, gastroesophageal reflux disease (GERD), Zollinger–Ellison syndrome, and gastric ulcers**. It belongs to a class of drugs known as **Proton Pump Inhibitors (PPIs)**.
Proton pump inhibitors work by suppressing the production of gastric acid in the stomach. Omeprazole specifically blocks the enzyme responsible for the final step of acid secretion in the stomach.
Step 1: Understanding the target enzyme.
In the stomach, acid secretion is carried out by the **parietal cells**. These cells contain an enzyme called the **H^+/K^+–ATPase enzyme**, also known as the **proton pump**. This enzyme exchanges hydrogen ions (H^+) with potassium ions (K^+) and releases hydrogen ions into the gastric lumen, forming hydrochloric acid (HCl).
Omeprazole inhibits this enzyme, thereby reducing gastric acid secretion.
Step 2: Mechanism of action of Omeprazole.

- Omeprazole is a **prodrug** that becomes activated in the acidic environment of the stomach.
- It binds **irreversibly** to the H^+/K^+–ATPase enzyme in parietal cells.
- This blocks the **final step of gastric acid secretion**.
- As a result, the amount of acid produced in the stomach is significantly reduced.

Because it blocks the final step of acid secretion, Omeprazole is considered highly effective in reducing stomach acidity.
Step 3: Evaluating the options.

- **H_2 receptor antagonist:** Drugs like ranitidine and famotidine belong to this class.
- **Proton pump inhibitor:** Omeprazole belongs to this class and inhibits H^+/K^+–ATPase. (Correct)
- **Anticholinergic agent:** Reduces gastric secretions by blocking acetylcholine.
- **Antacid:** Neutralizes gastric acid but does not inhibit acid production.

Therefore, the correct answer is:

Proton Pump Inhibitor

Quick Tip

Important Proton Pump Inhibitors (PPIs):

- **Omeprazole**
- **Pantoprazole**
- **Lansoprazole**
- **Rabeprazole**
- **Esomeprazole**

Mnemonic: **"OPLRE"** – Omeprazole, Pantoprazole, Lansoprazole, Rabeprazole, Esomeprazole.
Mechanism: Inhibition of the H^+/K^+–ATPase proton pump in gastric parietal cells.

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6. The LAL test is specifically performed to detect what in parenteral products?
(A) Microbial contamination
(B) Endotoxins
(C) Heavy metals
(D) Preservatives

Correct Answer: (2) Endotoxins

Solution:
Concept: The **LAL test** (Limulus Amebocyte Lysate test) is a highly sensitive test used in pharmaceutical quality control to detect the presence of **bacterial endotoxins** in parenteral products, intravenous fluids, vaccines, and medical devices.
Endotoxins are toxic substances that are released from the outer cell wall of **Gram-negative bacteria**. Even very small amounts of endotoxins in injectable or parenteral products can cause severe reactions in patients such as fever, shock, or even death.
The LAL test uses a biological reagent derived from the blood cells (amebocytes) of the horseshoe crab *Limulus polyphemus*. These cells contain proteins that react strongly in the presence of bacterial endotoxins, causing clot formation.

Step 1: Understanding endotoxins.
Endotoxins are:

- Lipopolysaccharides (LPS) present in the outer membrane of **Gram-negative bacteria**.
- Released when bacterial cells break down or multiply.
- Capable of causing **pyrogenic reactions** such as fever when introduced into the bloodstream.

Therefore, injectable products must be tested to ensure they are free from endotoxins.
Step 2: Principle of the LAL test.
The LAL reagent reacts with endotoxins and produces a measurable response. Depending on the method used, the reaction may result in:

- **Gel clot formation**
- **Turbidity change**
- **Color development**

These reactions indicate the presence of endotoxins in the tested sample.
Step 3: Evaluating the options.

- **Microbial contamination:** Detected by sterility testing.
- **Endotoxins:** Detected by the **LAL test**. (Correct)
- **Heavy metals:** Detected by chemical analysis.
- **Preservatives:** Determined by analytical methods such as chromatography.

Thus, the LAL test is specifically used to detect:

Endotoxins

Quick Tip

Important pharmaceutical tests:

- **LAL Test** → Detects bacterial endotoxins
- **Sterility Test** → Detects microbial contamination
- **Pyrogen Test** → Detects fever-causing substances

Remember: **LAL = Endotoxin detection in parenteral products**.

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7. Which vitamin is essential for the synthesis of blood clotting factors?
(A) Vitamin A
(B) Vitamin C

(C) Vitamin D
(D) Vitamin K

Correct Answer: (4) Vitamin K

Solution:
Concept: Vitamin K is a fat-soluble vitamin that plays a crucial role in the **synthesis of blood clotting factors**. It is essential for the proper functioning of the coagulation system in the human body.
Vitamin K is required in the liver for the synthesis of several clotting factors, including:

- **Factor II (Prothrombin)**
- **Factor VII**
- **Factor IX**
- **Factor X**

These clotting factors help in the formation of blood clots and prevent excessive bleeding when a blood vessel is injured.
Step 1: Understanding the role of Vitamin K in coagulation.
Vitamin K acts as a cofactor for the enzyme responsible for the **carboxylation of glutamic acid residues** in clotting factors. This modification allows the clotting factors to bind calcium ions, which is essential for the blood clotting process.
Without Vitamin K, these clotting proteins remain inactive, leading to impaired blood coagulation.
Step 2: Effects of Vitamin K deficiency.
Deficiency of Vitamin K can result in:

- Prolonged bleeding time
- Hemorrhage
- Delayed blood clotting

Newborn infants are particularly at risk of Vitamin K deficiency, which is why Vitamin K injections are often given after birth to prevent **hemorrhagic disease of the newborn**.
Step 3: Evaluating the options.

- **Vitamin A:** Important for vision and immune function.
- **Vitamin C:** Essential for collagen synthesis and wound healing.
- **Vitamin D:** Regulates calcium and phosphorus metabolism.
- **Vitamin K:** Essential for synthesis of blood clotting factors. (Correct)

Thus, the vitamin required for the synthesis of blood clotting factors is:

Vitamin K

Quick Tip

Important clotting factors dependent on Vitamin K:

- Factor II (Prothrombin)
- Factor VII
- Factor IX
- Factor X

Mnemonic: **"1972"** → Factors **10, 9, 7, 2** depend on Vitamin K.

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8. Who is known as the Father of Microbiology?
(A) Louis Pasteur
(B) Robert Koch
(C) Antonie van Leeuwenhoek
(D) Alexander Fleming

Correct Answer: (3) Antonie van Leeuwenhoek

Solution:
Concept: Antonie van Leeuwenhoek is widely regarded as the **Father of Microbiology**. He was a Dutch scientist who made significant contributions to the development of microbiology by being the first person to observe and describe microorganisms using a microscope.
During the **17th century**, Leeuwenhoek developed powerful single-lens microscopes that were capable of magnifying objects up to about **200–300 times**. Using these microscopes, he observed tiny living organisms in water, which he called **"animalcules."**
These observations marked the first scientific discovery of microorganisms such as bacteria and protozoa.
Step 1: Understanding Leeuwenhoek's contribution.
Antonie van Leeuwenhoek made several groundbreaking discoveries:

- First to observe **bacteria**
- First to observe **protozoa**
- Studied microorganisms present in pond water, saliva, and other biological materials

His discoveries opened the field of **microbiology**, which studies microscopic organisms.
Step 2: Importance of his work in microbiology.
Leeuwenhoek's work was important because:

- He demonstrated the existence of microscopic life.
- His observations laid the foundation for later developments in bacteriology and microbiology.
- His research inspired other scientists to explore microorganisms and their role in health and disease.

Step 3: Evaluating the options.

- **Louis Pasteur:** Known for germ theory and pasteurization.
- **Robert Koch:** Known for Koch's postulates and identification of disease-causing bacteria.
- **Antonie van Leeuwenhoek:** First to observe microorganisms; known as the **Father of Microbiology**. (Correct)
- **Alexander Fleming:** Discovered penicillin.

Therefore, the correct answer is:

Antonie van Leeuwenhoek

Quick Tip

Important scientists in microbiology:

- **Antonie van Leeuwenhoek** → Father of Microbiology
- **Louis Pasteur** → Father of Modern Microbiology
- **Robert Koch** → Founder of Medical Microbiology
- **Alexander Fleming** → Discovered Penicillin

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9. What is the correct sequence of steps in a PCR (Polymerase Chain Reaction) cycle?
(A) Annealing → Denaturation → Extension
(B) Denaturation → Annealing → Extension
(C) Extension → Denaturation → Annealing
(D) Denaturation → Extension → Annealing

Correct Answer: (2) Denaturation → Annealing → Extension

Solution:
Concept: Polymerase Chain Reaction (PCR) is a molecular biology technique used to amplify a specific segment of DNA. It allows scientists to produce millions of copies of a particular DNA sequence in a short period of time.
PCR is widely used in:

- Genetic research
- Disease diagnosis
- Forensic science
- DNA fingerprinting

The PCR process consists of a repeating cycle of three main steps that occur at different temperatures. These steps are **Denaturation, Annealing, and Extension**.

Step 1: Denaturation

During denaturation, the double-stranded DNA is heated to about $94°C$–$98°C$. At this high temperature, the hydrogen bonds between the complementary DNA strands break, causing the DNA to separate into two single strands.

$$\text{Double-stranded DNA} \rightarrow \text{Two single strands}$$

Step 2: Annealing

In this step, the temperature is lowered to about $50°C$–$65°C$. Short DNA sequences called **primers** bind (anneal) to their complementary sequences on the single-stranded DNA templates.

These primers provide a starting point for DNA synthesis.

Step 3: Extension (Elongation)

During extension, the temperature is raised to about $72°C$. At this temperature, the enzyme **Taq DNA polymerase** adds nucleotides to the primers and synthesizes a new complementary DNA strand.

This results in the formation of new double-stranded DNA molecules.

Step 4: Correct order of PCR steps

The PCR cycle always follows this sequence:

$$\text{Denaturation} \rightarrow \text{Annealing} \rightarrow \text{Extension}$$

This cycle is repeated many times (usually 25–35 cycles) to amplify the target DNA.

Step 5: Evaluating the options

- **Annealing** $\rightarrow$ **Denaturation** $\rightarrow$ **Extension** – Incorrect sequence
- **Denaturation** $\rightarrow$ **Annealing** $\rightarrow$ **Extension** – Correct sequence
- **Extension** $\rightarrow$ **Denaturation** $\rightarrow$ **Annealing** – Incorrect
- **Denaturation** $\rightarrow$ **Extension** $\rightarrow$ **Annealing** – Incorrect

Thus, the correct sequence is:

$$\text{Denaturation} \rightarrow \text{Annealing} \rightarrow \text{Extension}$$

Quick Tip

Remember the PCR sequence using the mnemonic:
D-A-E

- **D**enaturation
- **A**nnealing
- **E**xtension

Typical PCR temperatures:

- Denaturation: $94°C$–$98°C$
- Annealing: $50°C$–$65°C$
- Extension: $72°C$

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10. Identify the IUPAC name for Paracetamol.
(A) N-acetyl-p-aminophenol
(B) Acetylsalicylic acid
(C) 2-acetoxybenzoic acid
(D) N-phenylacetamide

Correct Answer: (1) N-acetyl-p-aminophenol

Solution:
Concept: Paracetamol (also known as **Acetaminophen**) is a widely used analgesic and antipyretic drug. It is commonly used to relieve mild to moderate pain and reduce fever.
The **IUPAC name** of paracetamol is:

N-(4-hydroxyphenyl)acetamide

However, it is also commonly referred to by its **chemical name**:

N-acetyl-p-aminophenol

This name describes the structure of the compound, which contains an **acetamide group** attached to a **para-substituted phenolic ring**.
Step 1: Understanding the structure of Paracetamol.
Paracetamol consists of:

- A **benzene ring**
- A **hydroxyl group (-OH)** in the para position
- An **acetamide group (-NHCOCH$_3$)**

Because the acetamide group is attached to the para-amino phenol structure, the compound is called **N-acetyl-p-aminophenol**.
Step 2: Evaluating the options.

- **N-acetyl-p-aminophenol:** Chemical/IUPAC-related name for paracetamol. (Correct)
- **Acetylsalicylic acid:** The chemical name for **Aspirin**.
- **2-acetoxybenzoic acid:** Another structural representation of aspirin.
- **N-phenylacetamide:** A different compound not equivalent to paracetamol.

Thus, the correct answer is:

N-acetyl-p-aminophenol

Quick Tip

Important drug–chemical name relationships:

- **Paracetamol** → N-acetyl-p-aminophenol
- **Aspirin** → Acetylsalicylic acid
- **Ibuprofen** → 2-(4-isobutylphenyl)propanoic acid

Remember: **Paracetamol = N-acetyl-p-aminophenol**.
