

# GPAT 2024 Question Paper with Solution

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## Human Anatomy

**Ques 1. Salivary amylase digests which one of the following?**

**Ans. Starch**

**Solu.** Salivary amylase, an enzyme found in saliva, begins the digestion of carbohydrates by breaking down starch into simpler sugars like maltose and dextrin.

**Ques 2. Murmur occurs due to which?**

**Ans. Heart valves**

**Solu.** A murmur is an unusual sound heard between heartbeats, often caused by turbulent blood flow due to issues with the heart valves.

**Ques 3. Which is the number of bones in the appendicular skeleton?**

**Ans. 126**

**Solu.** The appendicular skeleton includes the bones of the limbs and girdles, totaling 126 bones (64 in the upper limbs, 62 in the lower limbs).

**Ques 4. Which of the following diseases is caused by the deficiency of Niacin?**

**Ans. Pellagra**

**Solu.** Pellagra is a disease caused by a deficiency of niacin (vitamin B3), characterized by dermatitis, diarrhea, and dementia.

**Ques 5. DNA replication occurs in which phase of the cell cycle?**

**Ans. M phase**

**Solu.** DNA replication actually occurs in the S phase of the cell cycle, where the DNA content of a cell is duplicated in preparation for cell division.

**Ques 6. What is the name of the colored part present in the eye?**

**Ans. Iris**

**Solu.** The iris is the colored part of the eye that controls the size of the pupil and thus the amount of light that enters the eye.

**Ques 7. Which nerve works instrumentally as a motor nerve?**

**Ans. Accessory**

**Solu.** The accessory nerve (cranial nerve XI) is primarily a motor nerve that innervates the sternocleidomastoid and trapezius muscles, facilitating movements of the neck and shoulders.

**Ques 8. Which cranial nerve regulates the heartbeat?**

**Ans. 10 (Vagus nerve)**

**Solu.** The vagus nerve (cranial nerve X) regulates various body functions, including heart rate, by carrying parasympathetic fibers to the heart.

**Ques 9. Melatonin is secreted by which gland?**

**Ans. Pineal gland**

**Solu.** The pineal gland secretes melatonin, a hormone that regulates sleep-wake cycles.

**Ques 10. What is the starting material of corticosteroid?**

**Ans. Cholesterol**

**Solu.** Corticosteroids are synthesized from cholesterol in the adrenal cortex.

**Ques 11. Which hormone is not secreted by the placenta?**

**Ans. LH (Luteinizing Hormone)**

**Solu.** LH is secreted by the anterior pituitary gland and not by the placenta, which secretes hormones like hCG, progesterone, and estrogen.

**Ques 12. Renin is secreted by which cell?**

**Ans. JG cells (Juxtaglomerular cells)**

**Solu.** Renin is secreted by juxtaglomerular cells in the kidneys in response to low blood pressure or low sodium content.

**Ques 13. Name the outer covering of testes.**

**Ans. Tunica vaginalis**

**Solu.** The tunica vaginalis is the outer covering of the testes, derived from the peritoneum.

**Ques 14. Wilson disease is due to which deficiency?**

**Ans. Copper deficiency**

**Solu.** Wilson's disease is a genetic disorder caused by the body's inability to eliminate excess copper, leading to its accumulation and causing symptoms.

### Chemistry

**Ques 15. Which is a meta directing group in chemistry?**

**Ans. CF<sub>3</sub>**

**Solu.** CF<sub>3</sub> is a meta-directing group in electrophilic aromatic substitution reactions, directing incoming electrophiles to the meta position relative to itself on the aromatic ring.

**Ques 16. Thioglycolic acid is used in which process?**

**Ans. Iron (specifically for reducing ferric iron to ferrous iron)**

**Solu.** Thioglycolic acid is used to reduce ferric ions (Fe<sup>3+</sup>) to ferrous ions (Fe<sup>2+</sup>).

**Ques 17. Which compound undergoes fast nitration in the presence of H<sub>2</sub>SO<sub>4</sub>?**

**Ans. Toluene**

**Solu.** Toluene undergoes nitration faster than benzene due to the electron-donating methyl group, which activates the aromatic ring towards electrophilic substitution.

**Ques 18. What is the equivalent weight of KMnO<sub>4</sub> in acidic medium?**

**Ans. 31.6**

**Solu.** In an acidic medium, KMnO<sub>4</sub> acts as a strong oxidizing agent and its equivalent weight is calculated based on the change in oxidation state of manganese (Mn from +7 to +2).

**Ques 19. Which is the shortest-acting anticholinesterase?**

**Ans. Edrophonium**

**Solu.** Edrophonium is a short-acting anticholinesterase, used to diagnose myasthenia gravis due to its rapid onset and short duration of action.

**Ques 20. What is the mechanism of action of fluoroquinolones?**

**Ans. Inhibition of DNA Gyrase and topoisomerase**

**Solu.** Fluoroquinolones inhibit bacterial DNA gyrase and topoisomerase IV, enzymes critical for DNA replication and transcription, leading to bacterial cell death.

**Ques 21. What is the causative agent for Syphilis?**

**Ans. Treponema pallidum**

**Solu.** Syphilis is caused by the bacterium *Treponema pallidum*, a spirochete that infects through broken skin or mucous membranes.

**Ques 22. Leprosy is what type of infection?**

**Ans. Bacterial**

**Solu.** Leprosy, also known as Hansen's disease, is a chronic bacterial infection caused by *Mycobacterium leprae*.

**Ques 23. What is the catalyst for the Oppenauer oxidation reaction?**

**Ans. Aluminum tertiary butoxide**

**Solu.** The Oppenauer oxidation uses aluminum tertiary butoxide as a catalyst to oxidize secondary alcohols to ketones.

**Ques 24. What is Lindlar's Reagent?**

**Ans. Pd, CaCO<sub>3</sub> (Palladium on calcium carbonate)**

**Solu.** Lindlar's Reagent, a poisoned catalyst consisting of palladium on calcium carbonate, is used for the selective hydrogenation of alkynes to cis-alkenes.

**Ques 25. Which of the following is a spirit of salt?**

**Ans. HCl (Hydrochloric acid)**

**Solu.** Spirit of salt is a common name for hydrochloric acid, a strong acid used in various industrial and laboratory processes.

**Ques 26. Give an example of a DPP4 Inhibitor.**

**Ans. Sitagliptin**

**Solu.** Sitagliptin is an example of a DPP4 inhibitor, a class of oral hypoglycemics that inhibit the enzyme dipeptidyl peptidase-4, used in the management of diabetes mellitus type 2.

**Ques 27. How many optical isomers are possible for lactic acid?**

**Ans. 2**

**Solu.** Lactic acid has one chiral center, resulting in two optical isomers (enantiomers): L-lactic acid and D-lactic acid.

**Ques 28. What ring is present in Famotidine?**

**Ans. Thiazole ring**

**Solu.** Famotidine contains a thiazole ring, which is a sulfur and nitrogen-containing heterocycle.

**Ques 29. Which formula is used for the calculation of child dose based on weight?**

**Ans. Fried's formula**

**Solu.** Fried's formula calculates the pediatric dose based on age or weight, commonly expressed as:  $(\text{Child's Age in Years} / 150) \times \text{Adult Dose}$ .

## Pharmacy

**Ques 30. What is the rate-limiting step of controlled release?**

**Ans. Dissolution**

**Solu.** In controlled-release formulations, the dissolution of the drug from the dosage form is often the rate-limiting step, determining the rate at which the drug becomes available for absorption.

**Ques 31. Impact and attrition are principles of which device?**

**Ans. Fluid energy mill**

**Solu.** A fluid energy mill uses the principles of impact and attrition to achieve fine grinding and size reduction of materials.

**Ques 32. What test is used for digitoxose?**

**Ans. Killer-Killiani test**

**Solu.** The Killer-Killiani test is a chemical test used to detect the presence of digitoxose, a sugar component of certain cardiac glycosides.

**Ques 33. What are the in-process quality control tests for tablets?**

**Ans. Hardness, Friability, Weight measurement**

**Solu.** In-process quality control tests for tablets include hardness (to ensure mechanical strength), friability (to check for crumbling), and weight measurement (to ensure uniformity of dosage).

**Ques 34. Pterocarpus belongs to which family?**

**Ans. Leguminosae**

**Solu.** Pterocarpus, a genus of trees known for producing valuable timber and dyes, belongs to the Leguminosae (Fabaceae) family.

**Ques 35. Give an example of a BCS classification class III drug.**

**Ans. Famotidine, Nadolol, Atenolol**

**Solu.** BCS class III drugs are characterized by high solubility and low permeability. Examples include famotidine, nadolol, and atenolol.

**Ques 36. How many pharmacists are required for a 300 bedded hospital?**

**Ans. 10**

**Solu.** According to certain guidelines, a 300-bedded hospital typically requires around 10 pharmacists to ensure proper pharmaceutical care and medication management.

**Ques 37. Alfalfa belongs to which family?**

**Ans. Leguminosae**

**Solu.** Alfalfa (*Medicago sativa*) is a leguminous plant belonging to the family Leguminosae (Fabaceae).

**Ques 38. Weighing machines work on the principle of which energy?**

**Ans. Reflect energy (Roto weigh)**

**Solu.** Certain types of weighing machines operate on the principle of reflect energy, where the weight is determined based on the reflection of energy from the object being weighed.

**Ques 39. Which viscometer is used to measure Newtonian flow?**

**Ans. Ostwald viscometer**

**Solu.** The Ostwald viscometer is used to measure the viscosity of Newtonian fluids, relying on the time it takes for a fluid to flow through a capillary tube under gravity.