



**Ph.D. Entrance Examination
Model Question Paper**

Faculty: Pharmacy

Department: Pharmaceutical Chemistry

- The time taken by the analyte after sample injection to reach the detector is called _____
 - Dead time
 - Solute migration rate
 - Adjusted retention time
 - Retention time
- What is the unit of absorbance which can be derived from Beer Lambert's law?
 - L mol⁻¹ cm⁻¹
 - L gm⁻¹ cm⁻¹
 - Cm
 - No unit
- Which of the following is the wave number of near infrared spectrometer?
 - Near IR: 0.8 – 2.5 mm
 - Mid IR: 0.8 – 2.5 mm
 - Far IR: 2.5 – 50 mm
 - Mid IR: 50 – 100 mm
- The order of decreasing stability of the following cations is?
(I) $\text{CH}_3\text{C}^+\text{HCH}_3$ (II) $\text{CH}_3\text{C}^+\text{HOCH}_3$ (III) $\text{CH}_3\text{C}^+\text{HCOCH}_3$
 - III > II > I
 - I > II > III
 - II > I > III
 - I > III > II



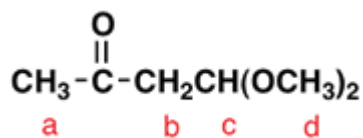
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5. Drug is an example of amino alkaloid.
- Ephedrine.
 - Aconine.
 - Caffeine.
 - Theophylline.
6. Example of flavones glycoside?
- Catechin
 - Naringenin
 - Luteolin
 - Quercetin
7. QSAR method involves
- Target structure
 - Target properties
 - Ligand x-ray structure
 - Ligand properties
8. Which of the following is not a five membered ring?
- Pyridine
 - Pyrrole
 - Furan
 - Thiophene



9. NMR is the study of the absorption of _____ by nuclei in a magnetic field

- a) Radioactive radiation
- b) IR radiation
- c) Radio frequency radiation
- d) Microwaves

10. Which of hydrogens a-d in the following molecule gives a triplet signal in a normal ^1H NMR spectrum?



- a) hydrogen a
- b) hydrogen b
- c) hydrogen c
- d) hydrogen d

11. Official method for assay of Paracetamol is

- a) Gas Chromatography
- b) HPLC
- c) Potentiometry
- d) Non-aqueous titration

12. End product of Vilsmeier-Haack reaction?

- a) Ketone
- b) Carboxylic acid
- c) Aldehyde
- d) None of the above.



13. End product of Ullmann reaction?
- Ester
 - Ether
 - Diphenyl ether
 - Ketone
14. which of the following terms refers to the molecular modelling computational method that uses equations obeying the laws of classical physics?
- Quantum mechanics
 - Molecular calculations
 - Molecular mechanics
 - Quantum theory
15. Natural products or derivatives or synthetic substances with good binding ability in drug discovery is known as
- Lead
 - Hit
 - NDA
 - IND
16. Oxadiazole ring contains
- One Nitrogen and One Oxygen
 - Two Oxygen and One Nitrogen
 - Two Nitrogen and One Oxygen
 - Two Oxygen and Two Nitrogen



17. The most important physicochemical properties affecting drug action,
- A.** Partition coefficient **B.** Solubility **C.** Chemical bonding, **D.** Chelation, **E.** Surface activity.
- a) **A and B**
- b) **B and D**
- c) **A, B and C**
- d) All of the above
18. The 3D structure elucidation is done by process.
- a) NMR
- b) IR
- c) X-ray crystallography
- d) MS
19. Which type of hydrogen bonding present when hydrogen bonding occurs between molecule.
- a) Intramolecular
- b) Intermolecular
- c) Both A and B
- d) None of the above.
20. Which of the following best describes the mechanism of the Williamson ether synthesis.
- a) SN^1 reaction
- b) SN^2 reaction
- c) E^1 reaction
- d) None of the above.



21. Which of the following is the functional group in alkyl halide?
- Hydroxyl group
 - Inert gas
 - Halogen atom
 - None of the above
22. In Which of the following reactions, the molecules absorbing light do not react but induce the other molecules to react.
- Irreversible
 - Thermal
 - Photosensitized
 - Dark
23. An example of photochemical reaction is _____
- Formation of NaOH
 - Decomposition of ammonia
 - Photosynthesis
 - Decomposition of HCl
24. What are the Chiral molecules?
- Unstable molecules
 - Superimposable on their mirror images
 - Shows geometrical isomerism
 - Not superimposable on their mirror images.



25. Which of the following acids does not exhibit optical isomerism?

- a) Lactic acid
- b) Tartaric acid
- c) Maleic acid
- d) α -amino acids



Answer Keys

Sl. No.	Answer Key	Sl. No.	Answer Key
1.	D	14.	C
2.	D	15.	B
3.	A	16.	C
4.	A	17.	D
5.	B	18.	A
6.	C	19.	B
7.	D	20.	B
8.	A	21.	C
9.	C	22.	C
10.	C	23.	C
11.	B	24.	D
12.	C	25.	C
13.	C		