

**Progressive Education Society's
Modern College of Arts, Science and Commerce, Ganeshkhind, Pune-411016
(Autonomous)**

B.Sc. Blended Program

(A degree of Savitribai Phule Pune University equivalent to the degree of University of Melbourne)

End Semester Examination: March/ April 2025

Program: B.Sc. Blended Program (Specific): B.Sc. Blended (Chemistry) Set: A

Class: T.Y. B.Sc. Blended

Semester: VI

Course code: CHM603

Course name: Natural Product and heterocyclic chemistry

Credits: 3

Time: 2½ hours

Maximum marks: 50

Instructions to the candidate:

- All questions are compulsory.
- Figures to the right indicate marks.
- Draw diagrams wherever necessary.
- Use of scientific calculator is allowed.
- Ask for graph paper if needed.

Q.1] Choose the correct option (Solve ANY 10 out of 12)

[1 x 10 =10M]

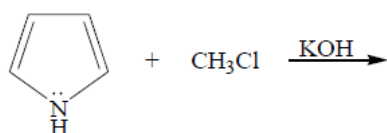
1. Mannose is -----
a) monosaccharide b) disaccharide c) polysaccharide d) none of these
2. Which amongst the following is a reducing sugar?
a) Fructose b) sucrose c) starch d) none of these
3. Which of the following statements is NOT true about proteins?
(a) Proteins are made up of monosaccharides.
(b) Proteins are essential for the development of skin, teeth and bones.
(c) Protein is the only nutrient that can build, repair and maintain body tissues.
(d) All of the above
4. Which of the following nitrogenous base is not present in DNA ?
a) Adenine b) Guanine c) Thymine d) Uracil
5. Which functional groups are present in carbohydrates ?
a) Ketone and aldehyde b) carboxylic acid
c) cyanide d) alkyl halide
6. Muscles are an example of
a) Globular protein b) fibrous protein c) aldohexose d) dipeptide

7. Guanosine is
a) nucleoside b) pentose c) aldose d) nitrogenous base
8. RNA contains Uridine, it is a
a) pyrimidine b) purine c) nucleic acid d) nucleoside
9. Which of the following compound is nonaromatic?
a) oxirane b) furan c) tetrahydrofuran(THF) d) pyridine
10. Three membered saturated ring containing one nitrogen atom is called as ----
a) oxirane b) aziridine c) thiopene d) pyrrole
11. Five membered aromatic ring containing one nitrogen atom is called as ----
a) pyridine b) furan c) thiopene d) pyrrole
12. Five membered aromatic ring containing one oxygen atom is called as -----
a) Pyrrole b) furan c) thiopene d) pyridine

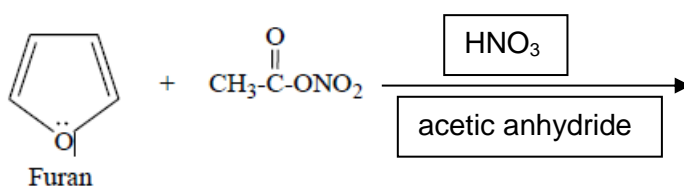
Q.2] Answer the following in short (ANY 10 out of 12)

[2 x 10 = 20M]

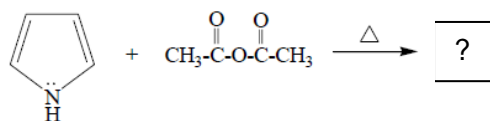
1. Draw correct structure of guanosine.
2. Explain and compare nucleoside and nucleotide with atleast 4 points
3. Draw correct structure of D-Ribose and D-Arabinose
4. Explain the reaction of Ninhydrin with amino acid.
5. What is the full form of NADPH. Write its correct role.
6. Give the structure of L- Tyrosine and L-alanine
7. Predict the product of following reaction.



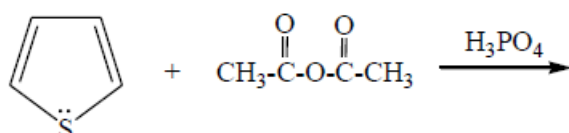
8. Predict the product of following reaction.



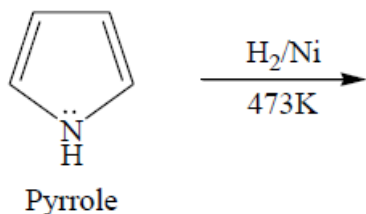
9. Predict the product of following reaction.



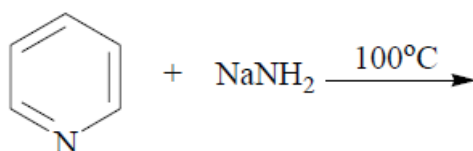
10. Predict the product of following reaction.



11. Predict the product of following reaction.



12. Predict the product of following reaction.



Q.3. Answer in brief (ANY 4 out of 6)

[4 x 5 = 20M]

1. Write a note on Ruff degradation with mechanism
2. Draw structure of any 10 essential amino acids with correct name and stereochemistry
3. Write a note on Juvabione and draw its correct structure.
4. Explain any two methods of preparation of pyrrole.
5. Explain Hantzsch Synthesis of pyridine. Write all the steps involved in the reaction.
6. Why pyridine is more basic than pyrrole? Explain.

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