UNIVERSITY OF THE PUNJAB

B.A. / B.Sc. Part-II
Annual Exam - 2017

Roll No. .....

Subject: Chemistry-II **TIME ALLOWED: 3 hrs.**
PAPER: A (Organic Chemistry) **MAX. MARKS: 40**

Instructions:

- Question No.1 is compulsory.
- It is compulsory to attempt at least two questions from each section.
- All questions carry equal marks.

Q. No. 1: Short questions. [4 x 2 = 8]

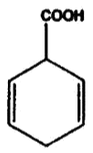
I. Why ketones are less reactive than aldehydes for nucleophilic addition reaction?
II. What is autoxidation? Give one example.
III. Explain why chlorobenzene undergoes nitration about 30 times slower than benzene?
IV. Label each of the following as aromatic, nonaromatic or antiaromatic. Justify your answer.
   a) Cyclopropenyl cation
   b) Cyclopropenyl anion

Section I

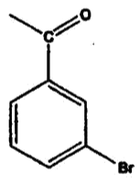
Q. No. 2: How can you synthesize the following compounds from acetylene? Draw the complete mechanisms for all steps involved. [4 x 2 = 8]

I. 1,1- Dibromoethane
II. Acetaldehyde
III. Ethane
IV. Ethene

Q. No. 3: Outline all steps with mechanisms involved in the synthesis of following compounds from benzene. [4 + 4]



(A)



(B)

Q. No. 4:

Write the structure of products formed after hydrolysis when each of the following compounds is made to react with C_2H_5MgBr. Draw complete mechanisms. [4 x 2 = 8]

I. Water
II. Oxygen
III. Benzaldehyde
IV. Butanone

Q. No. 5: [2 + 4 + 2]

I. How can you explain the fact that an increase in temperature will favor elimination more than substitution?
II. Why the structure of substrate is the major factor that controls the mechanism and rate of a nucleophilic substitution reaction? Give examples.
III. Why ethyl chloride is less reactive than ethyl iodide in S_N1 reaction?

(P.T.O.)

Section II

Q. No. 6: How will you manage to bring about following transformation? Draw complete mechanisms. [4 x 2 = 8]

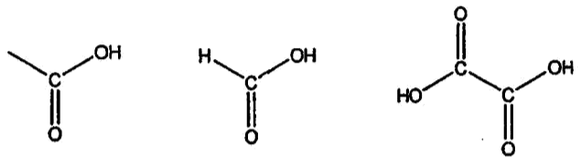
I. Primary alcohol ⟶ Aldehyde
II. Methanol ⟶ Methyl acetate
III. 1-Propanol ⟶ 1-chloropropane
IV. Chlorobenzene ⟶ Phenol

Q. No. 7: Explain the following reactions with mechanisms. [4 + 4]

I. Cannizzaro's reaction
II. Iodoform test

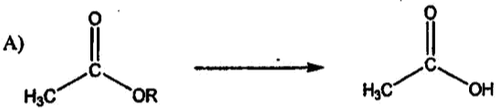
Q. No. 8:

I. Arrange the following compounds in order of decreasing acidity, giving explanation for your order. [4]



II. How will you accomplish the following conversions? [2 + 2]

A)



B)

Q. No. 9: Show all the steps involved in following conversions. [4 + 4]

I) $CH_2(COOC_2H_5)_2 \longrightarrow CH_3CH_2CH_2COOH$

II) $CH_3COCH_2COOC_2H_5 \longrightarrow CH_3COCH_2CH_3$

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B.A. / B.Sc. Part-II
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Roll No. .....

Subject: Chemistry-II
PAPER: B (Applied Chemistry)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 40

Note: Attempt FIVE questions. Q. No.1 is compulsory. Attempt at least TWO questions from each section.

Q.1	**(a)**	Define Chromophore and Auxochrome. Give examples	**(2)**
	(b)	Compare Absolute and Relative errors.	**(2)**
	(c)	Sucrose is an Invert Sugar. Justify	**(2)**
	(d)	What is Hydrolysis theory of cement setting?	**(2)**

Section-I

Q.2	**(a)**	Explain the types of Absorption and Intensity shifts.	**(4)**
	(b)	Explain Nitrogen cycle.	**(4)**
Q.3	**(a)**	Define and explain NERST Distribution law.	**(4)**
	(b)	Give some typical sources of Soil pollution.	**(4)**
Q.4	**(a)**	Define a Significant figure. How position of decimal is related to it?	**(4)**
	(b)	Give important application of IR Spectroscopy in Chemistry.	**(4)**
Q.5	**(a)**	What are Green House Gases? How these contribute in Global warming?	**(4)**
	(b)	Explain the Mean, Median and Mode with suitable examples.	**(4)**

Section-II

Q.6	**(a)**	Describe the Batch Process of Soap manufacturing.	**(4)**
	(b)	What are Polysaccharides? Discuss the sources and digestibility of Starch and Cellulose	**(4)**
Q.7	**(a)**	What do you mean by Blister Copper? How it can be purified?	**(4)**
	(b)	Draw a labelled flow sheet diagram for Soda Ash manufacturing.	**(4)**
Q.8	**(a)**	Discuss the Significance of lipids in biological membranes.	**(4)**
	(b)	Discuss Acid-base behavior of amino acids. Explain with suitable examples.	**(4)**
Q.9		Explain detailed process of Cement manufacturing. Also give flow sheet diagram.	**(8)**

15. Excretion through Malpighian tubules involves active transport of which icons into tubules from the surroundings

a) Potassium
b) Chloride
c) Sodium
d) All of above

16. Telencephalon is part of the

a) Hind brain
b) Midbrain
c) Spinal cord
d) Forebrain

17. Point of entry of sperm in frog egg

a) Animal pole
b) Vegetal pole
c) Gray crescent area
d) None of these

18. Thermoregulatory center in mammals is located in:

a) Pituitary body
b) Skin
c) Hypothalamus
d) Diencephalon.

19. Muscle contraction is stimulated by

a) Troponin
b) Tropamyosin
c) Acetylcholine
d) Myosin

20. Protein produces number of calories per gram

a) 3.3
b) 4.4
c) 4.6
d) 9.5

Q2 Fill in the blanks **½ x 20 = 10**

1. ----------includes all of those processes by which an animal takes in digest, absorbs, stores, and uses food (nutrients) to meet its metabolic needs.
2. In amphibians the cortical changes result in the formation of a ----------on the egg, opposite to the point of sperm penetration.
3. Leeches and some insect larvae exhibit ----------movement.
4. Pheromones are----------that affect the behavior of another individual of the same species.
5. ----------occur when an animal is one sex during one phase of its life cycle and the opposite sex during another phase.
6. A ----------consist of one motor nerve fibers and all the muscle fibers with which it communicates.
7. The gallbladder stores the greenish fluid called----------
8. Heat generation by shivering is called ---------- .
9. The controlling center for ovulation and menstruation is the ----------.
10. _____respond to mechanically induced changes.
11. All photoreceptors possess light sensitive pigments. These pigments are _____.
12. The ----------is the external covering of an animal.
13. The ---------- of echinoderm provides a unique mean of locomotion.
14. The functional unit of a muscle myofibril is the ----------.
15. Baleen plates are present in ----------.
16. In a chemical synapse two cells communicate by means of a chemical agent called a ----------.
17. Flatworm's nervous system contains ----------.
18. The endocrine system of a crustaceans, such as crayfish controls functions such as---- ---------- and color change.
19. All vertebrates have a ---------- circulatory system.
20. The outer protective covering of heart is ----------.