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**University Examinations 2015/2016**

THIRD YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGICAL SCIENCE OPTION

**SBT 2309: PHYTOCHEMISTRY**

**DATE: NOVEMBER, 2015 TIME: 2 HOURS**

***INSTRUCTIONS:*** *Answer question* ***one(Compulsory)*** *and any other* ***two*** *questions.*

**QUESTION ONE – (30 MARKS)**

1. Define the following terms: (4 Marks)
2. Pharmacognosy
3. Bioassay guided frachonation
4. Quality of a drug
5. Organoleptic
6. Name four quality testing that must be met by standard herbal drug. (4 Marks)
7. Distinguish between primary and secondary metabolites, giving an example of each.

(4 Marks)

1. Name four chromatographic methods employed in phytochemical analysis . (4 Marks)
2. State four reasons for renewed immense interest towards phytochemials. (4 Marks)
3. (i) What are alkaloids? (1 Mark)

(ii) State three functions of alkaloids. (3 Marks)

1. Draw the structures of the following compounds. (4 Marks)
2. Nicotine
3. Cocaine
4. Quinine
5. Geraniol
6. Write in full the names of the following co-enzymes needed during hydride transfer reactions;
7. NADH (1 Mark)
8. NADPH (1 Mark)

**QUESTION TWO (20 MARKS)**

a) Distinguish between synergistic and antagonistic as used in biological activity.(2 Marks)

b) Briefly , discuss natural product under the following subheadings;

1. Definition (1 Mark)
2. Sources (2 Marks)
3. Structure elucidation (6 Marks)

c) Name three types of activities evaluated by various biological methods in natural products.

(3 Marks)

d) Draw the structure of the following compounds.

1. Flavanone
2. Chalcone
3. Flavanonol
4. Isoflanone

e) State two physiological activities in flavanoids. (2 Marks)

**QUESTION THREE (20 MARKS)**

a) (i) State two characteristics of aromatic polyketide compounds. (2 Marks)

(ii) How are aromatic polyketides classified? (2 Marks)

b) Thin layer chromatography (TLC) is a versatile technique in pharmacognosy. Discuss

(6 Marks)

c) Briefly, discuss caffeine, under the following subheadings;

1. Structure (1 Mark)
2. Biological effects (2 Marks)
3. Properties (2 Marks)
4. Isolation (5 Marks)

**QUESTION FOUR (20 MARKS)**

a) (i) What are (i) Terpenoids (ii) Terpenes (iii) Artifacts (3 Marks)

b) How are terpenoids classified? (2 Marks)

c) Describe how you would test for the presence of the following in phytochemicals.

1. Alkaloids (2 Marks)
2. Saponins (2 Marks)
3. Terpenes (2 Marks)

d) Briefly, discuss Nicotine, under the following subheadings

1. Source ( 1 Mark)
2. Physiological action (2 Marks)
3. Uses of the oxidation product by conc. HNO3 (2 Marks)

e) Name the biogetic precursors of the following compounds.

1. terpenes
2. Indole
3. Isoquinoline
4. Rutaceae alkaloids
5. Piperidine