



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES

SCHOOL OF AGRICULTURE AND NATURAL RESOURCE SCIENCES

DEPARTMENT OF NATURAL RESOURCES SCIENCES

QUALIFICATION: BACHELOR OF NATURAL RESOURCES MANAGEMENT	
QUALIFICATION CODE: 07BNRS	LEVEL: 7
COURSE CODE: PTS7210S	COURSE NAME: PLANT STUDIES 2
DATE: JUNE 2023	
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Dr. J. M. Kamwi
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INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Write clearly and neatly.3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Examination question paper
2. Answering book
3. Calculator

THIS QUESTION PAPER CONSISTS OF 2 PAGES (Excluding this front page)

1. Describe *Psyrdrax livida* in terms of its leaves, general growth form and habit. [6]
2. Describe *Terminalia prunioides* in terms of its leaves, general growth form and habit. [6]
3. Angiosperms have sophisticated pollination syndromes, which is one advantage they have over gymnosperms. Give examples and explain what this means. [5]
4. Identify and describe any two problems the industry for Indigenous natural plant products is facing. [6]
5. Particularly in Namibia's more dry regions, many plants have thorns, spines, or prickles to defend themselves. Explain the distinctions between these three terms, the variety of these structures, and their purposes as you respond to this statement. To help make your response clear, use pertinent examples. If you wish, you can also utilize drawings. [12]
6. Each species in column A belongs to a family/subfamily in column B. Write down the number from column A and the corresponding letter from column B, e.g. (1) H. **NOTE:** more than one species could belong to the same family. [15]

COLUMN A – SPECIES	COLUMN B – FAMILIES
(1) <i>Philenoptera violacea</i>	A. Burseraceae
(2) <i>Schinziophyton rautanenii</i>	B. Bignoniaceae
(3) <i>Ziziphus mucronata</i>	C. Anacardiaceae
(4) <i>Datura innoxia</i>	D. Rhamnaceae
(5) <i>Commiphora angolensis</i>	E. Euphorbiaceae
(6) <i>Kigelia africana</i>	F. Poaceae
(7) <i>Terminalia sericea</i>	G. Strychnaceae
(8) <i>Searsia marlothii</i>	H. Clusiaceae
(9) <i>Baphia massaiensis</i>	I. Combretaceae
(10) <i>Phragmites australis</i>	J. Sapotaceae
(11) <i>Spirostachys africana</i>	K. Ebenaceae
(12) <i>Colophospermum mopane</i>	L. Solanaceae
(13) <i>Adansonia digitata</i>	M. Fabaceae / Papilionoidae
(14) <i>Grewia retinervis</i>	N. Fabaceae / Caesalpinioideae
(15) <i>Laggera decurrens</i>	O. Fabaceae / Mimosoidae
	P. Malvaceae (new classification)
	Q. Moraceae
	R. Asteraceae

7. The genus *Commiphora* is a truly arid-adapted and Namibian genus.
 - 7.1 Discuss this statement by elaborating on the structure of the plant that enables it to thrive in this country. [4]
 - 7.2 To which family does this genus belong? [1]
 - 7.3 Name two species of this genus that are endemic to the Namib. [2]
8. The complex fruit has evolved into a very uncommon structure in the Moraceae family and has a distinctive relationship with its pollinators. Describe this assertion. [10]

9. The best explanation for the evolution of the carpel is still Goethe's "foliar theory of the carpel"; describe this theory in more detail. [2]
10. The family Fabaceae is one of the most important and diverse families in Namibia. [15]
- 10.1 Discuss the importance of this family to the environment and people of Namibia. (use different biomes and vegetation types, family adaptations, identify important species and their importance).
- 10.2 Some taxonomists believe that the family has three subfamilies. Describe the distinguishing features of the three subfamilies. [6]
11. Each diagnostic characteristic(s) in column A belong(s) to a genus in column B. Write down the number from column A and the corresponding letter from column B, e.g (1) B. [10]

COLUMN A – CHARACTERISTICS	COLUMN B - GENERA
(1) Simple, opposite leaves; interpetiolar stipule; inferior ovary.	A. <i>Acanthosicyos</i>
(2) Spiny, leafless shrub endemic to the Namib, with large spiny fruit. The pulp and seeds are eaten.	B. <i>Ozoroa</i>
(3) Fruit a 4-5 winged samara, bark peeling in long threads.	C. <i>Ficus</i>
(4) Shrub or small tree with large bipinnate leaves with small leaflets; lacks thorns, has bright yellow flowers in spikes.	D. <i>Euphorbia</i>
(5) A member of the daisy family that has silvery leaves and is abundant in the Khomas region.	E. <i>Commiphora</i>
(6) Fruit is a syconium.	F. <i>Combretum</i>
(7) Deciduous or semi-deciduous tree with a rounded crown, leaves simple and alternate or spirary arranged, inflorescence in axillary clusters and is abundant in the Khomas region.	G. <i>Berchemia</i>
(8) Tree with diameter up to 10m; palmately compound leaves; large white flowers; a large ovoid fruit that is high in vitamin C.	H. <i>Vangueria</i>
(9) Plants with large, boat-shaped, succulent leaves, sometimes with toothed margins.	I. <i>Elephantorrhiza</i>
(10) Plants with aromatic resin, with many endemic species in the Namib, often pachycauls, often with peeling bark.	J. <i>Tarconanthus</i>
	L. <i>Hyphaene</i>
	M. <i>Aloe</i>
	N. <i>Phoenix</i>
	O. <i>Adansonia</i>