NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES

DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCE SCIENCES

QUALIFICATION: Bachelor of Natural Resource Management	
QUALIFICATION CODE: 07BNRS	**LEVEL:** 7
COURSE CODE: PTS710S	**COURSE NAME:** Plant Studies 2
SESSION: June 2022	**PAPER:** Theory
DURATION: 2 hours	**MARKS:** 100

FIRST OPPORTUNITY QUESTION PAPER	
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INSTRUCTIONS

1. Answer ALL ten (10) questions.
2. Read all questions carefully before answering.
3. Number your answers clearly.
4. Make sure your student number appears on the answering script.

THIS MEMORANDUM PAPER CONSISTS OF 4 PAGES
(Including this front page)

1. One of the advances of Angiosperm over Gymnosperms is that they have advanced pollination syndromes. What does this mean and provide examples. [5]

2. Name and explain any two challenges within the Indigenous natural plant products sector. [6]

3. Many plants are armed with spines, prickles or thorns, especially in the more arid parts of Namibia. Discuss this statement, explaining the differences between these three terms, and the diversity of these structures, and their functions. Give relevant examples to clarify your answer. You may also use drawings, if you wish. [12]

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

5. The genus *Commiphora* is a truly arid-adapted and Namibian genus.
   5.1 Discuss this statement by elaborating on the structure of the plant that enables it to thrive in this country. [4]
   5.2 To which family does this genus belong? [1]
   5.3 Name two species of this genus that are endemic to the Namib. [2]

6. In Moraceae, the compound fruit has become modified into a very unusual structure with a unique relationship between the fruit and its pollinators. Explain this statement. [12]

7. Goethe's "foliar theory of the carpel" is still the best hypothesis for explaining the evolution of the carpel, describe this theory in detail. [4]

8. The family Fabaceae is one of the most important and diverse families in Namibia.
8.1 Discuss the importance of this family to the Namibian environment, and to people. (Refer to different biomes and vegetation types, adaptations of the family, and mention species that are important and what they are important for.) [20]
8.2 The family is regarded by some taxonomists as having three subfamilies. Describe the distinguishing characteristics of the three subfamilies. [9]

9. (a) Sympetalous
(b) Synfilamentous
(c) Adnation (adnate)
(d) Megacarpa
(e) Microcarpa
(f) Perianth
(g) Androecium
(h) Gynoecium
(i) Diagnostic characters
(j) Type specimen
(k) Flora

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

peeling bark.	
	L. Hyphaene
	M. Aloe
	N. Phoenix
	O. Adansonia