



PAMIBIA 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	
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COURSE CODE: PTS710S	COURSE NAME: Plant Studies
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DURATION: 2 Hours	MARKS: 100

SECOND OPPORTUNITY QUESTION PAPER	
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INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL twenty one (21) 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. Plants are classified in a hierarchically. That means, within a family are a number of genera, each with a different form of the distinguishing characteristic(s). And within the genus are a number of species, again with a different form of the distinguishing characteristic. [4]
 1.1 Illustrate this within Combretaceae (in words). [2]
 1.2 Compare the leaf arrangement in the two genera of Combretaceae studied.
2. Explain the extreme diversity in secondary metabolism found in angiosperms. [2]
3. Explain the term co-evolution between plants and their predators. [2]
4. Explain the material transfer agreement (MTA) to which the NBRI is a party. [2]
5. What is the significance of herbaria? [2]
6. What is the mission of the NBRI? [2]
7. Describe ex-situ conservation which is used by the National Plant Genetic Resources Centre at the NBRI. [2]
8. The genus *Terminalia* is characterised by having a samara with a single wing running around the seed. Obviously, there are other species with this characteristic that do not belong to *Terminalia*. Mention one of such species and indicate its substrate. [2]
9. The taxa listed in column A have many uses. Choose the most important use from the list in column B. NB no use in column B may be selected more than once. Write down the number from column A and the corresponding letter from column B, example (1); D. [6]

Column A - taxon	Column B – important use
(1) <i>Colophospermum mopane</i>	A. Aromatic resin
(2) <i>Combretum apiculatum</i>	B. Browse for giraffe
(3) <i>Burkea africana</i>	C. Tanning leather
(4) <i>Boscia albitrunca</i>	D. Browse for kudu
(5) <i>Elephantorrhiza suffruticosa</i>	E. Timber
(6) <i>Commiphora wildii</i>	F. Fire wood

10. Give the families of species in question 9 (with careful attention to the spelling). Write down the number from column A and the family name. [6]
11. This is a scramble of the Fabaceae subfamilies. Match up the following species to the correct subfamily. Write down the number from column A and the corresponding letter from column B. NOTE: more than one species could belong to the same subfamily. [18]

COLUMN A - SUBFAMILY	COLUMN B - SPECIES
(1) Mimosoideae	A. <i>Pterocarpus angolensis</i>
(2) Caesalpinioideae	B. <i>Philenoptera violacea</i>
(3) Papilionoideae	C. <i>Mundulea sericea</i>

	D. <i>Guibourtia coleosperma</i>
	E. <i>Erythrina decora</i>
	F. <i>Abrus precatorius</i>
	G. <i>Colophospermum mopane</i>
	H. <i>Peltophorum africanum</i>
	H. <i>Baphia massaiensis</i>
	J. <i>Baikiaea plurijuga</i>
	K. <i>Burkea africana</i>
	L. <i>Elephantorrhiza suffruticosa</i>
	M. <i>Albizia anthelmintica</i>
	N. <i>Dichrostachys cinerea</i>
	O. <i>Faidherbia albida</i>
	P. <i>Acacia reficiens</i>
	Q. <i>Acacia luederitzii</i>
	R. <i>Erythrophleum africanum</i>

12. What is the difference between a petiole and petiolule? [2]
13. What are the two structures that allow angiosperms to be the dominant form of plant life in most terrestrial ecosystems? [2]
14. The following characteristics are typical of some of the most important grass species in Namibia. Identify the species and indicate the grazing value of the grass species e.g. decreaser or increaser. [4]
- a. Description
 Soft, tufted perennial, with oblique, creeping rhizome and dense basal leaf-cover. Culms erect, slender, unbranched, with one node, up to 0.9 m high. Leaf blade often pinkish or purplish, concentrated at base of plant, tapering to sharp, pointed tip, strongly curled when dry, with or without long, soft hairs. Ligule a fringe of short hairs. Leaf sheath striate, with or without hairs, somewhat squarish in cross-section. Inflorescence a stiff, inflexible, open or slightly contracted panicle, 50-250 mm long, only slightly branched.
 Spikelets up to 20 mm long, strongly flattened, may be an even width throughout or pointed, pale green or dark olive-green.
- b. Description
 Loosely tufted annual. Culms usually geniculate to decumbent, often rooting at lower nodes, up to 400 mm high. Leaf blade flat, clasping at base, short, up to 60 x 4 mm; margin with evenly spaced bristly hairs. Ligule membranous, margin hairy. Leaf sheath rounded, smooth. Inflorescence a loosely spike-like raceme, up to 70 mm long, often enclosed by upper leaf sheath near base.
 Spikelets covered with hooked barbs, densely clustered, on short stalks. 3.5-5 mm long, falling readily when mature, with a tendency to attached to clothes and fur.
15. Describe the stems and tendrils of Cucurbitaceae family members. [1]

16. People who have not studied plants often erroneously talk about the flowers of a particular plant, when in fact they mean the whole inflorescence. Explain this statement, describing the difference between a flower and an inflorescence. [4]
17. Most members of the Ebenaceae have a calyx that is persistent. Discuss this statement and give 2 genera of this family in Namibia. [4]
18. For each of the following descriptions of species, give (a) the scientific name (b) the family (c) economic importance in Namibia and (d) distribution in Namibia. Bonus points for common names.
- 18.1 Large attractive deciduous tree, 10-18 m high, sometimes even bigger with a dense spreading crown, imparipinately compound leaves, male and female flowers on separate trees, fruit a spherical tough-skinned drupe, pale creamy yellow when ripe, edible fruit. [4]
- 18.2 Deciduous or semi-deciduous tree with a rounded crown, up to 12 m high, simple leaves, alternate or spirally arranged, fruit ovoid-oblong berry, fleshy, yellow fruit when ripe. [4]
- 18.3 V-shaped shrub or small tree with bipinnately compound leaves, 2-3 pinnae pairs; each pinna with 1-2 leaflets pairs; leaflets 10 x 5 mm; strongly curved paired thorns at nodes; flowers in round, creamy white heads; bark with white lenticels. [4]
19. Give one word / term for the following: [5]
- The place responsible for storing and preserving dried plants
 - The father of modern taxonomy
 - The arrangement of organisms from most primitive to most advanced
 - The very first specimen described of any taxon
 - The ministry responsible for protecting forests in Namibia
20. Each of the following plant species is very typical of a certain vegetation type in Namibia. Name the vegetation type in which each occurs. [4]
- Acacia hereroensis*
 - Acanthosicyos horridus*
 - Pterocarpus angolensis*
 - Spirostachys africana*
21. For each of the following – describe the leaves, inflorescence and fruit. [12]
- Maerua juncea*
 - Ozoroa paniculosa*
 - Searsia lancea*
 - Combretum hereroensis*