FACULTY	AGRICULTURE, ENGINEERING AND NATURAL RESOURCES		
SCHOOL	AGRICULTURE AND FISHERY SCIENCES		
DEPARTMENT	ANIMAL PRODUCTION, AGRIBUSINESS & ECONOMICS		
SUBJECT	RESEARCH METHODOLOGY IN AGRICULTURAL ECONOMICS		
SUBJECT CODE	AER 3782		
DATE	NOVEMBER 2023		
DURATION	3 HOURS	MARKS	100

SECOND OPPORTUNITY EXAMINATION PAPER

Examiner: Prof HJ Sartorius von Bach

Internal Moderator: Dr KM Kalundu

This question paper consists of four (4) pages including this front page

Instructions

- Answer all questions
- All questions carry equal marks (20 marks each)
- Please write legibly and number your questions clearly

UNIVERSITY OF NAMIBIA EXAMINATIONS

QUESTION 1

Explain the difference between the following terminologies:

a. Descriptive and analytical research (4)
b. Diagnostic research design and hypothesis-testing design (4)
c. Type -I Error and Type-II error (4)
d. Two group simple randomized design and Latin square design (4)
e. List four types of annexes used in a research document (4)

QUESTION 2

a) What are the characteristics of hypothesis formulation and testing? (10)
b) Provide at least 5 assumptions necessary for research to be classified as scientific (10).

QUESTION 3

a) What is the meaning of research in the field of agricultural economics, conceptualise your meaning by discussing its significance within the current Namibian context. (15)
b) In the current time of Artificial Intelligence, the identification of plagiarism is high on the research agenda. Define, explain and describe consequences of plagiarism. (5)

QUESTION 4

Read the following paragraph and answer questions below:
Cattle farmers south of the cordon veterinary fence follow a production system suited to their production environment. The options are to either (i) produce weaners and sell them to the auctions, or (ii) selling them as long weaner to auctions, or (iii) to sell slaughter animals to abattoirs, or (iv) not to have a cow herd and to purchase weaners at auctions and sell them later. Each alternative shows a different profitability. Historically, the weaner price was about 60% of the carcass prices. It changed a decade ago to a situation that the weaner price become more favourable to reach 80% of the price paid for slaughter animals. It implied that the farmer received N$40/kg for a 160kg weaner (only 7 months old), while (s)he only receives N$50/kg for a 27-month-old ox from the abattoir. The price difference resulted into a scenario that farmers did not supply slaughter animals to the export abattoir and rather sold their weaners at auctions. Consequently, it resulted into low turnover of the abattoirs and their financial shortfalls. To counter the abattoirs low throughput, government evaluate the need to close borders for female weaner cattle to RSA. However, without change the auction price for weaners dropped to 25% of the carcass prices during the past few months. Farmers now complain of losing a stable pricing system and ask for support.

As a recent graduated Agricultural Economist, you are part of a team to advise the Honourable Minister on how to address the situation in the above paragraph, you are required to:

a) Provide the problem statement (5)
b) Provide the research objectives which could lead to changes in the beef industry (5)
c) Either follow the path of using hypothesis or make use of research questions to explain the suggested research direction. (5)
d) Provide a methodology how to address the problem statement, objectives and hypothesis or research question (5)

QUESTION 5

Below, find a text with some references (not necessarily related). Use the American Psychological Association (APA) style and guidelines to point out where and how to correct. For each correction, point out as follows:

- the line number where the mistake was observed,
- the misused style, and
- the corrected version.

Hint: The section is taken out of a journal, no need for you to cross-check references between text and list of references. Only point out where corrections are required in case of publishing APA style. (20)

Various cycles have been identified by Chin , 1978. Medium term ice core series for example showed that some 300 years ago a little ice age period persisted for several decades and that for the past 100 years, a relatively warm climate pattern was observed. Longer time span series (Emiliani, 1966) showed that about 5 000 and 6 000 years ago, the world experienced its warmest period recorded. Cycles showed that it took about 40 000 to 70 000 years to reach a glacial maximum; the last one was 18 000 years ago. Chin (1978) showed that it only took between 2 000 to 5 000 years to completely destroy the formed continental-sized ice sheet. The more recently reported for Kenya, Brazil, Australia, and other countries. On the other hand, excess precipitation showed increased frequency and intensity of extremes (Cohen et. al., 2014). Findings shows cyclic patterns, with rainfall explained as single or double cycles (Du Toit & O'Connor, *2014*). These cyclical patterns are used in decision-making, as in the case of Australia, where pastoralists use seasonal climate forecasting as main driver for profitability (Cobon and Toombs, 2013). These patterns are not fully investigated for Namibia, as the South Atlantic convergence zone is less predictable than the intertropical convergence zone and that weather is affected by distance from oceans and altitudes (Barreiro et. al. 2002,2005;Taschetto & Wainer, 2008). The statistical approach uses less computing resources and are based on relationships between the predicted and predictor variables (Shukla & Mooley, 1987, Krishnamurti *et. al.*, 2002, *Klotzbach & Gray*, 2003, Sahai *et. al.*, 2003, Thomas Nicolas Annamalai *et. al.*, 2005, Duffy *et. al.*, 2006, Kim & Kim, 2010, Ye *et. al.*, 2015, and Gerlitz *et. al.*, 2016), while the dynamical approach is based on predicted rainfall as consistent with other climate variables (Doblas-Reyes *et. al.*, 2006, Saha *et. al.*, 2006). Generally, studies have moved towards dynamical seasonal prediction (Misra, 2004, Pattanaik & Kumar, 2010, Yuan *et. al.*, 2011; Liu *et. al.*, 2013, *Becker et. al.*, 2014, Siegmund *et. al.*, 2015, Jia *et. al.*, 2015, and Osman & Vera, *2017*).

REFERENCES

Anderson, T.M., Ritchie, M.E. & Michael McNaughton., (2007). Rainfall and soils modify plant community response to grazing in Serengeti National Park. *Ecology* 88 (5) 1191–1201.

Annamalai, H.J.Potemra, R. Murtugudde, & McCreary, J.P. (2005). Effect of preconditioning on the extreme climate events in the tropical Indian Ocean. J. Climate, 18, 3450–3469.

Arora, V.K., (2002). *The use of the aridity index to assess climate change effect on annual runoff. J. Hydrol.*, 265, 164–177.

Barreiro, M., Chang, P. & Saravanan, R. (2002). Variability of the South Atlantic convergence zone simulated by an atmospheric general circulation model. *J Climate* 15, 745-763.

Becker, E., van den Dool, H. & Zhang, Q. (2014). Predictability and forecast skill in NMME. J. Climate, 27, 5891–5906.

Bollerslev T. (1986). Generalized autoregressive conditional heteroskedasticity. *Journal of Econometrics*, 31(3), 307–327.

Box, G.E.P. & Jenkins G.M. (1976). *Time Series Analysis*: Forecasting and Control; Holden Day: San Francisco, CA, USA.

Chin W.Q. (1978). Drought cycles and weather patterns, ***Canadian Water Resources Journal***, 3 (1) 68-84.

Cobon, D.H. & Toombs, N.R. (2013). Forecasting rainfall based on the Southern Oscillation Index phases at longer lead-times in Australia. *The Rangeland Journal*, 35, 373–383.

Cohen, J., Screen, J.A., Furtado, J.C., Barlow, M., Whittleston, D., Coumou, D., Francis, J., Dethloff, K., Entekhabi, D., & Overland, J. (2014). Recent Arctic amplification and extreme mid-latitude weather. *Nat. Geosci.* 7, pages 627–637.

Cottrill, A., Hendon, H.H., Lim, E.-P., Langford, S., & Shelton, K. (2013). Seasonal forecasting in the Pacific using the coupled model POAMA-2. *Weather. Forecasting*, 28, 668–680.

Crevits, R. & Croux, C. (2007). Forecasting Using Robust Exponential Smoothing with Damped Trend and Seasonal Components;

THE END