Fa1National University of Lesotho

BSc. and BSc. Ed Supplementary Examination

PG 2412: Climatology

August, 2023   Marks: 100   3 Hours
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Instructions:

- Answer any **four (4)** questions.
- Where applicable illustrate your answer with equations and diagrams.

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Question 1

Describe the components of the climate system.   (25)

[25]

Question 2

a) Give an account of the observed global circulation of the atmosphere.   (13)

b) Describe any two (2) climate classification approaches.   (12)

[25]

Question 3

a) Explain any three (3) factors that affect the horizontal distribution of temperature.
                                                                            (15)
b) Outline how jet streams are formed. Where can they be found?   (10)

[25]

Question 4

a) Discuss why, and how, the oceans are an important controlling factor of climate.

                                                                            (15)

b) Explain how the oceans can affect the response of the atmosphere to global climate change.   (10)

[25]

Question 5

Give an account of the global precipitation distribution.   (25)

[25]

a) Using the data in Table 1, determine the following categories for the month of February in Maseru:
   i)   Below normal   (5)
   ii) Normal   (5)
   iii) Above normal   (5)

Table 1. Monthly precipitation (mm), February, Maseru

Year	Precipitation (mm)
1981	186
1982	123
1983	141
1984	144
1985	148
1986	169
1987	154
1988	107
1989	162
1990	147
1991	172
1992	109
1993	167
1994	183
1995	185
1996	100
1997	105
1998	107
1999	108
2000	110
2001	119
2002	125
2003	133
2004	157
2005	147
2006	144
2007	158
2008	171
2009	178
2010	250

b) Through use of appropriate parameters summarise the following daily minimum temperature data for Moshoeshoe I during February 2006.   (10)

Table 2. Daily minimum temperature for Moshoeshoe I, February 2006

Month	Day	Rainfall (mm)
2	01	15.8
2	02	16.5
2	03	14.6
2	04	15.6
2	05	15.5
2	06	16.4
2	07	17.0
2	08	16.5
2	09	14.0
2	10	14.4
2	11	14.4
2	12	14.6
2	13	14.2
2	14	10.5
2	15	12.0
2	16	15.5
2	17	18.0
2	18	18.5
2	19	16.2
2	20	12.6
2	21	17.2
2	22	17.2
2	23	16.2
2	24	16.8
2	25	15.8
2	26	15.0
2	27	15.8
2	28	16.5
2	29	-9999