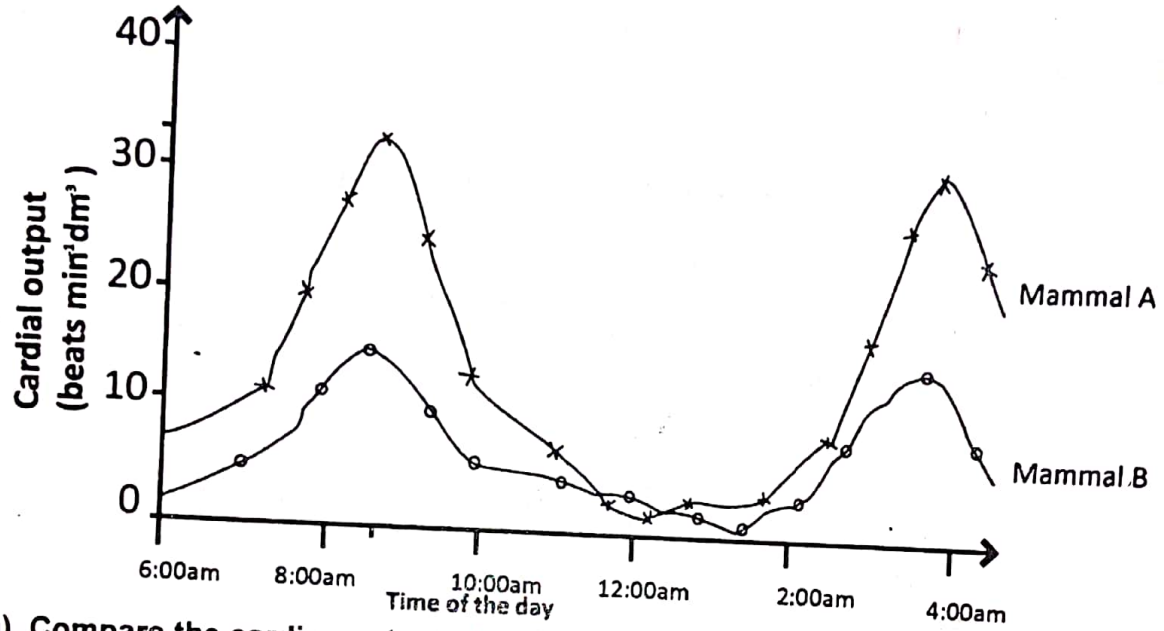
SECTION A (40 MARKS)

1. The figure shows the changes in the cardiac output of two individual Mammals A and B of different sizes, determined from 6:00a.m up to 4:00p.m in the evening when each mammal was given a hot drink.



a). Compare the cardiac output of both mammals. (07 marks)

b). Explain the effect of day time on the cardiac output of both mammals. (08marks)

c). Comment on the difference in the cardiac output both mammals. (06marks)

d). Suggest factors that are likely to affect the cardiac output of a mammal. (04marks)

e). Suggest and explain how each of the following can affect the cardiac output of mammal A.

(i) exercise (08 marks)

(ii) altitude (04 marks)

f). How is the cardiac output regulated in man (03 marks)

SECTION B (60 MARKS)

2. a). What is meant by reciprocal innervation? (03 marks)

b). Differentiate between smooth and cardiac muscles. (07 marks)

c). Explain how a skeletal muscle shortens when stimulated. (10 marks)

3. (a) Distinguish between transcription and translation. (05marks)

(b) Explain the process of translation in a cell. (12 marks)

(c) What is the significance of translation in organisms? (03 marks)

4. a) Describe the role played by the Casparian strip in the transport of materials within the vascular tissues of higher plants. (10 marks)

(b) Explain the role of transpiration in the transport of water to the leaf cells of a tall tree. (10 marks)

5. (a) What are the major distinguishing features for gaseous exchange in k8a fish and a terrestrial insect?
(11marks)

(b) Explain the absence of an elaborate nervous system in simple animals like amoeba. (09marks)

6. a) What is meant by Osmoregulation? (03 marks)

b) What is the significance of osmotic control in animals. (03 marks)

c) Explain how the;

i) counter-current heat exchange conserves heat energy. (09 marks)

ii) nephron regulates blood pH. (05 marks)

END