**Group (A): (1 hour, 24 marks)**

**1. Explain the following: (14 marks)**

1. Adaptation of Australian grasshopper and desert locust to high temperature.
2. Effect of pH and 2,3 DPG on oxygen dissociation curve.
3. Negative feedback mechanism with an example.
4. Heat balance and the role of the hypothalamus.
5. Muscle Hypertrophy.
6. Glycogen-Lactic Acid System.

**2. Define the followings: (10 marks)**

1. Homeostasis
2. Orientation.
3. Stratum basale.
4. Eccrine gland.
5. The phosphagen energy system.

**Group (B): (1 hour, 24 marks)**

**1. Compare between the followings: (12 marks)**

1. Carbohydrate metabolism in liver during feeding and fasting.
2. Physiological problems of weightlessness during short and long period.
3. Acute and chronic oxygen poisoning in deep sea.

**2. Explain the following: (12 marks)**

1. Increased diffusing capacity after acclimatization.
2. Natural acclimatization of native human being living at high altitudes.
3. Using helium instead of nitrogen in deep dives.