Metamorphism Story Problem

It's mid-January and the Wasatch Mountains haven't seen snow in weeks. The snowpack is thin – only about 30 cm deep. The low angle of the sun makes for **(short/long)** short days and **(short/long)** long nights. Temperatures have been colder than average. This type of weather condition, combined with a shallow snowpack, is favorable for **(kinetic/equilibrium)** Kinetic snow crystal growth. Even with the low sun angle, south facing slopes have formed a **(melt-freeze / rain)** melt-freeze crust, which can **(increase/decrease)** decrease the movement of **(water vapor / longwave radiation)** water vapor below the crust within the snowpack. On north-facing slopes, the long period of cold nights and cool days has caused radiation recrystallization processes to occur, creating **(low/high)** low cohesion and **(faceted/rounded)** faceted grains in the top layer of the snowpack. You measure the temperature at the surface of the snowpack (-10°C) and the temperature 5 cm down (-5°C), finding a temperature gradient of 10°C/10cm in that layer. Finally, we get a good snowstorm that produces 45 cm of snow with 11% water content. The new snow has **(high /low)** high cohesion and lower adhesion on **(north / south)** north facing slopes. Following the storm we had a clear, cold, real cold night, resulting in a lot of outgoing **(longwave / shortwave)** longwave radiation at the surface of the snowpack, and the following morning you observe **(facets / surface hoar / rime)** surface hoar on the snow surface during your dawn patrol.