2022 USGC Cartographic Exam Key

Section 1 – MS / ES
1. 1. Houston   2. New Orleans   3. Mobile   4. Miami   5. Havana   6. Cancun
2. The Loop Current brings warmer water into the Gulf of Mexico and raises the water temperature across the Gulf.
3. Given the warm, deep water the hurricane or tropical storm would likely strengthen rapidly.
4. Gulf Stream
5. north
6. higher
7. Loop Current
8. lower
9. stronger
10. La Nina makes the wind shear weaker which favors hurricane strengthening and also brings generally warmer sea surface temperatures.

Section 2 – MS / ES
1. 1. South Korea   2. North Korea   3. China
2. 4. Pyongyang   5. Seoul
3. richer; Wealth, both individual and national, translates directly to increased light consumption
4. more; Light pollution also directly correlates with population density in most cases (Pyongyang is an exception)
5. Answers may vary – increased productivity, safety, enjoyment of leisure time, and outward display of prosperity are all possible answers [reasonable answers accepted]
6. Answers may vary but disruption of sleep patterns through various mechanisms and the disappearance of stars in urban areas due to light pollution and sky glow are the most likely acceptable responses [reasonable answers accepted]
7. Light pollution disrupts sleep and migration patterns and habitat formation in animals; this is particularly acute with migratory species like birds [reasonable answers accepted]
8. Answers may vary but many cities have adopted light pollution controls, especially regulating outdoor lighting for individuals and businesses, including brightness and hours of operation

Section 3 – MS / ES
1. 1. Tropical   2. Boreal   3. Temperate   4. Subtropical
2. 5. Tropical   6. Temperate   7. Not   8. Not   9. Temperate   10. Tropical   11. Temperate   12. Tropical   13. Temperate
3. 1/3 or 33% (accept percentages or fractions between 27% and 38%)
4. 45% (accept percentages or fractions between 40% and 50%)
5. Russia, Brazil, Canada, United States, China
6. agriculture, animal grazing, fuel, manufacturing, construction (accept reasonable answers)
7. increased atmospheric carbon dioxide, decreasing biodiversity, erosion, environmental and climate effects (accept reasonable answers and explanations)

Section 4 – MS / ES
1. Dubai
2. Abu Dhabi, Ajman, Fujairah, Ras Al Khaimah, Sharjah, Umm Al Quwain (accept any 4)
3. 15% (accept 12% to 20%)
4. Indian
5. possible answers include overcrowding, tourism, unsuitability of existing land for residential / commercial use, economic development, etc. (accept reasonable answers)
6. possible answers include habitat loss, degradation of fisheries, environmental impacts like pollution from heavy equipment, increase in sea temperatures (accept reasonable answers)