

2020 USGC Nationals Written Examination - Key and Marking Scheme

Section 1 [20 marks]

Please refer to the image in Section 1 of the Resource Booklet.

1. Identify each of the following on the image – playa lake, butte, mesa, inselberg, alluvial fan
2. Define the term playa lake. [2 marks]
3. What structure will be left when this lake disappears? [1 mark]
4. Describe the relationship between a butte and a mesa. [2 marks]
5. Define the term inselberg. [3 marks]
6. Define the term shield as it relates to geographic regions. [3 marks]
7. Why are inselbergs common in shield regions? [2 marks]
8. Define the term alluvial fan. [2 marks]

Grading notes: Questions 1 and 3 are level marked. All others are point marked.

Expected answers:

1. [1 mark per answer] playa lake – 5; butte – 1; mesa – 9; inselberg – 11; alluvial fan – 4
2. [2 marks] playa lake – Playa lake - also called pan, flat, or dry lake, flat-bottom depression found in interior desert basins and adjacent to coasts within arid and semiarid regions, periodically covered by water that slowly infiltrates into the ground water system or evaporates into the atmosphere, causing the deposition of salt, sand, and mud along the bottom and around the edges of the depression. [accept reasonable equivalents]
3. [1 mark] salt pan
4. [2 marks] buttes are formed by the erosion of mesas over time [accept reasonable equivalents]
5. [3 marks] inselberg - an isolated rock hill, knob, ridge, or small mountain that rises abruptly from a gently sloping or virtually level surrounding plain [accept reasonable equivalents]
6. [3 marks] shield - any of the large stable areas of low relief in the Earth's crust that are composed of Precambrian crystalline rocks, little affected by tectonic events following the end of the Precambrian, and are relatively flat regions where mountain building, faulting, and other tectonic processes are minor, compared with the activity at their margins and between tectonic plates [accept reasonable equivalents]
7. [2 marks] The presence of an inselberg typically indicates the existence of a nearby plateau or highland, or their remnants. This is especially the case for inselbergs composed of sedimentary rock, which will display the same stratigraphic units as this nearby plateau. [accept reasonable equivalents]
8. [2 marks] alluvial fan - accumulation of sediments shaped like a section of a shallow cone, with its apex at a point source of sediments, such as a narrow canyon emerging from an escarpment; characteristic of mountainous terrain in arid to semiarid climates

Section 2 [25 marks]

9. Rank each of the following in order from largest to smallest based on the percentage contributed to overall greenhouse gas emissions in the United States – commercial and residential consumption; electricity production; agriculture; industry and manufacturing; transportation [5 marks]

10. As of 2018 and within 1%, how much have US greenhouse gas emissions risen since 1990? [1 mark]

11. Identify 3 factors that might cause year-to-year fluctuations in greenhouse gas emissions in the US. [3 marks]

12. What do scientists predict will be the trend in US greenhouse gas emissions for 2020? Provide one major reason for that prediction. [2 marks]

13. What percentage of Americans commute to work each day by driving alone? [1 mark]

14. What is the next most common method for Americans to commute to work? [1 mark]

15. What percentage of Americans commute to work each day on public transportation? [1 mark]

16. In a well-developed paragraph, identify the main reasons why most American cities do not have robust public transportation networks. Your answer should focus on the period from 1950 to present. [5 marks]

17. In a well-developed paragraph, identify steps major cities have taken since the 1980s to revive their public transportation networks. Make reference to both specific cities and types of projects that have been undertaken. [5 marks]

Grading notes: Questions 9, 10, 13, 14 and 15 are point marked; questions 11, 12, 16 and 17 are level marked

Expected answers:

9. [1 mark per answer] commercial and residential consumption – 4; electricity production – 2; agriculture – 5; industry and manufacturing – 3; transportation – 1

10. [1 mark] 4% (exact number is 3.7% as of 2018)

11. [1 mark per answer] economic factors; price of fuel; weather patterns (e.g. hotter or cooler summers or winters in a given year) [accept other reasonable answers]

12. [2 marks] due to Covid-19 and the ensuing worldwide economic crisis scientists predict that US emissions will drop significantly in 2020 [accept reasonable equivalents]

13. [1 mark] 76%

14. [1 mark] carpooling

15. [1 mark] 5%

16. [5 marks] answers will vary, but should include the emphasis on highway construction in the US and the desire to build highways through (not around) cities, the lack of investment in legacy systems like streetcars, the development of suburbs outside of the range of existing public transport systems [accept reasonable answers with adequate explanations]

17. [5 marks] this answer should make reference to specific projects in cities like Salt Lake City, Denver, Portland, Dallas, Seattle, Atlanta, etc. Many of these have been light rail projects either within downtown areas or connecting downtown areas to commuter suburbs and have been limited in scope but have revived interest in public transport projects. [accept reasonable equivalents with adequate explanations]

Section 3 [20 marks]

18. Define the term water security. [2 marks]

19. Describe the link between water security and sustainable development with specific reference to the UN Sustainable Development Goals (SDGs). What specific things is the United Nations attempting to promote with regard to safe water and water security around the world? [4 marks]

20. According to the UN, what percentage of global freshwater resources are considered useable for ecosystems and humans? [2 marks]

21. Identify two specific reasons that freshwater would be considered unsuitable for use by ecosystems or humans. [2 marks]

22. Briefly describe how natural disasters contribute to freshwater scarcity. [2 marks]

23. In a well-developed paragraph, describe the reason that Uzbekistan and Tajikistan are shown as 'extreme risk' on this map and explain how their level of water insecurity relates to the disappearance of the Aral Sea. [8 marks]

Grading notes: Question 20 is point marked, all other questions are level marked.

Expected answers:

18. [2 marks] the reliable availability of an acceptable quantity and quality of water for health, livelihoods and production, coupled with an acceptable level of water-related risks [accept reasonable equivalents]

19. [4 marks] SDG 6 is specifically 'clean water and sanitation for all'; the six "outcome-oriented targets" include: Safe and affordable drinking water; end open defecation and provide access to sanitation and hygiene, improve water quality, wastewater treatment and safe reuse, increase water-use efficiency and ensure freshwater supplies, implement IWRM, protect and restore water-related ecosystems; the two "means of achieving" targets are to expand water and sanitation support to developing countries, and to support local engagement in water and sanitation management. [accept reasonable equivalents]

20. [2 marks] less than 1%

21. [1 mark per answer] Usable fresh water includes water not contaminated or degraded by water-altering chemicals, such as sewage or any other harmful chemicals from continuous previous use [accept reasonable equivalents]

22. [2 marks] contaminants enter water supplies through flooding; natural disasters such as hurricanes, earthquakes, and wildfires can damage man-made structures such as dams and fill waterways with debris [accept reasonable equivalents]

23. [8 marks] answers should discuss the use of water in the Amu Darya and Syr Darya rivers for hydroelectric power and agriculture, along with Tajikistan's Rogun Dam project on the Vakhsh River and the impact of all of this on both Uzbekistan's water security and the lack of freshwater reaching the Aral Sea [accept reasonable answers with explanations and award liberal partial credit]

Section 4 - [17 marks]

24. Of these platforms, which are owned by Facebook? [2 marks]

25. Which originated outside of the United States? [2 marks]

26. Define the term digital divide. [2 marks]

27. Identify and explain three major obstacles to closing the digital divide in developing countries. [3 marks]

28. Identify and explain three major obstacles to closing the digital divide in developed countries like the United States and China. [3 marks]

29. Briefly describe the effect of technology on economic globalization. [2 marks]

30. In a well-developed paragraph, describe the effect of technology on cultural globalization. In your answer make specific reference to the internet and the social media platforms referenced in the chart. [6 marks]

Grading notes: Questions 24 and 25 are point marked, questions 26-30 are level marked.

24. [2 marks – all or nothing] Facebook, WhatsApp, Facebook Messenger, Instagram

25. [2 marks – all or nothing] WeChat, TikTok, QQ, Sina Weibo, Qzone

26. [2 marks] refers to the gap between those able to benefit from the internet and those who are not; answer should include mention of both access and benefit [accept reasonable formulations of this response]

27. [1 mark per answer] answers may vary but can include poverty, lack of infrastructure, rural versus urban population, educational gaps and many others [accept reasonable answers]

28. [1 mark per answer] many of these apply to both China and the US, along with the difficulty of reaching some of the currently underserved areas with high-speed internet or cell service, just as with the rural electrification of the US [accept reasonable answers]

29. [2 marks] economic globalization is the increasing economic interdependence of national economies across the world through a rapid increase in cross-border movement of goods, services, technology, and capital; technology both drives and facilitates economic globalization by improving communication and efficiency and allowing for the free and rapid exchange of ideas and information [accept reasonable equivalents]

30. [6 marks] Cultural globalization refers to the transmission of ideas, meanings, and values around the world in such a way as to extend and intensify social relations. This process is marked by the common consumption of cultures that have been diffused by the Internet, popular culture media, and international travel. This has added to processes of commodity exchange and colonization which have a longer history of carrying cultural meaning around the globe. The circulation of cultures enables individuals to partake in extended social relations that cross national and regional borders. The creation and expansion of such social relations is not merely observed on a material level. Cultural globalization involves the formation of shared norms and knowledge with which people associate their individual and collective cultural identities. It brings increasing interconnectedness among different populations and cultures. Reference should be made to specific platforms (YouTube, Facebook, etc.) as facilitators of this process.