

## 2018 US Geography Olympiad Multiple Choice Examination - Part 1

**Instructions** – This portion of the multiple choice examination consists of 40 questions. You will receive two points for a correct answer. You will lose one point for an incorrect answer. Blank responses lose no points. Please fill in the bubbles completely on the answer sheet. You may write on the examination, but all responses must be bubbled on the answer sheet. All images are contained in the resource booklet. Diacritic marks such as accents have been omitted from place names and other proper nouns. You have one hour to complete both the written portion of the examination and this set of multiple choice questions.

Questions 1-5 refer to the image in section 1 of the resource booklet.

This map shows a part of the jet stream during the summer of 2015.

1. Which of the following most accurately describes the jet stream?
  - A. warm Atlantic air current that originates in the Gulf of Mexico and follows the eastern coastlines of the United States and Newfoundland before crossing the Atlantic Ocean
  - B. a cold, low-salinity ocean current that flows north along the western coast of South America
  - C. parts of the Atlantic Ocean and the Pacific Ocean affected by a low-pressure area where the prevailing winds are calm
  - D. fast flowing, narrow, meandering air currents in the atmosphere
2. The polar jet stream in red in this image is located in which range above sea level?
  - A. 1-2 km
  - B. 5-8 km
  - C. 9-12 km
  - D. 10-16 km
3. In comparison to the polar jet stream, the subtropical jets are characterized by which of the following?
  - A. higher altitude, slower wind speed
  - B. same altitude, much faster wind speed
  - C. lower altitude, roughly equivalent wind speed
  - D. lower altitude, slower wind speed
4. Given the location of the polar jet stream in the image, which of the following was the most likely weather pattern to emerge?
  - A. Much colder weather in Alaska during the summer of 2015
  - B. Intense wind and rain in California during the spring, along with a warmer summer
  - C. Record melting of Greenland's ice sheet
  - D. Dry summer weather in Texas and Louisiana

5. Large meanders in the jet stream are known by which of the following terms?
  - A. Hadley cells
  - B. Rossby waves
  - C. Ferrel cells
  - D. Walker circulation

Questions 6-10 refer to the image in section 2 of the resource booklet.

6. This image shows farms irrigated by which of the following methods?
    - A. surface irrigation
    - B. center pivot irrigation
    - C. lateral move irrigation
    - D. localized irrigation
  7. These fields, located in Kansas, would be irrigated using which of the following?
    - A. fossil water
    - B. desalinated water
    - C. rainwater
    - D. river water
  8. This method of farming has been responsible for severe depletion of which of the following?
    - A. the Colorado River and its tributaries
    - B. remaining water from the Laurentide Ice Sheet
    - C. soil nutrients from many areas of the Great Plains
    - D. the Ogallala Aquifer
  9. The irrigation method pictured here is characteristic of which of the following types of agriculture?
    - A. CAFOs
    - B. intensive farming
    - C. traditional agriculture
    - D. organic farming
  10. Farms practicing the type of agriculture and irrigation methods pictured would likely use all of the following practices except which of the following?
    - A. modern agricultural machinery and equipment
    - B. data collection and analysis to improve efficiency
    - C. extensive terracing
    - D. fertilizers and pesticides
- Questions 11-14 refer to the image in section 3 of the resource booklet.
11. Which of the following is located in the area marked 1 on the image?
    - A. a salt marsh
    - B. a tombolo
    - C. a regressive delta
    - D. a firth

12. By what process did the landform in area 2 on the image form?

- A. erosion
- B. marine transgression
- C. wave shoaling
- D. deposition

13. What direction is the longshore drift in this area in relation to the shoreline in area 2 on the image?

- A. at roughly a 45-degree angle towards the shoreline moving towards the right side of the image
- B. at roughly a 45-degree angle towards the shoreline moving towards the left side of the image
- C. roughly parallel
- D. roughly perpendicular

14. What would be the most likely reason for the formation of area 3 in this image?

- A. change in the direction of the longshore drift
- B. changes in tidal direction
- C. an extreme weather event like a hurricane
- D. changing wind direction further from shore

Questions 15-20 refer to the images in section 4 of the resource booklet.

15. These images, taken at approximately 38°06'N and 81°58'W, show the production of which of the following?

- A. iron
- B. copper
- C. gold
- D. coal

16. What type of mining does this image depict?

- A. dredging
- B. mountaintop removal mining
- C. strip mining
- D. highwall mining

17. All of the following are potential environmental impacts of the type of mining depicted EXCEPT

- A. increased biodiversity in previously mined areas
- B. widespread deforestation
- C. burial of headwater streams causing loss of habitats
- D. pollution of watersheds caused by dissolved solids and metal ions

18. In relation to this type of mining, the term overburden is best described by which of the following?

- A. materials left over after the process of separating the valuable fraction from the uneconomic fraction of an ore
- B. commercially worthless material that surrounds, or is closely mixed with, a wanted mineral in an ore deposit
- C. material that lies above an area that lends itself to economical exploitation
- D. glass-like by-product left over after a desired metal has been separated from its raw ore

19. There has been a decline the mining of this commodity in the United States in the last decade due to which of the following?

- A. tariffs placed on American exports by Asian nations
- B. declining prices for gold since 2010
- C. price pressure from renewable energy and natural gas
- D. competition from Chinese imports

20. In what location were these images most likely taken?

- A. the eastern US
- B. the western US
- C. Peru
- D. Russia

Questions 21-23 refer to the images in section 5 of the resource booklet.

21. The lake in the images was formed by which of the following processes?

- A. glaciation
- B. a massive earthquake
- C. the construction of a dam
- D. a volcanic eruption

22. In the United States, which of the following lakes was formed in a similar way to the one pictured?

- A. Lake Mead
- B. Crater Lake
- C. Lake Pontchartrain
- D. Lake Okeechobee

23. Which of the following native groups live in the vicinity of this lake?

- A. Batak
- B. Inupiat
- C. Klamath
- D. Kanembu

Questions 24-27 refer to the image in section 6 of the resource booklet.

24. The structure pictured is typical of temples constructed in which of the following modern-day countries?

- A. India
- B. Pakistan
- C. Vietnam
- D. Cambodia

25. To which religion would this temple have been dedicated?

- A. Jainism
- B. Confucianism
- C. Hinduism
- D. Shintoism

26. Of what material are this temple and others in the immediate area constructed?

- A. Limestone
- B. Sandstone
- C. Concrete
- D. Marble

27. Given the similarities between this temple and temples constructed by a nearby empire, historians believe the construction of this building was heavily influenced by which of the following?

- A. the Sailendras of Java
- B. Tang Dynasty China
- C. the Maurya Empire
- D. the 'Three Kingdoms' of Korea

Questions 28-31 refer to the images in section 7 of the resource booklet.

28. These images depict architecture and culture of which of the following countries?

- A. China
- B. Argentina
- C. Colombia
- D. Brazil

29. The image on the right shows a cultural event tied to which of the following?

- A. a harvest festival
- B. a religious observance
- C. celebration of this nation's independence
- D. commemoration of a military victory

30. The bridge shown in the left image is notable for which of the following reasons?

- A. it is an example of modernist architecture in the planned capital of this nation
- B. it demonstrates European influence on the architecture of this nation
- C. it is a remnant of a recent Olympic games held in this nation
- D. it demonstrates the commitment of this nation to sustainable construction and green building practices

31. In relation to the country depicted in these images, which of the following best defines the term capoeira?

- A. a stew of beans with beef and pork considered the national dish of this country
- B. a martial art developed in this country that combines elements of dance, music, and acrobatics
- C. a musical fusion of samba and jazz originating in the country in the 1950s
- D. a colonial-era sugarcane plantation and mill prevalent in the country

Questions 32-36 refer to the image in section 8 of the resource booklet.

32. Which of the following determines the amount of energy produced by a hydroelectric plant like the one pictured in the image?

- A. the distance the transmission lines travel from the plant
- B. the volume of the water flow reaching the turbine
- C. the elevation distance the water travels
- D. a combination of both the volume and the elevation distance

33. The percentage of the world's electricity produced by hydroelectric power is closest to which of the following?

- A. 10%
- B. 15%
- C. 25%
- D. 30%

34. Which of the following nations produces more than 100% of its electricity needs from hydroelectric power and exports much of its overall production to its neighbors?

- A. Mexico
- B. Russia
- C. Paraguay
- D. Brazil

35. Which of the following produces more TWh of hydroelectric power than any other nation?

- A. the United States
- B. Norway
- C. China
- D. Canada

36. All of these are disadvantages of reservoirs associated with hydroelectric power except which of the following?

- A. disruption to aquatic ecosystems upriver and downriver of reservoirs
- B. release of excessive amounts of methane in tropical areas due to decay of biological material
- C. the poor reliability of using reservoirs as a water source for local populations
- D. the loss of significant amounts of water from reservoirs due to evaporation

Questions 37-40 refer to the image in section 9 of the resource booklet.

37. All of the following factors affect the intensity of solar radiation in a given area except which of the following?

- A. the angle at which the sun's rays strike
- B. the amount of cloud cover in the area
- C. absorption and reflection by the atmosphere
- D. the temperature of the area

38. Given the information in the image, in which of the following areas is cloud cover likely to be the highest on the island of Hawaii?

- A. on the north and northeast-facing slopes of the mountains
- B. on the southern tip of the island
- C. on the extreme northwestern tip of the island
- D. along the northern coastline

39. What other type of map of the Hawaiian Islands would show a similar pattern to the image shown in section 9?

- A. average annual rainfall
- B. average annual vegetation height
- C. annual evapotranspiration
- D. mean annual midday biomass heat storage

40. Incident radiation is highest when the sun is at roughly what position in relation to the surface?

- A. a 45-degree angle
- B. a 125-degree angle
- C. roughly parallel
- D. roughly perpendicular