

**GEOGRAPHIC INFORMATION SYSTEMS
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***** EXAMINATION *****

FIELD ASTRONOMY

1. **A type of time is:**
 - a) solar
 - b) zone
 - c) Greenwich mean time
 - d) All of the above

2. **The need for an astronomic observation may occur when:**
 - a) there are no NGS monuments in the area
 - b) there are NGS monuments in the area
 - c) using NAVSTAR GPS equipment
 - d) Both b and c

3. **When the sun is directly over a meridian,**
 - a) the zone time is six hours
 - b) it is noon time, local apparent time, on the meridian 180 degrees away
 - c) it is noon time plus a slight correction on that meridian
 - d) None of the above

4. **Another name for zone time is:**
 - a) apparent time
 - b) sidereal time
 - c) standard time
 - d) local time

5. **The difference in time between a particular zone and the adjacent zone:**
 - a) is the declination
 - b) is altitude
 - c) is one hour
 - d) is seven and one-half degrees

6. **Time is later as you move:**
 - a) eastward
 - b) westward
 - c) northward
 - d) southward

7. **The time listed in most computational tables for celestial observations is:**
- a) apparent time
 - b) zone time
 - c) Greenwich mean time
 - d) All of the above
8. **To determine the zone description for any point on the earth,**
- a) divide the longitude by 15 and add 1 if the remainder > 7.5 degrees
 - b) add the longitude to 360 degrees
 - c) multiply the longitude by 15
 - d) None of the above
9. **The zone description of 68 degrees west is:**
- a) 3
 - b) 4
 - c) 5
 - d) 6
10. **The zone description of 61 degrees west is:**
- a) 3
 - b) 4
 - c) 5
 - d) 6
11. **The zone description of 91 degrees west is:**
- a) 3
 - b) 4
 - c) 5
 - d) 6
12. **The zone time is 10 h 5 m 8 s and the longitude is 60 degrees west.**
- a) The GMT of the observation is 14 h 5 m 8 s
 - b) The GMT of the observation is 15 h 5 m 8 s
 - c) The GMT of the observation is 5 h 54 m 52 s
 - d) The GMT of the observation is 4 h 54 m 52 s
13. **The zone time is 4 h 9 m 18 s and the longitude is 40 degrees west.**
- a) The GMT of the observation is 6 h 9 m 18 s
 - b) The GMT of the observation is 7 h 9 m 18 s
 - c) The GMT of the observation is 1 h 9 m 18 s
 - d) The GMT of the observation is 0 h 9 m 18 s
14. **Time signals are broadcast by:**
- a) NASA
 - b) Greenwich
 - c) the US Naval Observatory
 - d) the US Weather Bureau

15. **Latitude and longitude are used by:**
- a) the terrestrial systems
 - b) the celestial system
 - c) horizon system
 - d) spherical system
16. **Altitude and azimuth are used by:**
- a) the terrestrial systems
 - b) the celestial system
 - c) horizon system
 - d) spherical system
17. **Right ascension and declination are used by:**
- a) the terrestrial systems
 - b) the celestial system
 - c) horizon system
 - d) spherical system
18. **The fundamental reference lines of the terrestrial system are:**
- a) the axis of the earth's rotation and the earth's equator
 - b) the great circle through the equator
 - c) the Greenwich meridian
 - d) All of the above
19. **The equator is:**
- a) a great circle
 - b) equidistant from the poles
 - c) perpendicular to the axis of rotation
 - d) All of the above
20. **A great circle passing through both poles is called a:**
- a) arc of declination
 - b) equator
 - c) meridian
 - d) latitude
21. **A parallel of latitude:**
- a) is on a plane perpendicular to the equator
 - b) great circle
 - c) is on a plane parallel to the equator
 - d) corresponds to a unique meridian
22. **The numerical value of a meridian is:**
- a) the longitude
 - b) the latitude
 - c) the declination
 - d) the right ascension

23. **The conventional symbol for latitude is:**
- a) alpha
 - b) phi
 - c) beta
 - d) delta
24. **The conventional symbol for longitude is:**
- a) pi
 - b) lambda
 - c) phi
 - d) gamma
25. **The conventional symbol for declination is:**
- a) alpha
 - b) lambda
 - c) beta
 - d) delta
26. **The conventional symbol for right ascension is:**
- a) alpha
 - b) lambda
 - c) beta
 - d) delta
27. **Latitudes are expressed in degrees and are measured:**
- a) 0 to 180 degrees north of the equator
 - b) 0 to 180 degrees south of the equator
 - c) 0 to 90 degrees north and 0 to 90 degrees south of the equator
 - d) None of the above
28. **Great circles through the celestial poles are called:**
- a) equatorial circles
 - b) hour circles
 - c) local hour angles
 - d) declination circles
29. **The angle between hour circles is called:**
- a) the hour angle
 - b) the declination
 - c) the latitude
 - d) the meridian
30. **The declination is expressed in degrees similar to:**
- a) the zone time
 - b) the apparent time
 - c) the local time
 - d) latitude

31. **The vernal equinox is also known as the:**
- a) the first point of Ceres
 - b) the first point of Mars
 - c) the first point of Aries
 - d) the eclipse
32. **The vernal equinox cross the equator from south to north on:**
- a) January 15
 - b) March 21
 - c) August 3
 - d) November 16
33. **The vernal equinox moves westward along the equator about:**
- a) 10 seconds per year
 - b) 25 seconds per year
 - c) 40 seconds per year
 - d) 50 seconds per year
34. **Right ascension and declination are:**
- a) independent coordinates of the celestial system
 - b) dependent coordinates of the celestial system
 - c) reciprocal coordinates of the celestial system
 - d) inverted coordinates of the celestial system
35. **The hour angle of a star is measured:**
- a) northward along the celestial equator
 - b) westward along the celestial equator
 - c) southward along the celestial equator
 - d) eastward along the celestial equator
36. **The Greenwich hour angle of the celestial body is increasing:**
- a) northward along the celestial equator
 - b) eastward along the celestial equator
 - c) westward along the celestial equator
 - d) southward along the celestial equator
37. **The direction of gravity passes through:**
- a) the north pole
 - b) the south pole
 - c) the center of the earth
 - d) None of the above
38. **The displacement of the horizon plane is called:**
- a) declination
 - b) sidereal adjustment
 - c) correction for parallax
 - d) None of the above

39. **The altitude of a body is:**
- a) an angular distance of the body
 - b) is the complement of the coaltitude
 - c) is measured along a vertical circle
 - d) All of the above.
40. **The coaltitude is also known as:**
- a) zenith distance
 - b) declination
 - c) nadir
 - d) parallax
41. **The conventional symbol for azimuth is:**
- a) the Greek letter lambda
 - b) the Greek letter phi
 - c) the English letter Z
 - d) the English letter H
42. **The astronomic triangle is formed by:**
- a) the pole, nadir, and zenith
 - b) the pole, zenith, and star
 - c) the star, nadir, and latitude
 - d) the star, latitude, and nadir
43. **The side of the astronomic triangle between the pole and the star is:**
- a) codeclination
 - b) coaltitude
 - c) colatitude
 - d) declination
44. **The side of the astronomic triangle between the pole and the zenith is:**
- a) codeclination
 - b) coaltitude
 - c) colatitude
 - d) declination
45. **The side of the astronomic triangle between the zenith and the star is:**
- a) codeclination
 - b) coaltitude
 - c) colatitude
 - d) declination
46. **The angle of the astronomic triangle at the zenith is the:**
- a) hour angle
 - b) parallactic angle
 - c) zenith angle
 - d) azimuth angle

47. **The angle of the astronomic triangle at the pole is the:**
- a) hour angle
 - b) parallactic angle
 - c) zenith angle
 - d) azimuth angle
48. **The angle of the astronomic triangle at the star is the:**
- a) hour angle
 - b) parallactic angle
 - c) zenith angle
 - d) azimuth angle
49. **The angle least used in computations is the:**
- a) hour angle
 - b) parallactic angle
 - c) zenith angle
 - d) azimuth angle
50. **The formulas required for the solution of the astronomic triangle:**
- a) may be derived from the law of cosines
 - b) may be derived from the sine law
 - c) may be derived from the Pythagorean theorem
 - d) None of the above
51. **At zone time 11 h 22 m 15 s on May 17, 1986 and longitude 91-37-12 W**
- a) the zone description is 4
 - b) the zone description is 5
 - c) the zone description is 6
 - d) the zone description is 7
52. **The GMT of the observation is:**
- a) 15 h 22 m 15 s
 - b) 16 h 22 m 15 s
 - c) 17 h 22 m 15 s
 - d) 18 h 22 m 15 s
53. **For the GMT 17 h 00 m 00 s on May 17, 1986**
- a) the GHA for the sun is 45 degrees 54.8 minutes
 - b) the GHA for the sun is 60 degrees 54.8 minutes
 - c) the GHA for the sun is 75 degrees 54.8 minutes
 - d) the GHA for the sun is 90 degrees 54.7 minutes
54. **For the GMT 17 h 00 m 00 s on May 17, 1986**
- a) the GHA for the moon is 303 degrees 05.5 minutes
 - b) the GHA for the moon is 317 degrees 37.5 minutes
 - c) the GHA for the moon is 332 degrees 09.6 minutes
 - d) the GHA for the moon is 346 degrees 41.6 minutes

55. **The increment for 22 m 15 s for the sun is:**
- a) 5 degrees 33.8 minutes
 - b) 5 degrees 38.0 minutes
 - c) 5 degrees 49.5 minutes
 - d) 5 degrees 52.0 minutes
56. **The increment for 22 m 11 s for Aries is:**
- a) 5 degrees 30.3 minutes
 - b) 5 degrees 31.5 minutes
 - c) 5 degrees 32.8 minutes
 - d) 5 degrees 33.7 minutes
57. **The GHA of the sun at the time in Question 51 is:**
- a) 75 degrees 54.8 minutes
 - b) 81 degrees 28.6 minutes
 - c) 87 degrees 14.6 minutes
 - d) 89 degrees 17.1 minutes
58. **For the GMT 17 h 00 m 00 s on May 17, 1986**
- a) the declination for the sun is N 19 degrees 21.3 minutes
 - b) the declination for the sun is N 19 degrees 22.4 minutes
 - c) the declination for the sun is N 19 degrees 22.6 minutes
 - d) the declination for the sun is N 19 degrees 23.0 minutes
59. **For GHA 327-44-18 and west longitude 98-14-14:**
- a) the LHA is 65-58-32
 - b) the LHA is 229-30-04
 - c) the LHA is 245-58-32
 - d) the LHA is 49-30-04
60. **The least accurate determination of azimuth uses:**
- a) the sun
 - b) Aries
 - c) Polaris
 - d) Mars

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