

Nepal Engineering Council Registration Examination
Model Question for Geomatics Engineering (AGeE)

Section A (60*1 = 60)

1. “Principle of Measurement” is the process of
 - a) Measuring and mapping the Earth's surface
 - b) Analyzing and interpreting geographic data
 - c) Designing and building structures
 - d) Accurately measuring quantities

2. In chain surveying, field work is limited to
 - a) Linear measurements only
 - b) Angular measurements only
 - c) Both linear and angular measurements
 - d) Neither linear nor angular measurements

3. The term used for a fixed point on the Earth's surface as a reference in a survey is
 - a) Control point
 - b) Benchmark
 - c) Trigonometric point
 - d) Azimuth point

4. Type of instrument that is commonly used for levelling in surveying is
 - a) Theodolite
 - b) Total station
 - c) Levelling instrument
 - d) GPS receiver

5. When contours of different elevation cross each other, it indicates a/an.....
 - a) Vertical cliff
 - b) Saddle
 - c) Overhanging cliff
 - d) Valley

6. Square of the standard deviation gives
 - a) Variance
 - b) Covariance
 - c) Correlation
 - d) Regression

7. The main “principle of photogrammetry” is the measurement of the
 - a) Properties of light
 - b) Object and terrain using photographs
 - c) Properties of camera lenses
 - d) Properties of image sensors

8. The main purpose of interior orientation in aerial photogrammetry is to determine the position and orientation of the.....
 - a) Camera at the time of exposure
 - b) Aircraft at the time of exposure
 - c) Ground control points at the time of exposure
 - d) Images at the time of exposure

9. The binocular vision in photogrammetry is the process of using two
 - a) Cameras to capture images simultaneously
 - b) Eyes to perceive depth and distance
 - c) Lenses to capture images with different focal lengths
 - d) Wavelengths of light to capture images

10. The term used to describe the smallest feature that can be distinguished in a remote sensing image is
 - a) Pixel
 - b) Spectral resolution
 - c) Spatial resolution
 - d) Temporal resolution

11. The purpose of image interpretation in remote sensing is to
 - a) Extract information from the image
 - b) Remove noise from the image
 - c) Increase the spatial resolution of the image
 - d) Change the color of the image

12. Which type of sensor is commonly used to acquire data for lidar-based terrain modelling?
 - a) Optical sensor
 - b) Radar sensor
 - c) Laser sensor
 - d) Infrared sensor

13. Which coordinate system is commonly used in geodesy?
 - a) Cartesian
 - b) Polar
 - c) Geographic
 - d) Spherical

14. An Ellipsoid is
 - a) Physical Surface
 - b) Equipotential
 - c) Mathematical surface
 - d) Mean sea level

15. The distance along meridian between the points which lies in same meridian is
 - a) Latitude
 - b) Departure
 - c) Northing
 - d) Easting

16. According to Newton's law of gravitation "Every particle in the universe attracts every other particle with a force, whose magnitude is
 - a) Directly proportional to the product of their masses
 - b) Inversely proportional to the product of their masses
 - c) Directly proportional to the square of the distances between their centre
 - d) Inversely proportional to the product of masses and distances.

17. In gravimetry, the spherical coordinate are used to
 - a) Calculate the density of a substance
 - b) Calculate the weight of an object
 - c) Represent a point in 3-dimensional space
 - d) Calculate the temperature of a substance

18. The celestial sphere is a sphere that represents the
 - a) Earth's atmosphere
 - b) Stars and planets in the sky
 - c) Earth's rotation
 - d) Moon's orbit

19. Systematic cadastral survey was started after the land reform program in
 - a) 2019 BS
 - b) 2032 BS
 - c) 2021 BS
 - d) 2052 BS

20. Land reform is the process of
 - a) Redistributing land to citizens
 - b) Increasing land taxes
 - c) Improving land use practices
 - d) Mapping and surveying land

21. What type of tenure system is common in traditional societies?
 - a) Freehold
 - b) Leasehold
 - c) Communal
 - d) State-owned

22. The main purpose of a land information system is to
 - a) provide information about land ownership to the public
 - b) manage land use and zoning regulations
 - c) provide a comprehensive database of land-related information for decision- making
 - d) track land development projects

23. Which of the following characteristic is not about Land pooling concept.
- a) Participatory approach
 - b) Self-financing mode
 - c) Displacement of land owners
 - d) Fair and transparent procedure
24. How many land use classes are there in land use act 2076?
- a) Seven
 - b) Eight
 - c) Nine
 - d) Twelve
25. Ionosphere modelled in a GNSS receiver to mitigate its effects on the code pseudo-range measurements by using
- a) Klobuchar model
 - b) NeQuick model
 - c) Hopfield model
 - d) Markov model
26. Which one of the following is the mathematical property of noise in GNSS signal?
- a) Euclidean
 - b) Elastic
 - c) Gaussian
 - d) Thermal
27. The purpose of the ephemeris data in a GNSS signal is to provide the receiver with information on the
- a) Satellite's location
 - b) Receiver's location
 - c) Current time
 - d) Satellite's health
28. The main factor affecting the accuracy of a GPS receiver is the
- a) Number of visible satellites
 - b) Altitude of the satellites
 - c) Satellite geometry
 - d) Weather conditions
29. Which type of positioning is typically used for navigation and tracking applications?
- a) Kinematic positioning
 - b) Static positioning
 - c) Angle-based positioning
 - d) Distance-based positioning
30. The aim of Kalman Gain is to
- a) Maximize the gain

- b) Minimize the difference between observed and modelled values
 - c) Minimize the observation
 - d) Minimize the noise
31. Pantograph is used for
- a) Area measurement
 - b) Length measurement
 - c) Enlargement and Reduction of map
 - d) Perimeter measurement
32. The projection which preserves the area of projected surface of the earth is called....
- a) Conformal Projection
 - b) Equivalent Projection
 - c) Equidistant Projection
 - d) Compromise Projection
33. The subject for study of signs and symbol is called.....
- a) Semiology
 - b) Symbology
 - c) Symbolic
 - d) Symbol selection
34. The output of missing primary colors RED, GREEN and BLUE is
- a) Black
 - b) White
 - c) Grey
 - d) depends on condition
35. Which of the following web map category best fits the shortest route-finding option?
- a) Personalized web maps
 - b) Analytic web maps
 - c) Interactive web maps
 - d) Real time web maps
36. The positive image making process includes....
- a) Drawing
 - b) Scribing
 - c) Masking
 - d) Plate making
37. What is a primary key in a relational database?
- a) A unique identifier for each record in a table
 - b) A field that stores the most important information in a record
 - c) A field that contains a summary of the data in a record
 - d) A field that stores the date of a record
38. In which format the ISO 19115 metadata standard is written?
- a) Hyper Text Markup Language (HTML)

- b) Extensible Markup Language (XML)
 - c) Unified Modelling Language (UML)
 - d) Text document
39. The number of attributes in relation is called as its
- a) Cardinality
 - b) Degree
 - c) Tuples
 - d) Entity
40. What is the purpose of SQL?
- a) To manage and manipulate databases
 - b) To create and design websites
 - c) To write computer programs
 - d) To analyze data
41. What type of database management system is designed to handle large amounts of unstructured data?
- a) Object-oriented database management system (OODBMS)
 - b) Relational database management system (RDBMS)
 - c) Object-relational database management system (ORDBMS)
 - d) Hierarchical database management system (HDBMS)
42. In NSDI, organizational structure the role of lead agency is
- a) To draft standards for implementation of geoportal
 - b) To prepare data access, data sharing policies
 - c) Undertake the networking management functions and linkage with the other SDI initiatives
 - d) Analyze outcome of activities undertaken by lower level organs
43. The following is not a component of Geographic Information System (GIS)
- a) Hardware
 - b) Software
 - c) Topology
 - d) Data
44. What is 'Metadata'?
- a) It is 'data about data'
 - b) It is 'meteorological data'
 - c) It is 'oceanic data'
 - d) It is 'contour data'
45. The following is not topological relation between two polygon features:
- a) Disjoint
 - b) Combine
 - c) Intersection
 - d) Contains

46. The surface model used to create a continuous surface from a set of scattered points is known as
- a) TIN model
 - b) Grid model
 - c) Triangulated incorrect network model
 - d) Triangulated planar network model
47. Interpolation is made possible by a principle called
- a) Spatial Autocorrelation
 - b) Spatial auto-correction
 - c) Thematic Autocorrelation
 - d) Thematic auto-correction
48. The OGC standard web service used to disseminate grid data through web is
- a) Web Coverage Service
 - b) Web Feature Service
 - c) Web Map Service
 - d) Web Catalog Service
49. The process of determining the exact location of points on the surface of the earth is known as ...
- a) Topography
 - b) Geology
 - c) Hydrology
 - d) Surveying
50. Most common equipment used for measuring water depth in hydrographic survey is
- a) Tidal gauge
 - b) Echo sounder
 - c) Laser rangefinder
 - d) Seismic equipment
51. The underground horizontal passage open to atmosphere at both ends is known as ...
- a) Tunnel
 - b) Adit
 - c) Gangway
 - d) Cross cut
52. The main instruments used to conduct transmission line surveying is
- a) Total station and GPS
 - b) Inclinator
 - c) Load cells
 - d) Drilling equipment
53. Portion of dam in contact with ground at downstream side is known as
- a) Crest
 - b) Toe

- c) Foot
 - d) Heel
54. The temporary framework which is useful in construction, demolition, maintenance or repair works is known as
- a) Grouting
 - b) Scaffolding
 - c) Shoring
 - d) Underpinning
55. Standard dimensions (mm x mm) of A3 drawing sheet is
- a) 11.69×16.54
 - b) 29.7×42
 - c) 297×420
 - d) 420×280
56. Which of the following methods of charging depreciation of an asset has increased amount of depreciation as the age of asset increases
- a) sum-of-year digit
 - b) sinking fund
 - c) diminishing balance
 - d) straight line
57. The process of optimizing the project's limited resources without extending the project duration is known as
- a) project crashing
 - b) resource levelling
 - c) resource smoothing
 - d) networking
58. The process of composing/raising the required fund from different sources such as equity, preferred stock, bond and debenture is known as
- a) capital structure planning
 - b) project financing
 - c) capital budgeting decision
 - d) deducing earning per share
59. In which of the following society, people used to seek their existence on growing plants for their cattle and domestic animals
- a) pastoral society
 - b) tribal society
 - c) horticultural society

d) agricultural society

60. According to Nepal Engineering Council Act, 2055 (Revised, 2079), all engineering academic institutions shall be in the Council.

- a) affiliated
- b) united
- c) recognized
- d) associated

Section-B (20*2 = 40)

61. The WCB of survey line having QB N40°W is

- a) 40°
- b) 220°
- c) 320°
- d) 310°

62. For a point A at contour line 1050m and other point B at contour 1000m lying 500m apart, the gradient of AB is

- a) 1:50
- b) 1:30
- c) 1:10
- d) 1:1

63. The minimum number of satellites needed for a GPS to determine its position precisely is

- a) 2
- b) 3
- c) 4
- d) 24

64. The altitudinal distance of a geostationary satellite from the earth is about

- a) 26,000 km
- b) 30,000 km
- c) 36,000 km
- d) 44,000 km

65. The present time at the standard meridian of Nepal is 5:35pm. What will be the equivalent time at 82°30'E?

- a) 5:20 pm
- b) 11:20 pm
- c) 5:55pm
- d) 11:50 pm

66. The amount of free air correction for a gravity station at the mean sea level is
- a) 0 mgal
 - b) ± 0.1119 mgal
 - c) +0.3086 mgal
 - d) -0.3086 mgal
67. The value of scale factor at central meridian for UTM projection is
- a) 1
 - b) 0.9999
 - c) 0.9996
 - d) 0.6999
68. Which sheet number is located in the eastern part of the sheet number 145-1300-18?
- a) 145-1300-13
 - b) 145-1300-19
 - c) 145-1300-17
 - d) 145-1300-23
69. In a GNSS receiver, the carrier phase measurement between the receiver and a satellite is calculated as 3,456,789.8 cycles. If the wavelength of the signal is 19.03 cm, what is the distance between the receiver and the satellite in meters?
- a) 6,347,939.3 meters
 - b) 6,347,939.4 meters
 - c) 6,347,939.5 meters
 - d) 6,347,939.6 meters
70. The slant tropospheric delay at 30° elevation is about greater than that at zenith.
- a) 2 times
 - b) 3 times
 - c) 4 times
 - d) 5 times
71. If a map of scale 1:10000 is enlarged to 1:5000, the percentage of enlargement is...?
- a) 100
 - b) 200
 - c) 50
 - d) 20
72. How many map sheet of 1 inch to 1 mile maps are required for covering whole country of Nepal?
- a) 274
 - b) 116
 - c) 247
 - d) 136

73. Which of the following SQL queries will display the number of records in the "Customers" table, grouped by the "Country" field?
- SELECT COUNT (*) FROM Customers GROUP BY Country;
 - SELECT COUNT(Country) FROM Customers GROUP BY Country;
 - SELECT Country, COUNT (*) FROM Customers GROUP BY Country;
 - SELECT Country, COUNT(Country) FROM Customers GROUP BY Country;
74. Consider the join of a relation R with relation P. If R has m tuples and P has n tuples, then the maximum size of join is:
- m+n
 - mn
 - (m+n)/2
 - 2(m+n)
75. Based on the pixel size on ground represented by one pixel, which of the following image has low spatial resolution?
- 0.5m
 - 2m
 - 5.8m
 - 30m
76. The query can be used to select all the features in a GIS layer that share a boundary with a specified feature is
- Spatial query
 - Attribute query
 - Topological query
 - Logical query
77. If the cross sectional area of an embankment at 30m intervals area is 20,40,60,50,30 m² respectively then the volume of the embankment on the basis of the prismoidal rule is :
- 5300 m³
 - 4300 m³
 - 8300 m³
 - 3300 m³
78. Given that Grade 1 (g1) = +1.2 % and Grade 2 (g2) = -1.5% and rate of change of grade (r) = -0.4% per 100m. The length of the vertical curve is
- 75m
 - 675 m
 - 825m
 - 400 m
79. Effective monthly interest rate will be, if nominal interest rate of 10% accounted for continuous compounding
- 1%
 - 0.84%

c) 1.2%

d) 2%

80. By considering following activities of a project, the project duration will be

Activity	A	B	C	D	E
Immediate predecessors	-	-	-	C	A, B, D
Duration (days)	4	5	3	7	5

a) 9 days

b) 10 days

c) 15 days

d) 24 days