

**Tribhuvan University**  
**Institute of Science and Technology**  
**M. Sc. MMS Entrance Examination**  
**Model Question 2080**

**Full Marks: 100**  
**Pass Marks: 40**

**Time: 2 Hrs.**

**Attempt all questions. Please Tick/Encircle the correct answer. Any omission or correction to the answers is not allowed.**

**Mountain Environment**

**18 x1= 18 Marks**

1. The atmospheric stratum nearest to earth is:  
a. Thermosphere      b. Stratosphere      c. Troposphere      d. None of the above
2. The three "Rs" of waste management hierarchy is/are  
a. Reduce, Reuse and Recycle      b. Reduce, Redox and Reoxidation  
c. Reuse, Reimburse and Regain      d. Regain, Recycle and Resend
3. Renewable source of energy is:  
a. Coal      b. Kerosene      c. Petroleum      d. Biomass
4. Hygrometer is used to measure:  
a. Wind speed      b. Wind direction      c. Relative humidity      d. Temperature
5. Unit for solar insolation is:  
a. kWh/m<sup>2</sup>/day      b. kWh      c. kW      d. W
6. What is called the fall in average air temperature per 1000 m rise in elevation in the mountains?  
a. Lapse rate      b. Lipse rate      c. Leap year      d. Lap year
7. When a cloud burst occurs:  
a. Sudden and very heavy rainfall      b. Sudden and almost negligible rainfall  
c. Random and light rainfall      d. No rainfall is observed
8. What atmospheric layer has most of the clouds?  
a. Mesosphere      b. Thermosphere      c. Exosphere      d. Troposphere
9. The region of the atmosphere above 400 km and higher is known as:  
a. Exosphere      b. Mesosphere      c. Thermosphere      d. Troposphere
10. In the air amount of water vapor is classified as  
a. Precipitation      b. Wind      c. Humidity      d. Temperature

11. Which of the following increases air's ability to hold water vapor?  
 a. increase in wind speed                      b. increase in temperature  
 c. decrease in temperature                      d. decrease in air pressure
12. What is the purpose of isobars?  
 a. to measure air pressure                      b. to describe the weather conditions in a weather station  
 c. to find out what form precipitation will take                      d. to connect points of equal air pressure on a weather map
13. What happens when air reaches its dew point?  
 a. Condensation occurs                      b. Relative humidity is 100%  
 c. The humidity decreases                      d. Clouds form
14. Approaching warm weather and sky covered by cirrus clouds signifies  
 a. Warm day                      b. Approaching cyclones  
 c. Expected precipitation                      d. No change in weather status
15. The fraction of incident solar radiative energy flux, or irradiance, reflected and scattered upward from a surface integrated over a certain solar spectrum is known as  
 a. Solar radiation                      b. Albedo                      c. Solar flux                      d. Surface reflectivity
16. How do prevailing winds that travel across large bodies of water affect the climate?  
 a. They make it colder                      b. They make it warmer  
 c. They make it wetter                      d. They make it drier
17. The study of weather is called:  
 a. Meteorology                      b. Aerology                      c. Climatology                      d. Troposphere
18. Ozonosphere is a part of  
 a. Troposphere                      b. Stratosphere                      c. Exosphere                      d. Thermosphere
- Mountain Geography & Geology** **18 x1= 18 Marks**
19. Parts of earth covered by water is about:  
 a) 73%                      b) 50%                      c) 92%                      d) 87%
20. The soil with poorest water holding capacity is:  
 a. Clay                      b) Loam                      c) Sand                      d) None of the above
21. The worst natural hazards in the tropics are:  
 a. Tropical cyclones                      b. Tsunami                      c. Floods                      d. None of the above
22. What is the average atmospheric pressure at the sea level as defined by the international standards atmosphere?  
 a. 101325 pascals                      b. 14.6959 pascals                      c. 1013 pascals                      d. 984.43 pascals
23. The kind of winds that blows through the year frequently is classified as  
 a. Prevailing winds                      b. Maritime winds

- c. Continental winds                      d. Convectional winds
24. Which of the following mountain is a volcanic mountain?  
 a. Fuji                      b. Chimborazo                      c. Mauna Kea                      d. All of the above
25. Which mountain range divides the continents Asia from Europe?  
 a. Pyrenees mountains                      b. Cascade mountains  
 c. Ural mountains                      d. Rocky mountains
26. The highest mountain in the entire North America is  
 a. Mount Whitney                      b. Denali                      c. Rushmore                      d. Mitchell
27. The deposition of the mass of rocks, boulders, scree, sand, and other rocky substances brought down along by a melting glacier is known as  
 a. Moraine                      b. Debris                      c. Glacier wash                      d. GLOF
28. The geological process via which rocks tear apart to disintegrate is known as  
 a. Breaking                      b. Defenestration                      c. Weathering                      d. Crater
29. The process via which a glacier is pulled back to the mountains while the void claimed by water deposition is known as  
 a. Glacier retreat                      b. Glacier retention                      c. Glacier backtracking                      d. Glaciation
30. The formation of the Himalaya could be traced back to a point where all of the continents were a giant landmass known as  
 a. Pangea                      b. Panthalassa                      c. Gondwanaland                      d. Laurasia
31. Which interior earth shell is molten and metallic in composition?  
 a. Inner core                      b. Lithosphere                      c. Mantle                      d. Outer core
32. Which is the closest to the currently accepted age of Earth?  
 a. 1.51 million year                      b. 10.52 billion years                      c. 4.65 billion years                      d. 5.53 million years
33. Which is the youngest mountain range?  
 a. Churia range                      b. Mahabharat range  
 c. Higher Himalayan range                      d. Kailash range
34. Which has the highest specific gravity?  
 a. Quartz                      b. Water                      c. Gold                      d. Diamond
35. Which soil color and chemical formula apply to hematite?  
 a. Grey,  $\text{Fe}_2\text{SiO}_4$                       b. Red,  $\text{Fe}_2\text{O}_3$                       c. White,  $\text{CaCO}_3$                       d. Black,  $\text{FeS}_2$
36. Which rock is igneous?  
 a. Granite                      b. Gneiss                      c. Schist                      d. Limestone

### **Mountain Ecology & Diversity**

**18 x1= 18 Marks**

37. Micro-organism are the agent of:

- a) Biological weathering
- c) Chemical weathering

- b) Physical weathering
- d) None of these

38. Endemic plants are those which are:

- a. found in alpine region
- c) Cosmopolitan in distribution
- b) gregarious in habitat
- d) restricted to a specific area

39. Forest near equator are:

- a. Tropical rain forest
- b) deciduous
- c) Conifers
- d) grassland

40. The 'threatened species' refers to the species which are:

- a. Endangered
- b. Rare
- c. Vulnerable
- d. All of the above

41. Which of the following factors leads to eutrophication?

- a. Excessive use of fertilizers
- c. Both (a) and (b)
- b. Increase of plants nutrients
- d. None of the above

42. What is the other name of 'Yarchagumba'?

- a. Caterpillar Fungus
- c. Yellow Fungus
- b. Caterpillar with sprout
- d. Hepilus fabricius

43. Plant species with a wide range of genetic distribution evolve into a local population known as

- a. Ecotype
- b. Population
- c. Ecosystem
- d. Biome

44. What type of food chain is it?

dead animals → blowfly maggot → maggots → frog → snake

- a. Detrital food chain
- c. Predator food chain
- b. Decomposer food chain
- d. Grazing food chain

45. In an ecosystem, the energy flow is always

- a. Always unidirectional
- c. In any direction
- b. Always bidirectional
- d. Always down directional

46. Diversity of all living things depends on

- a. Geography
- b. Presence of other species
- c. Soils
- d. All of the above

47. The ability of a population to increase under ideal environmental conditions is called

- a. Natality
- b. Carrying capacity
- c. Biotic potential
- d. Absolute natality

48. Which is not the characteristic of a population?

- a. Natality
- b. Mortality
- c. Stratification
- d. Sex ratio

49. Which statement is correct with respect to the food chain?

- a. Every component of the food chain forms a trophic level
- b. Inter-relation between different food chains is known as a food web
- c. All the chains formed by nutritional relations is used to understand energy flow.
- d. All of the above

50. The most studied group is  
 a. Birds                      b. Mammals                      c. Both (a) and (b)                      d. Fishes
51. Regulating services of plants  
 a. Decreases disease prevalence on plants  
 b. Increases resistance to plant invasion  
 c. Increases soil nutrient remineralization  
 d. All of the above
52. A biodiversity hotspot  
 a. Is a region with a high level of endemic species  
 b. That have experienced great habitat loss  
 c. Both (a) and (b)  
 d. None of the above
53. Terrestrial biodiversity is usually greater near the \_\_\_\_ .  
 a. North pole                      b. South pole                      c. Equator                      d. Tropic of cancer
54. Which conservation area was established first in Nepal?  
 a. Gaurishankar Conservation Area  
 b. Annapurna Conservation Area  
 c. Kanchenjunga Conservation Area  
 d. Manaslu Conservation Area

### **Mountain Tourism & Mountaineering**

**18 x1= 18 Marks**

55. The riskiest terrain for avalanche hazard is considered as  
 a. 30°                      b. 40-60°                      c. 30-45°                      d. 60°+
56. The highest mountain in the Alps is  
 a. Monte Rossa                      b. Matterhorn                      c. Mont Blanc                      d. Augielle du midi
57. What is the height of Mt. K2?  
 a. 8422 m                      b. 8629 m                      c. 8611 m                      d. 8586 m
58. Kanchenjunga, the 3rd highest mountain in the world is shared by which countries  
 a. Nepal-India                      b. India-China                      c. Nepal-India-China                      d. Nepal alone
59. In which country is Mt. Fuji located?  
 a. China                      b. Japan                      c. Vietnam                      d. South Korea
60. Which is the world's longest mountain system?  
 a. Mid- Atlantic Range                      b. Alps                      c. Andes                      d. Himalayan
61. Which mountain is also known as the "The Head of the Sky"?  
 a. Sagarmatha                      b. K2                      c. Kanchenjunga                      d. Lhotse
62. Which mountain is based for Nepal mean time?  
 a. Sagarmatha                      b. Makalu                      c. Nilgiri                      d. Gaurishankar

63. The form of rock climbing associated with climbing without any sort of fall protection is  
 a. Bouldering            b. Free solo        c. Deep water solo            d. All of the above
64. Which of the following is a running knot?  
 a. Clove hitch            b. Bowline            c. Munter hitch            d. Thumb knot
65. Self-arrest is one of the major applications in climbing while  
 a. Sudden fall            b. Need of discipline  
 c. Breach of mountaineering codes            d. Any sort of emergency
66. Rutschblock test is related to  
 a. Avalanche            b. Rain            c. Clouds            d. Glacier
67. A plane of rock inclined from 30 to 75 degrees is called as  
 a. Cliff            b. Glacis            c. Wall            d. Slab
68. Tyrolean Traverse is used to  
 a. Cross a river            b. Negotiate an avalanche prone area  
 c. Descend from a gradual slope            d. Climb a steep slope
69. Snow Bollard is also known as  
 a. Horse shoe            b. Isobar            c. Fluke            d. Stake
70. Rope which has more elasticity is  
 a. Single rope            b. Twin rope            c. Static rope            d. Dynamic rope
71. What type of ice is found at the ablation zone?  
 a. Black ice            b. All type            c. Blue ice            d. White ice
72. High Altitude Pulmonary Odema (HAPO) is basically filling of fluid inside the  
 a. Tissues            b. Stomach            c. Brain            d. Lungs

### Research Methods & Statistics

18 x1= 18 Marks

73. Randomly assigning treatment to experimental units allows:  
 a. population inference            b. causal inference  
 c. both types of inference            d. neither type of inference
74. When 20,000 is increased by 0.2%, we get  
 a. 20,004            b. 20,040            c.20,400            d. 24,000
75. The process not needed in experimental research is  
 a. Controlling            b. Observation  
 c. Reference collection            d. Manipulation and replication
76. How can we enhance the research objective?  
 a. By making it more valid            b. By making it more reliable

- c. By making it more impartial                      d. All of the above
77. A parameter is:  
 a. a sample characteristic                      b. a population characteristic  
 c. unknown                                              d. normal normally distributed
78. Observational studies allow:  
 a. Population inference                      b. Causal inference  
 c. Both types of inference                      d. Neither type of inference
79. If  $8X + 4 = 32$ , then  $2X - 1 = ?$   
 a. 3                                              b. 4                                              c. 5                                              d. 6
80. What are the core elements of a dissertation?  
 a. Introduction; Data Collection; Data Analysis; Conclusions and Recommendations  
 b. Executive Summary; Literature Review; Data Gathered; Conclusions; Bibliography  
 c. Research Plan; Research Data; Analysis; References  
 d. Introduction; Literature Review; Research Methodology; Results; Discussions and Conclusions
81. Research problem is selected from the standpoint of  
 a. Social relevance                                      b. Financial support  
 c. Researcher's interest                              d. Availability of relevant literature
82. Which one among the following is the most comprehensive source of population data?  
 a. Census                                              b. National Sample Surveys  
 c. Demographic Health Surveys                      d. National Family Health Surveys
83. If an investigator selects the districts from a state, municipalities from districts and farmers from the municipalities at farmers, then such a sampling procedure is known as:  
 a. Two stage sampling                      b) Three stage sampling  
 b. Cluster sampling                      d) Stratified sampling
84. When asked questions concerning personal hygiene, people commonly lie. This is an example of:  
 a. Sampling bias                                      b. Confounding  
 c. Non-response bias                                      d. Response bias
85. If a sum of money is divided equally among  $n$  children, each child will receive Rs 60. If another child is added to the group, then when the sum is divided equally among all children, each child will receive a Rs 50 share. What is the sum of money?  
 a. 100                                              b. 200                                              c. 300                                              d. 400
86. Which one is called non-probability sampling?  
 a. Quota sampling                                      b. Cluster sampling  
 c. Systematic sampling                                      d. Stratified random sampling

87. For moderately discrete the empirical relation between mean (M) median (Md) and mode (Mo) is.

a.  $3(M - Mo) = M - Md$

b.  $3(Md - M) = Mo - M$

c.  $3(M - Md) = (M - Mo)$

d.  $2(Mo - M) = 3(Md - M)$

88. The data in the scatterplot above would have a correlation coefficient that is close to:

a. -1.0

b. -0.5

c. +1.0

d. +0.5

89. If the value of all observation is same, then its standard deviation of the items:

a. Greater than or equal to 1

b. Equal to zero

b. Less than or equal to one

c. Equal to one

90. The appropriate formula of coefficient of skewness based upon moments is:

a.  $\beta_1 = \frac{\mu_3^2}{\mu_2^3}$

b.  $\beta_1 = \frac{\mu_3^3}{\mu_2^2}$

b.  $\beta_1 = \frac{\mu_4^2}{\mu_3^3}$

c.  $\beta_1 = \frac{\mu_1^2}{\mu_2^3}$

### Subjective Question

(1\*10=10 Marks)

1. How mountain science can facilitate in the holistic development of mountainous region? Present your integrated development planning and execution modality.