

Nepal Engineering Council Registration Examination

Model Question for Civil Engineering (ACiE)

(100*1 = 100)

1. Modulus of elasticity is the stress when applied in a member will double the length due to
 - a) change in length = original length
 - b) change in length = twice of original length
 - c) final length = original length
 - d) final length = half of original length
2. Profound lumps of cement in a bag shall be confirmed instantly before its use by
 - a) consistency test
 - b) soundness test
 - c) freshness test
 - d) setting time test
3. Non-load bearing (e.g. compound wall) is generally constructed using stones in
 - a) ashlar fashion
 - b) coursed rubble
 - c) uncoursed rubble
 - d) chamfered ashlar
4. A body will appear mirror image with respect to
 - a) elastic neutral axis
 - b) plastic neutral axis
 - c) axis of symmetry
 - d) neutral axis and axis of symmetry
5. If a topographic map is prepared with 5m contour interval, then index contour is generally shown at
 - a) every 5th contour
 - b) every 3rd contour
 - c) every 10th contour
 - d) every 7th contour
6. Valuation of a currently running Bhat Bhateni supermarket shall be carried out more precisely by..... methods of valuation
 - a) plinth area
 - b) capitalized worth

- c) depreciated
 - d) development
7. Which of the following property of soil is known for index property
- a) size of particle
 - b) shape of particle
 - c) thixotropy
 - d) shape and size of particle
8. Compaction and consolidation are different because of
- a) intensity of load applied
 - b) equipment used for loading purpose
 - c) expulsion of either air particle or water particle
 - d) either reduction of void ratio or increasing density of soil
9. A pure sand has its shear strength due to
- a) ϕ
 - b) C
 - c) C and ϕ
 - d) void ratio of sand
10. For construction of bridge pier, precise soil test shall be carried out by taking sample through
- a) digging a pit
 - b) direct shear test
 - c) sand piling
 - d) standard split spoon sample
11. Shallow foundation is different from deep foundation in many aspects, one of the prominent aspects is
- a) it has low depth
 - b) it has wider width
 - c) worker can enter purposefully
 - d) only used in building construction
12. One of the greatest merits of raft foundation is
- a) easier to construct than deep foundation
 - b) stronger than deep foundation
 - c) avoids unequal settlements
 - d) avoids unnecessary costs for soil tests

13. A liquid of specific gravity 0.8 is heavier than water by -----
- a) 1.0
 - b) 0.8 m
 - c) 0.4 m
 - d) 1.6 m
14. Working principle of hydraulic lift is based on
- a) Bernoulli's principle
 - b) Archimedes' principle
 - c) Pascal's Law
 - d) Newton's Law
15. Bernoulli's equation is derived from
- a) Kepler
 - b) Laplace
 - c) Euler
 - d) Poisson
16. Moody's diagram for estimating head loss was originally developed for
- a) Circular pipes
 - b) Rectangular pipes
 - c) Trapezoidal pipes
 - d) Semi-circular pipes
17. If the flow parameters remain constant at any section along the flow at a particular instant of time, then flow is known asflow
- a) steady
 - b) unsteady
 - c) uniform
 - d) nonuniform
18. The instrument used for measuring evaporation is
- a) hygrometer
 - b) evaporimeter
 - c) lysimeter
 - d) luxmeter
19. A vertical sleeve support can have number of induced reactions
- a) 1
 - b) 2

- c) 3
 - d) 4
20. Torque required to be applied in a shaft with increased length will be for the same amount of twist
- a) increased
 - b) decreased
 - c) constant
 - d) doubled
21. According to Euler's theory, the critical load is
- a) directly proportional to flexural rigidity
 - b) inversely proportional to flexural rigidity
 - c) inversely proportional to length of column
 - d) directly proportional to square of length of column
22. Which of the following method is best suited to calculate the slope at supports of simply supported beam (SSB) loaded with central concentrated load
- a) real work method
 - b) strain energy method
 - c) slope deflection method
 - d) unit load method
23. For the influence line diagram (ILD) drawn for shear force at any section ('a' unit far from left support) in a simply supported beam of 'L' span, the ratio of maximum positive ordinate to maximum negative ordinate will be
- a) $(a/L) - 1$
 - b) $(L/a) + 1$
 - c) $(a/L) + 1$
 - d) $(L/a) - 1$
24. In Muller Breslau principle, the deflection shape of structure due to applied unit force resembles the shape of influence line diagram in some scale, the scale factor is
- a) amount of deflection at any point along deflected curve
 - b) amount of deformation which was intentionally created
 - c) amount of slope at any point along deflected curve
 - d) amount of shear force at any point along the conjugate beam
25. Load combinations are the loadings formed by theof the independent loading conditions.
- a) Linear combination

- b) Non-linear combination
 - c) Exponential functions
 - d) Binary functions
26. Slump test of concrete is conducted to determine the
- a) Strength
 - b) Workability
 - c) Soundness
 - d) Durability
27. Which of the following statement is the most appropriate?
- a) beam is designed in compression and checked for shear
 - b) beam is designed in shear and checked for bending
 - c) beam is designed for bending and checked for shear
 - d) beam is designed for bending and checked for torsion
28. According to IS 456:2000, $E_c = 500\sqrt{f_{ck}}$, where E_c represents
- a) long term static modulus of elasticity of concrete in N/mm^2
 - b) short term static modulus of elasticity of concrete in KN/m^2
 - c) short term static modulus of elasticity of concrete in N/mm^2
 - d) long term static modulus of elasticity of concrete in KN/m^2
29. Which of the following members can resist axial compression?
- a) strut
 - b) tie
 - c) beam
 - d) cable
30. According to national building code (NBC) 202:2015, maximum unsupported length of long wall between cross walls shall be limited to
- a) 4.0 m
 - b) 4.5 m
 - c) 5.0 m
 - d) 5.5 m
31. The impermeable layer of soil below the ground that neither contain nor transmit water is called as
- a) aquifer
 - b) aquiclude
 - c) aquifuge

- d) aquitard
32. In Nepal, water supply pipes of a pumping system of water distribution network are generally designed for a velocity not exceeding to
- a) 0.6 m/s
 - b) 1.5 m/s
 - c) 4.5 m/s
 - d) 3 m/s
33. Rate of filtration in terms of lph/m² for a rapid sand filter lies in between
- a) 3000 to 6000
 - b) 2000 to 6000
 - c) 6000 to 15000
 - d) 100 to 200
34. Design discharge of lateral sewers in Nepal are taken as times average discharges.
- a) 1.8
 - b) 2 to 4
 - c) 2 to 5
 - d) 1.4
35. The sludge produced in an activated sludge process is considered as an average sludge when the sludge volume index (SVI) is
- a) 50 to 100 ml/g
 - b) 100 to 200 ml/g
 - c) 50 – 100 g/ml
 - d) > 200 ml/g
36. According to Environment Protection Act (EPA), 2019 of Nepal, which of the following Environmental Assessment (EA) processes mandatorily requires scoping document.
- a) BES and IEE
 - b) IEE and EIA
 - c) EIA
 - d) BES
37. Which of the following type of irrigation method uses artificial rain-like system to irrigate the land?
- a) sprinkler irrigation method
 - b) furrow irrigation method
 - c) drip irrigation method

- d) border irrigation method
38. Which of the following canal alignment encounters maximum number of cross-drainage works?
- a) contour canal
 - b) side slope canal
 - c) detour canal
 - d) ridge canal
39. The path represented by the streamlines is called as -
- a) energy dissipation
 - b) flow net
 - c) water flow
 - d) hydraulic jump
40. At which stage most sediment deposition occurs in a river?
- a) through stage
 - b) boulder stage
 - c) alluvial stage
 - d) delta stage
41. The canal structure provided over a river or valley is called as
- a) Syphon
 - b) Aqueduct
 - c) Ditches
 - d) Super passage
42. Tile drainage should be placed in -----
- a) shallow depths
 - b) more pervious strata
 - c) less pervious strata
 - d) pervious strata
43. Upper Tamakoshi hydroelectric project, which is under construction, will have installed capacity of -----
- a) 546 MW
 - b) 564 MW
 - c) 456 MW
 - d) 654 MW

44. -----is not a consideration for site selection of hydroelectric power plant.
- rocky land
 - sedimentation
 - large catchment area
 - availability of water
45. Which element of hydroelectric power plant prevents the penstock from water hammer phenomenon?
- valves and gates
 - draft tubes
 - spillway
 - surge tank
46. The critical velocity (V_{cs}) to settle a particle is given by
- $V_{cs} = \text{Mean depth of the settling basin (D)} / \text{Hydraulic Residence Time (HRT)}$
 - $V_{cs} = \text{Hydraulic Residence Time (HRT)} / \text{Mean depth of the settling basin (D)}$
 - $V_{cs} = \text{Hydraulic Residence Time (HRT)} * \text{Mean depth of the settling basin (D)}$
 - $V_{cs} = \text{Hydraulic Residence Time (HRT)} - \text{Mean depth of settling basin (D)}$
47. Forebay in hydroelectric power plant is a -----
- normal reservoir
 - temporary reservoir
 - regulating reservoir
 - a type of coffer dam
48. Which principle is used in Hydraulic Turbines?
- Braggs law
 - Pascal's Law
 - Faraday Law
 - Newton's second law
49. The roads with average daily traffic (ADT) of 5000 to 20000 passenger car unit (PCU) in 20 years perspective periods are called as
- class I roads
 - class II roads
 - class III roads
 - class IV roads
50. As per Nepal Road Standards (NRS 2070), the cross slope of a Water Bound Macadam (WBM) road should be considered as

- a) 5.0%
 - b) 2.5%
 - c) 4.0%
 - d) 1.5 to 2.0%
51. The viscosity of a bitumen sample is expressed in
- a) psi
 - b) dynes
 - c) mm^2/sec
 - d) sec
52. The definite peak value of speed across the section from the frequency distribution curve provides
- a) modal speed
 - b) mean speed
 - c) speed for regulation
 - d) spot speed
53. Standard axel load of a vehicle in Nepal is considered as
- a) 102 KN
 - b) 101.7 KN
 - c) 81.6 KN
 - d) 82 KN
54. Which of the following joint is not a road joint?
- a) tyton
 - b) expansion
 - c) construction
 - d) warping
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
61. Tar is the by-product of
- a) Petroleum
 - b) Wood
 - c) Coal
 - d) Kerosene
62. The ultimate tensile strength of structural mild steel is about
- a) 160 N/mm²
 - b) 2400 N/mm²
 - c) 420 N/mm²
 - d) 520 N/mm²

63. Which of the following is not a method of levelling?
- Spirit levelling
 - Traverse levelling
 - Barometric levelling
 - Trigonometric levelling
64. Handling of materials is classified in the
- Job overheads
 - Water charges
 - General overheads
 - Miscellaneous works
65. Which of the following represents the percentage limit of porosity of the compacted sand?
- 5-15
 - 15-30
 - 30-40
 - 40-50
66. If the shearing stress is zero on two planes, then the angle between the two planes is
- 45°
 - 90°
 - 135°
 - 225°
67. The seepage force in the soil is.....
- proportional to head loss
 - proportional to exit radius
 - parallel to the equipotential lines
 - perpendicular to gradient line
68. The ratio of settlement at any time (t) to the final settlement is known as
- compression index
 - consolidation coefficient
 - degree of consolidation
 - degree of saturation
69. Surface tension
- acts in the plane of the interface normal to any line in the surface
 - is also known as capillarity
 - is a function of the curvature of the interface
 - decreases with fall in temperature
70. Bernoulli's equation can be applied when the flow is
- rotational
 - turbulent
 - unsteady
 - steady
71. Pressure intensity or force due to pressure gradient for fluid at rest is considered as which of the following kind of force?
- Body force

- b) Force due to motion
 - c) Surface force
 - d) Tension force
72. Which factor influences the shape of a runoff hydrograph the most?
- a) Basin area
 - b) Soil depth
 - c) Channel slope
 - d) Precipitation intensity and duration
73. When a section is subjected to two equal and opposite forces tangentially to the section, the stress produced is known as
- a) Tensile stress
 - b) Lateral stress
 - c) Shear stress
 - d) Zero stress
74. The maximum vertical deflection under live load for a cantilever member supporting brittle cladding in an industrial building is:
- a) $\text{Span}/240$
 - b) $\text{Span}/180$
 - c) $\text{Span}/120$
 - d) $\text{Span}/150$
75. Bending moment at any section in a conjugate beam gives in the actual beam
- a) deflection
 - b) slope
 - c) curvature
 - d) bending moment
76. The amount of bending moment induced in a cable is
- a) unity
 - b) zero
 - c) varies upon the load conditions
 - d) twice
77. The load factor for plastic design of steel structure considering earthquake resistant design of structures:
- a) $1.7(DL+IL)$
 - b) $1.2(DL+IL)$
 - c) $1.0(DL+IL)$
 - d) $0.5(DL+IL)$
78. For mass concrete work, the degree of workability should be
- a) very high
 - b) high
 - c) medium
 - d) low
79. AS per IS 456 (2000), for a column design, the cross-sectional area of longitudinal reinforcement, shall beof gross-sectional area of the column
- a) not less than 0.8% nor more than 6%

- b) not less than 1.8% nor more than 4%
 - c) not less than 0.06% nor more than 0.8%
 - d) not less than 1% nor more than 5%
80. The timber floor not spanning on the masonry wall but properly anchored to the wall gives
- a) lateral restraint but not rotational restraint
 - b) rotational restraint but not lateral restraint
 - c) both lateral and rotational restraints
 - d) neither lateral nor rotational restraint
81. Out of the following, which is surface source of water
- a) Spring
 - b) Tube well
 - c) Open well
 - d) Pond
82. Colloidal particles are removed by the process of
- a) aeration
 - b) plain sedimentation
 - c) sedimentation with coagulation
 - d) filtration
83. No treatment of the sewage is given if dilution factor is
- a) Less than 150
 - b) Between 150 to 200
 - c) Between 200 to 300
 - d) More than 500
84. Environmental Impact Assessment ensures that environmental concerns are included during which project stage?
- a) Operation stage
 - b) Design stage
 - c) Planning and decision-making stage
 - d) Post-construction stage
85. By how much percentage canal capacity is increased to meet peak demands in a month?
- a) 15-20
 - b) 20-25
 - c) 25-30
 - d) 30-40
86. Design a lined canal carrying a discharge of 20 cumecs. The slope is 1 in 7000. Assume suitable values for side slopes and lining.
- a) Side Slope = 1.2: 1, Depth = 4.4 m
 - b) Side Slope = 1.4: 1, Depth = 4.1 m
 - c) Side Slope = 1.5: 1, Depth = 3.77 m
 - d) Side Slope = 1.3: 1, Depth = 4.5 m
87. What device is placed in front of head regulator for silt removal?
- a) Weir
 - b) Silt Extractor
 - c) Silt Excluder

- d) Barrage
88. The canal water flows freely under gravity in which of the following Cross Drainage works?
- a) Aqueduct and Super passage
 - b) Super passage and Syphon
 - c) Canal Syphon and Aqueduct
 - d) Level-crossing and inlets outlets
89. Which among the following plants have the least operating cost?
- a) Gas turbine power plants
 - b) Hydroelectric power plants
 - c) Nuclear power plants
 - d) Thermal power plants
90. The length of horizontal blanket should be equal to
- a) 3 times the height of the dam
 - b) 4 times the height of the dam
 - c) 5 times the height of the dam
 - d) 6 times the height of the dam
91. The Surge Tank is associated with which type of power plant?
- a) Low head hydro
 - b) High head hydro
 - c) Medium head hydro
 - d) Thermal power plant
92. Which turbine has highest speed?
- a) Pelton wheel turbine
 - b) Francis turbine
 - c) Kaplan turbine
 - d) Impulse turbine
93. Which of the following is not considered when designing highways?
- a) Pavement settlement
 - b) Level of service
 - c) Sight distance
 - d) Cross-section
94. If the center to center spacing of the vehicles is 20 meters, then the basic capacity of a traffic lane at a speed of 50 kmph is
- a) 2500 vehicles per day
 - b) 2000 vehicles per hour
 - c) 2500 vehicles per hour
 - d) 1000 vehicles per hour
95. Which of the following pavements is better for highway lighting?
- a) Gravel Road
 - b) Water Bound Macadam Road
 - c) Bituminous bound Macadam Road
 - d) Cement Concrete Road

96. The ductility value of bitumen for suitability in road construction should not be less than
- a) 30 cm
 - b) 40 cm
 - c) 50 cm
 - d) 60 cm
97. What is the reduction in the value of capital assets called?
- a) Capital expenditure
 - b) Capital loss
 - c) Loss
 - d) Deficit
98. According to the time estimates made by the PERT planners, the maximum time that would be needed to complete an activity is called as
- a) The most likely time estimate
 - b) Optimistic time estimate
 - c) Pessimistic time estimate
 - d) Expected time estimate
99. Following document defines the legal rights and obligations of the parties and may be described as the regulations under which the contract will be performed.
- a) Specifications
 - b) General Conditions of Contract
 - c) Special provisions
 - d) Bill of Quantities
100. X is a director of a Private Bank in Nepal; the bank has opened few posts for recruitment of computer engineers in one of their branches through lateral entry. X recommends the name of his nephew to the selection board, the selection board members all feel under pressure and influence of X because of his status in the company. What of the following ethical issues pertain to X's behavior in the matter.
- a) Conflict of Interest
 - b) Nepotism
 - c) Embezzlement
 - d) Conflict of Competence

