

1. Which of the following is not a negative impact of transportation?
- A. Safety
 - B. Energy consumption
 - C. Mobility
 - D. Pollution

ANSWER:C

2. Safety criteria of transportation is viewed under
- A. Political role of transportation
 - B. Environmental role of transportation
 - C. Social role of transportation
 - D. Behavioral role of transportation

ANSWER:B

3. Gravity model is used in transportation planning for
- A. Modal split
 - B. Trip distribution
 - C. Trip generation
 - D. Trip assignment

ANSWER:C

4. If the design speed is 50km/hr with a reaction time is 2.5sec and coefficient of friction is 0.3 on road ascending gradient of 2% the minimum stopping sight distance for two lane, two way traffic is
- A. 65.5m
 - B. 69.9m
 - C. 131m
 - D. 139.8

ANSWER:A

5. The provision of traffic signals at intersections
- A. Reduces right angle and rear end collisions
 - B. reduces right angled and rear end collisions
 - C. increases right angled and rear end collisions
 - D. reduces right angled collisions but may increase rear end collisions

ANSWER:D

6. Which one is false statement?
- A. Volume is the number of vehicles or persons passing a point during a specified time of period.
 - B. Capacity is the maximum and repeatable volume of vehicles/travelers that can traverse a point or short segment during a specified time of period.
 - C. Demand is the number of vehicles or persons that desire to travel or pass a point during a specified period also usually one hour.
 - D. Level of Service (LOS) expresses the performance of a highway at capacity less than traffic volumes.

ANSWER:D

7. Which statement is false about Utility?

- A. When time and cost have negative coefficient the utility is bad.
- B. When frequency have positive coefficient the utility is good.
- C. When time and cost have negative coefficient the utility is good.
- D. Utility is used to measure the satisfaction/ happiness of the choice mode.

ANSWER:C

8. Which one is the road cross sectional element?

- A. Lane
- B. Tangent length
- C. Curve radius
- D. Speed

ANSWER:A

9. As a highway Engineer where the side drains are provided in hill roads?

- A. Only on the opposite side of hill
- B. On both sides of the road
- C. Only on the hill side of the road
- D. None

ANSWER:C

10. In Parabolic equation of $ax^2 + bx + c$ for vertical curve the value of c is:

- A. Equal to the elevation of low point of curve
- B. Equal to the elevation of beginning of curve
- C. Equal to the elevation of high point of curve
- D. Equal to the elevation of end point of curve

ANSWER:B

11. If the design speed on a highway is 60km/h with radius of curve is 150m and coefficient of friction is 0.15 then the super elevation of the road is

- A. 0.15
- B. 0.04
- C. 0.038
- D. 0.07

ANSWER:C

12. Which one is not consider in vertical alignment of a highway?

- A. Curve widening
- B. Design of gradients
- C. Design of sag curves
- D. Sight distance

ANSWER:A

13. Which one of the following is not the effect of grade increment in operation?

- A. Reduction in speed
- B. Increase in gasoline consumption
- C. Increase in emissions and noise
- D. None

ANSWER:D

14. Which highway parameter does not affect by Length of vehicle?

- A. Pavement thickness
- B. Extra widening
- C. Minimum radius of turning
- D. Length of horizontal curve

ANSWER:A

15. The number of traffic conflict points is 32 which type of junction or intersection of road?

- A. 4-legged intersection
- B. Roundabout
- C. T-intersection
- D. Y-intersection

ANSWER:A

16. If the super elevation is 0.07 and width of pavement is 7m then the raise of outer edge with respect to inner edge is _____

- A. 0.47m
- B. 0.49m
- C. 0.48m
- D. 0.50m

ANSWER:B

17. If the super elevation of the highway provided is zero, then the design speed of highway having a curve of 200m and coefficient of friction 0.10 is?

- A. 40km/h
- B. 50km/h
- C. 55km/h
- D. 60km/h

ANSWER:B

18. Obligatory points through which the alignment should not pass are _____

- A. Religious structure and costly structures
- B. Intermediate towns
- C. Important cities
- D. Important places of worship

ANSWER:A

19. If the overall net amount of earthwork for the entire project from mass haul diagram is positive, this shows

- A. Excess of fill
- B. Balanced earthwork
- C. Excess of cut
- D. Excess of borrow

ANSWER:C

20. In which of the following circumstance a highway engineer should select shorter Design Period?

- A. For Important roads,
- B. If the actual or estimated traffic is higher volume,
- C. Roads in difficult location
- D. If there is problem in traffic forecasting

ANSWER:D

21. Which one of the following is not consider during selection of bitumen binder material in highway project?

- A. Environmental conditions of the project
- B. Deformation resistance and potential hardening
- C. Water Absorption
- D. Good resistance to hardening

ANSWER:C

22. Which one of the following is not true?

- A. Ductility is a test used to determine the stretching characteristics of asphalt.
- B. As penetration of asphalt cement increases, viscosity increases.
- C. To increase workability of asphalt, heating action is performed.
- D. Volatile solvents are mixed with asphalt cement to make cutback asphalt

ANSWER:B

23. In general which property of aggregate is suitable for highway construction?

- A. Permeable
- B. Thin and elongated
- C. Free from dust
- D. Hydrophilic (water loving)

ANSWER:C

24. Which one is not true about earth roads?

- A. Designed for a very low traffic
- B. Used when there is economic limitation
- C. The natural sub grade soil can be made to carry the traffic load after clearing and shaping
- D. Give all seasonal services so that reshaping after seasonal changes will not require.

ANSWER:D

25. Which one of the following road type has higher quality in relation to passenger and driver comfort?

- A. Flexible pavement
- B. Gravel road
- C. Rigid pavement
- D. Earth road

ANSWER:A

26. Which of the following tests measures the toughness of road aggregates?

- A. crushing strength test
- B. abrasion test
- C. impact test
- D. shape test

ANSWER:C

27. Which one of the following pavement type has higher design life?

- A. Flexible pavement
- B. Full depth asphalt
- C. Rigid pavement
- D. Earth road

ANSWER:C

28. In the wet soil mass, air occupies one-sixth of its volume and water occupies one- third of its volume. The void ratio of the soil is:

- A. 0.25
- B. 0.5
- C. 1.0
- D. 1.5

ANSWER:C

29. The effective size of particles of soil is denoted by

- A. D_{10}
- B. D_{15}
- C. D_{30}
- D. D_{60}

ANSWER:A

30. The coefficient of curvature for a well graded soil, must be between

- A. 0.5 to 1.0
- B. 1.0 to 3.0
- C. 3.0 to 4.0
- D. 4.0 to 5.0

ANSWER:C

31. The predominant mineral responsible for shrinkage and swelling in black cotton soils is:

- A. Illite
- B. Kaolinite
- C. Mica
- D. Montmorillonite

ANSWER:D

32. The type of boring method that can be used for both rock and soils are

- A. shell boring
- B. wash boring
- C. auger boring
- D. rotary boring

ANSWER:D

33. Liquid limit exists for

- A. Sandy soils
- B. Clayey soils
- C. Sandy soils
- D. Gravelly soils

ANSWER:B

34. For highly fissured clay the best method to find the shear strength is

- A. Direct shear test
- B. Triaxial test with $\sigma_3=0$
- C. Field van shear test
- D. Unconfined compression test

ANSWER:A

35. For testing a saturated clay for shear strength, the test recommended, is

- A. Direct shear test
- B. Triaxial compression test
- C. Unconfined compression test
- D. All the above

ANSWER:C

36. Failure of the stability of slopes, generally occurs along
- A. Slip plane
 - B. A horizontal surface
 - C. A curved surface
 - D. All the surfaces

ANSWER:C

37. The compression resulting from a long term static load and consequent escape of pore water, is known as:
- A. Compaction
 - B. Melting
 - C. Swelling
 - D. Consolidation

ANSWER:D

38. Sample has preserved natural structure of soil.
- A. undisturbed
 - B. disturbed
 - C. non-representative
 - D. remolded

ANSWER:A

39. Which of the following method is adopted for fast boring?
- A. cylindrical augers
 - B. percussion boring
 - C. rotary boring
 - D. Wash boring

ANSWER:D

40. For transport of sample to laboratory, the sample is:
- A. wrapped in wax paper
 - B. mixed with other samples
 - C. given disturbance
 - D. saturated with lime

ANSWER:A

41. The total blow required for the second and third 15 cm of penetration in standard penetration test is taken as
- A. Seating drive
 - B. penetration resistance
 - C. overburden pressure
 - D. Deilintancy /submergence

ANSWER:A

42. The shear strength of a soil
- A. Is directly proportional to the angle of internal friction of the soil
 - B. Is inversely proportional to the angle of internal friction of the soil
 - C. Decreases with increase in normal stress
 - D. Decreases with decrease in normal stress

ANSWER:D

43. A foundation is said to be shallow if its depth is _____ its width.
- A. greater than
 - B. less than
 - C. Unknown
 - D. none of the above

ANSWER:B

44. Which of the below is not a preliminary consideration for building a foundation?

- A. Bearing capacity of soil
- B. Ground water condition
- C. Settlement control
- D. Soil organisms

ANSWER:D

45. When do strap footings are used in foundation?

- A. to transfer load of an isolated column
- B. distance between the columns is long
- C. two column loads are unequal
- D. to avoid combined footing

ANSWER:B

46. When two column loads are unequal, which of the possible footing can be provided?

- A. strap footing
- B. raft footing
- C. trapezoidal combined footing
- D. mat footing

ANSWER:C

47. Local shear failure generally occurs in

- A. Dense sand
- B. non-cohesive soil
- C. loose sand
- D. all of the mentioned

ANSWER:C

48. Which of the following is not one of the criteria, for design of gravity retaining wall?

- A. The wall must be thinner in section
- B. The wall must be safe against overturning
- C. The wall must be safe against sliding
- D. No tension should be developed in the wall

ANSWER:A

49. For the design of gravity dam, the minimum value of FS (factor of safety) against sliding should be

- A. 2.0
- B. 1.5
- C. 0.5
- D. 4.0

ANSWER:B

50. The piles that are used for protecting structures from ships and floating object is

- A. Anchor piles
- B. Fender piles
- C. compaction piles
- D. batter piles

ANSWER:C

51. When a pile hammer hits the pile, the total driving energy is equal to
- A. Weight of hammer times the height of drop
 - B. weight of the ram time times the height of the stroke
 - C. sum of the impact of the ram
 - D. sum of the impact of ram plus the energy delivered by explosion

ANSWER:A

52. The slab is said to be one way slab, if _____.
- A. $L/B \leq 2$.
 - B. $L/B > 2$.
 - C. $L < B$.
 - D. $L/B \geq 0$.

ANSWER:B

53. _____ are structural components of the building used to provide flat or useful surfaces.
- A. Beams
 - B. Columns
 - C. Slabs
 - D. Braces

ANSWER:C

54. When the resultant of the load does not coincide with the centroid of the cross-section, the column is said to be _____.
- A. Centrally loaded columns.
 - B. Eccentrically loaded columns.
 - C. Laterally loaded.
 - D. All of the above.

ANSWER:B

55. Which of the following is incorrect about concrete.
- A. concrete does not resist any tensile stresses
 - B. concrete does not resist any Compressive stresses
 - C. It does not deteriorate with time.
 - D. It is difficult to demolish in case of repair or modification.

ANSWER:B

56. Which of the following is the oldest and simplest method of design used for reinforced concrete structures?
- A. Working Stress Design Method
 - B. Ultimate Strength Design Method
 - C. Limit State Design Method
 - D. Unknown

ANSWER:A

57. If the moisture content increases in the concrete, what will happened?
- A. it does not change the strength the concrete
 - B. it reduces the strength the concrete
 - C. it increases the strength the concrete
 - D. Unknown

ANSWER:B

58. Which of the following is not true about the splicing of bars in concrete structure?
- A. Splicing of bars must be provided at max-moment/stress.
 - B. Bars which are spliced should be staggered
 - C. Splices are made simply by lapping the bars a sufficient distance to transfer stress by bond from one bar to the other.
 - D. The required length of lap for tension is approximately $1.3l_b$ and that for compression is l_b .

ANSWER:A

59. One of the following is not the serviceability limit state
- A. Cracking
 - B. Excessive vibration
 - C. Deflection
 - D. Collapse

ANSWER:D

60. Advantages of partial factor of safety for actions is to cater for errors/inaccuracies due to the following cases Except:
- A. Design assumptions and inaccuracy of calculation
 - B. Possible unusual load increment
 - C. c. Unforeseen stress redistributions
 - D. Constructional accuracy

ANSWER:D

61. Which mode of failure is happened without warning when the concrete reaches its maximum strength earlier than steel.
- A. Over reinforced
 - B. Balanced
 - C. Under reinforced
 - D. ample warning before failure

ANSWER:A

62. Which failure is acceptable in reinforced concrete structure?
- A. balanced failure
 - B. brittle failure
 - C. ductile failure
 - D. none of the above

ANSWER:C

63. The ultimate design moment to be resisted by the rectangular reinforced concrete beam is 120 kNm. Determine the area of reinforcement required if the beam concrete strength $f_{ck} = 25 \text{ N/mm}^2$ and steel strength $f_{yk} = 500 \text{ N/mm}^2$ (Take $b = 200 \text{ mm}$ & $d = 400 \text{ mm}$)
- A. 818 mm^2
 - B. 996 mm^2
 - C. 337 mm^2
 - D. 167 mm^2

ANSWER:A

64. The minimum concrete cover sets to satisfy the requirements for:
- A. safe transmission of bond forces
 - B. durability
 - C. adequate fire resistance
 - D. All

ANSWER:D

65. Slab can be considered as two way slab when
- A. Loads go in to one direction
 - B. Slabs deflect only in one direction
 - C. Required main reinforcement will be only in one direction.
 - D. Main reinforcement is designed in both directions.

ANSWER:D

66. Which one is the Concrete strength test
- A. Cube test.
 - B. Slump test.
 - C. Yield test.
 - D. Jar test.

ANSWER:A

67. Which Load is acting on a structure laterally?
- A. Dead load.
 - B. Live load.
 - C. Wind load
 - D. Gravity Load

ANSWER:C

68. The minimum grade of concrete for designing RCC water tank is ____
- A. C 20
 - B. C 15
 - C. C 25
 - D. C 30

ANSWER:D

69. Curing a concrete for long period ensures better
- A. Volume stability
 - B. Strength
 - C. Water resistance
 - D. All the above

ANSWER:D

70. When shear stress exceeds the permissible limit in a slab, then it is reduced by
- A. Increasing the depth
 - B. Providing shear reinforcement
 - C. Using high strength steel
 - D. Using thinner bars but more in number

ANSWER:A

71. One of the following is NOT true among the given alternatives.
- A. The provided area of steel is always greater than the calculated area of steel.
 - B. The provided spacing is always greater than the calculated.
 - C. The required area of steel is always greater than the provided area of steel.
 - D. The required spacing is always greater than the provided spacing.

ANSWER:B

72. One of the following is not influencing factors for selection of dam types

- A. Climate
- B. Availability of construction materials
- C. Topography
- D. Social demography

ANSWER:D

73. which of the following is differ from the others based on its construction material

- A. Arch Dam
- B. Gravity Dam
- C. Buttress Dam
- D. Embankment dam

ANSWER:D

74. The overturning of the dam section takes place, if tension is ignored; when

- A. the resultant force at any section cuts the base of the dam d/s of the toe
- B. the resultant force at any section cuts the base of the dam U/s of the heel
- C. the resultant intersects the base within the kern
- D. the horizontal forces are more than the resistance.

ANSWER:A

75. A type of embankment dam with a central impervious core covered by a relatively pervious transition filter which is finally surrounded by a more pervious outer shells is

- A. Zoned embankment type
- B. Homogenous type
- C. Diaphragm type
- D. Rock dam

ANSWER:A

76. In the Earthen dam, The line of saturation/ the upper boundary of the flow line below which the flow is under hydrostatic pressure is termed as:

- A. Water table
- B. Phreatic line
- C. Drainage line
- D. Piping

ANSWER:A

77. What is the purpose of coffer dam?

- A. For discharging surplus water from the reservoir to the downstream channel.
- B. A means for conveying water from dam to turbine
- C. to prevent the entrance of debris into Intake structure
- D. to separate and safeguard the construction area from the water body in a river in order that the excavation work for a bridge or other structure

ANSWER:D

78. One of the following is benefit of project scheduling:

- A. Project schedule defines project scope of work and shows how the project is to be run.
- B. Project schedule signifies a project work plan on time basis.
- C. Project schedule identifies critical activities to the management of project by exceptions.
- D. Project schedule provides for measuring progress and evaluating resource performance.

ANSWER:B

79. In a construction contract, the contractor is not responsible for:

- A. Procuring material which is not supplied by the owner
- B. Organizing and planning the work as per drawing
- C. Executing the work as per specifications laid down in the contract
- D. Developing the owner's program into a complete set of drawings

ANSWER:D

80. Which of the following is NOT a task of project management?

- A. Control cost and budgets for a specific project.
- B. Brainstorming ideas for new projects.
- C. Plan and monitor tasks and resources.
- D. Define goals

ANSWER:B

81. You recently took over a project from another project manager. While reviewing the network diagram, you find that there are four critical paths and three near-critical paths. What can you conclude about the project?

- A. The project will likely be completed on time and within budget
- B. The project is at high risk
- C. The project will require more people and additional budget
- D. The project should be terminated.

ANSWER:B

82. Under which construction project development phase will the owner conduct inspection of the installed facilities?

- A. Project initiation phase
- B. Project planning phase
- C. Project execution phase
- D. Project commissioning phase

ANSWER:D

83. If the expected time for completion of a project is 10 days with a standard deviation of 2 days, the expected time of completion of the project with 99.9% probability is

- A. 4 days
- B. 6 days
- C. 10 days
- D. 16 days

ANSWER:D

84. How many bags of cement is required for c-25 cement concrete (1:2:3)? (Consider a factor of 1.5 for dry base analysis and wastage).

- A. 8 bags
- B. 6 bags
- C. 3.6 bags
- D. 9.5 bags

ANSWER:A

85. How many bags of cement is required for plastering 1m² of 12mm thick wall in 1:4 mortar? Consider 1.55 factor for dry base analysis.

- A. 0.1 bag
- B. 2 bags
- C. 6 bags
- D. 3 bags

ANSWER:A

86. Which of the following is true about open and closed specification?

- A. Closed specifications allow substitutions
- B. In open specifications one or more products are specified, but other manufacturers will be considered
- C. Both closed and open specifications prohibit substitutions
- D. None

ANSWER:B

87. _____ is the process of preparing/defining a detailed list of all labor and materials necessary for the work and entering the items on properly dimensioned paper.

- A. Taking Off
- B. Bill of Quantity
- C. Centre line method
- D. none

ANSWER:A

88. What is density of steel?

- A. 2400kg/m³
- B. 7850kg/m³
- C. 8560kg/m³
- D. 1400kg/m³

ANSWER:B

89. Which one of the following factors doesn't affect project cost estimation?

- A. Proper management
- B. Nature of subsurface condition
- C. Construction scheduling
- D. None

ANSWER:D

90. Which one of the following statements is not true?

- A. Fascia boards, eaves, skirting shall be measured by length stating girth
- B. Steel beams, trusses, columns and purlins, bracings, rails, etc. Shall be measured by weight (kg),
- C. Doors and windows shall be measured by area
- D. Concrete pipes shall be measured in length, stating the diameter

ANSWER:C

91. In a case where there is a contradiction arises between the drawing and specification in executing of a specific activity, which one shall govern?

- A. Drawing
- B. Specification
- C. Quantity
- D. Take off sheet

ANSWER:B

92. If fineness modulus of sand is 2.5, it is graded as.....

- A. Very fine sand
- B. Fine sand
- C. Medium sand
- D. Coarse sand

ANSWER:B

93. What are building materials?

- A. Substance that which cannot be utilized in the construction of a structure
- B. Substance that is utilized in the construction of a structure and finishing works
- C. Substance that is utilized in the manufacturing of construction materials
- D. None of the mentioned

ANSWER:B

94. Stainless steel materials resist corrosion due to they are covered with

- A. Carbon
- B. Steel
- C. Vanadium
- D. Chromium

ANSWER:D

95. ____ is a mixture of cement, sand, crushed stone and water, which, when placed in the skeleton of forms and are allowed to cure, becomes harden like a stone?

- A. Cement mortar
- B. Cement grouting
- C. Cement concrete
- D. Cement slurry

ANSWER:C

96. Which of the following constituent in earth gives plasticity and acts as a cementing material to mold bricks in suitable shape?

- A. Silica
- B. Lime
- C. Alumina
- D. Magnesia

ANSWER:C

97. ____ is found in the rift valley and widely used for manufacturing of light weight concrete block and for the production of Portland Pozzolana Cement.

- A. Pumice
- B. Trachyte
- C. Sandstone
- D. Granite

ANSWER:A

98. An asphalt concrete mix contains 2240 kg of aggregate and 160 kg of asphalt binder per m³. Asphalt absorption of the aggregate is 1.3%. The bulk relative density of the aggregates is 2.58, and the relative density of the asphalt is 1.02. Find total asphalt and effective asphalt content respectively?

- | | |
|-------------------|---------------------|
| A. 29.12% & 5.45% | C. 6.67% & 5.45% |
| B. 6.67% & 29.12% | D. 29.12% & 130.88% |

ANSWER:B

99. Which of the following cement is used for interior and exterior decorative works?

- | | |
|------------------------|---------------------------|
| A. Low Heat Cement | C. Rapid Hardening Cement |
| B. High Alumina Cement | D. Colored Cement |

ANSWER:D

100. What are the basic principles of bituminous stabilization?

- | | |
|------------------|-------------------------------|
| A. Waterproofing | C. Waterproofing and cohesion |
| B. Cohesion | D. Adhesion |

ANSWER:C