

1. How much is the moment of 90N force, about point "A" for the condition $\theta = 150^\circ$?

a) 20KN.m b) 30KN.m c) 40KN.m d) 50KN.m e) All f) None

2. How much is the value of θ for which the moment about "A" is zero?

a) 1rad b) 3.1 rad c) 2.1 rad d) 3.5 rad e) All f) None

3. How much is the value of θ for which the moment about "A" is Maximum?

a) 1rad b) 3.1 rad c) 2.1 rad d) 3.5 rad e) All f) None

4. Design of reinforced concrete simply supported beams carrying uniformly distributed loads is based on the resultant bending moment at:

a) Face of Supports b) Mid Span c) Every Section d) One Third of a span

5. The thickness of the topping of ribbed slab in wet areas, varies between

a) 3 to 5cm b) 5 to 8cm c) 8cm to 10cm d) 12cm to 15cm

6. Portion of dam in contact with ground at downstream side is __

a) Crest

b) Toe

c) Foot

d) Heel

7. Based on the function, a dam can be classified into:

a) 5

b) 8

c) 10

d) 6

9. Which of the following is the correct equation for the electrical power generated by the hydroelectric power plant?

a) $75 \times 0.736 \rho Q H \eta$ Watt

b) $(7.5/0.736) \times gQH\eta$ Watt

c) $0.845 \times gQH\eta$ Watt

d) $9.81 \times gQH\eta$

10. Which of the following is not a requirement for site selection of hydroelectric power plant?

a) Availability of water

b) Large catchment area

c) Rocky land

d) Sedimentation

11. Which one of the following is not related with works done during road route selection?

a) Determination of vertical & horizontal curve dimensions

b) Examination of manmade and natural features

c) Identification of feasible route

d) Preliminary economic and environmental study

12. Which one of the following is not related with main geometric design control criterion in highway design?

a) Traffic Volume b) Terrain class c) Road Functional Class d) None

13. Which of the following is correct regarding horizontal and vertical alignments?

a) Vertical geometry is critical for sight distance requirement whereas horizontal geometry doesn't have any impact on sight distance.

b) Both horizontal and vertical geometry of road has no impact on safety and comfort of end users.

c) Grade of the road is affected by horizontal alignment whereas superelevation value is affected by vertical alignment

d) Both Horizontal and Vertical alignments help us to deal the threedimensional context of a geometric design in to separate two-dimensional

problem which are easy to analyze

14. What is the main purpose of providing super-elevation on horizontal curve location?

- a) Increasing Sight distance
- b) To keep vehicles on their land and increasing safety of the road
- c) Facilitating surface drainage
- d) Breaking speed of vehicle

15. In road earth work construction, what forces us to cart away excavation soil and import

fill material from quarry site?

- a) Poor quality excavated material
- b) Uneconomical hauling distance
- c) Excess fill volume than excavated material
- d) Excess cut volume than fill volume
- e) All except C

16. Which of the following is not a part of unbound pavement material?

- a) Crushed stone
- b) Natural gravel
- c) Mechanical stabilized material
- d) Chemical stabilized material
- e) Subgrade soil

17. The tensile stress from the vehicle load of asphalt concrete road is resisted by the

asphalt cement/bitumen component, which of the physical tests of asphalt cement contributing for the tensile stress resistance of asphalts concrete road?

- a) Absolute viscosity

- b) Dynamic viscosity
- c) Softening point test
- d) Ductility test
- e) Flash point

18. Which of the following asphalt concrete mix design parameters has generally a decreasing trend when asphalt content increases?

- a) Stability
- b) Air void (Void in Total Mix)
- c) Flow
- d) Void filled with Asphalt
- e) Void in mineral aggregate

19. Subgrade strength is one of the factors of structural design of pavement layers, which

of the following percentile values are recommended for determination of design subgrade CBR value based on Ethiopian Roads Administration (ERA) Manual?

- a) 90th percentile
- b) 80th percentile
- c) 85th percentile
- d) 95th percentile
- e) 97th percentile

20. Which of the following is not the main factor of pavement deterioration rate?

- a) Weather condition
- b) Traffic loading
- c) Pavement thickness
- d) Construction quality
- e) Fatigue cracking

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21. What will be the coefficient of passive earth pressure, at a depth of 8m in cohesion-less soil (Sand) with 300

angle of internal friction?

a) 4 b) 5 c) 3 d) 1 e) All

22. The material retained or supported by a retaining structure is called ____.

a) Surcharge b) Support wall c) Back fill material d) All

23. On designing retaining walls it is necessary to take care of the ____ exerted by soil mass.

a) Lateral earth pressure b) Erosion c) Surcharge d) All

24. Cantilever retaining walls can safely and economically be used for a height not more than

a) 3m b) 5m c) 4m d) 7.5m e) All

25. The portion of the backfill lying above the horizontal plane at the top of the retaining wall is called ____.

a) Active state b) Surcharge c) Slip lines d) Plasticity

26. One of the following strengths of material best refers to maximum strength of materials.

a) Ductile b) Stress c) Ultimate d) Rapture

27. Among the physical properties of materials listed below, which one is most related to the freeze and thawing action?

a) Density b) Specific gravity c) Porosity d) Permeability

28. Which of the following material is chosen when there is a high tensile force?

a) Porous b) Ductile c) Brittle d) Permeable

29. Which one of the following impurities in water attack protective oxide film of steels?

a) Chloride b) Silt c) Sugar d) Permeable

30. Which one of the following is prone to sulphate attack?

a) C4AF b) C2S c) C3S d) C3A e) C2SCOS

31. Which one of the following impurities contributes to corrosion of reinforcement bars?

a) Salt b) Silt c) Sugar d) Permeable e) None

32. Which one of the following impurities contributes to rapid setting in concrete?

a) Salt b) Silt c) Sugar d) Permeable e) None

33. What does the term uniformly grade refers on sieve analysis of aggregates?

a) Single sized

b) Open graded

c) Gap graded

d) Fine graded

34. Which one of the graded types of aggregate requires more paste?

a) Coarse sized

b) Uniformly graded

c) Large graded

d) Finely graded

35. Which type of concrete admixture used in smaller amount as compared to the other type?

a) Pozzolanic

b) Chemical

c) Mineral

d) Physical

36. Which one of the following is not the main purpose of a building foundation?

a) Spread the load to create good bearing capacity by the ground

b) Anchor the building

c) Carry the structural load of the building

d) Distribute the load so as to avoid unequal settlement

37. Which foundation type will be suited for an earth retaining wall?

a) Pile foundation

b) Strip /line foundation

c) Isolated foundation

d) Combined pad foundation

38. Which material cannot be used for construction of load bearing wall?

a) Reinforced concrete

b) Timber

c) Bricks

d) None of the above

39. Which construction of wall refers to a wall constructed of materials made into units and stacked together using different binding mechanisms?

a) Monolithic wall

b) Masonry wall

c) Shear wall

d) Cavity wall

40. Suppose the given site has a sloppy topography with loose bearing capacity and swampy water feature, what would be the type of slab system you propose?

a) Ground supported slab

b) Basement floor slab

c) Ground suspended slab

d) Ribbed slab

41. ___ is not a function of a door

a) Privacy

b) Resistance to weather

- c) Fire safety
- d) None

42. Of the types of doors, which one is preferably more functional in wet areas?

- a) Flush type door
- b) Wooden door
- c) uPVC door
- d) Metal door

43. What is the purpose of a vertical circulation?

- a) Provide a means of circulation between floor levels.
- b) Establish a safe means of travel between floor levels.
- c) Provide an easy means of travel between floor levels.
- d) All the above

44. In terms of material usage, which type of staircase is most preferable for an emergency exit?

- a) Concrete
- b) Wooden
- c) Steel ‘
- d) Composite

45. Which one is NOT a functional requirement of a roof system?

- a) Fire safety
- b) Strength and stability
- c) Weather resistance
- d) Aesthetic

46. Which of the following is a type of construction technology used for building high-rise buildings?

- a) Reinforced concrete
- b) Timber framing.
- c) Adobe construction
- d) Stone masonry

47. What is Building Information Modeling (BIM)?

- a) A 3D modeling software for architects and engineers
- b) A method of construction using prefabricated components
- c) A system of managing construction site logistics
- d) A method of reducing building energy consumption

48. What is prefabrication in construction?

- a) A method of building that uses recycled materials.
- b) A way to construct buildings without using traditional methods.
- c) A technique that involves manufacturing building components off-site
- d) A way to build more sustainably by using eco-friendly materials.

49. What is the primary purpose of Building Information Modeling (BIM)?

- a) To create 3D models of buildings
- b) To coordinate project teams
- c) To manage construction schedules
- d) All

50. Which software is commonly used for BIM modeling?

- a) Microsoft Excel b) Autodesk Revit c) Adobe Photoshop d) Sketch Up

51. Specifications are devices for organizing the information depicted on the drawings and they are written descriptions of the legal and technical requirements forming the contract documents. Among the following which one is described on specifications but not on drawings?

- a) Schedules of finishes, windows and doors
- b) Type and quality of materials, equipment, labor or workmanship
- c) Location of materials, machineries, and fixtures
- d) Interaction of furniture, equipment and space

52. Among the types of specification which one is intended to be used as a reference in construction project that has been standardized by a recognized authority?

- a) Manufacturer's specification
- b) Contract (Project) Specification
- c) Standard Specification
- d) Guide Specification

53. Choose the types of technical specifications that call for desired materials, producers, systems, and equipment by their trade names and model numbers or some other designation that identifies a specific product of a manufacturer.

- a) Performance Specification
- b) Descriptive/Prescription Specification
- c) Brand Name Specification
- d) Reference Specification

54. Choose the type of technical specification that refers to the levels of quality established by a recognized testing authority or standard set by quality control authorities:

- a) Performance Specification
- b) Descriptive/Prescription Specification
- c) Brand Name Specification
- d) Reference Specification

55. A detailed and itemized pricing document that provides project-specific

measured quantities of the items identified in drawings and specifications for a built asset is named ____.

- a) Drawing
- b) Specification
- c) Bill of quantity
- d) Takeoff sheet

56. 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 is called ____.

- a) Taking off
- b) Squaring
- c) Abstracting
- d) Writing the final Bill

57. When the offsets of footings are symmetrical, lengths and breadths of walls are taken for working out various items as shown in plan and this method is known as__.

- a) Centre line
- b) Crossing
- c) In- to- in and out- to-out
- d) None

58. Which of the following is/are the primary objectives of Financial Management?

- a) Maximize the wealth of Equity shareholders
- b) Maximize the wealth of Preference Shareholders
- c) Maximize the wealth of Debenture holders
- d) A and B
- e) C and B
- f) All of the above

59. The term working capital in financial management perspective is

- a) Fixed assets
- b) Total assets
- c) Current assets
- d) Current assets minus current liabilities.
- e) Total assets minus current liabilities
- f) Total assets minus Total liabilities

60. The term capital structure is

- a) Long-term debt, preferred stock, and common stock equity
- b) Shareholders' equity
- c) Total assets minus liabilities
- d) A and B
- e) B and C
- f) All of the above

61. The Current liability of XYZ Construction Company is 30,000ETB and the Current Ratio is 2: 5. The networking Capital in ETB is;

- a) 18,000 b) (45,000) c) (18000) d) 45,000 e) (18,500) f) None

62. Which one of the following is a working capital Management decision?

- a) Determining whether or not a project should be accepted
- b) Determining the amount of equipment needed to complete a job
- c) Determining the amount of long-term debt required to complete a project
- d) Determining whether to pay cash for a purchase or to use the credit offered by the supplier
- e) A and B
- f) All of the above

63. Pick up the incorrect statement from the following:

- a) Downtime is a time where equipment cannot be utilized due to breakage

- b) The cost of disruption is lower for predictive equipment maintenance than for reactive equipment maintenance.
- c) Idle time is the time lost as a result of job interruptions when equipment is ready and available but unable to be used productively.
- d) Equipment contract-related idle costs include overhead costs, additional overtime charges, replacement costs, and cost of personnel.

64. Which of the following would be regarded as supportive equipment?

- a) Motor Grader b) Dump Truck c) Vibrator d) Roller

65. Which of the following project types can be considered equipment-intensive?

- a) Small irrigation projects
- b) Low rise buildings
- c) Small irrigation projects
- d) High rise buildings

66. If you are assigned as construction manager for ABC General Contractor, what are the two most important criteria you should consider in selecting equipment for your projects?

- a) Type and scope of work
- b) Effectiveness and profit maximization
- c) Material influence and machine influence
- d) Time schedule and management condition

67. What is the loading time for a Sino truck with a 15m³ capacity if it is paired with an excavator that has 1.5m³ bucket capacity and a 30-second cycle time?

- a) 3 Seconds

b) 30 Seconds

c) 150 Seconds

d) 300 Seconds

68. While managing a large project, a project manager decided to include indirect costs as part of his cost estimate. If indirect costs are included in an estimate, which of the following is true?

a) Indirect costs should be included at the activity level or higher levels.

b) Indirect costs must be included at the activity level only.

c) Indirect costs should only be included in earned value measurements and not in cost estimates.

d) Indirect costs should not be included in cost estimates.

e) A and B

f) All of the above

69. ____ is the process of developing an approximate estimate cost of resources needed to complete a project

a) Cost Plan Management.

b) Cost Controlling

c) Cost Estimation

d) Determining the Budget

e) A and B

f) C and D

70. ____ considers the total cost of ownership or development plus support costs for a project.

a) Sunk cost

b) Lifecycle cost

c) Direct costs

- d) Indirect costs
- e) C and D
- f) All of the above

71. A theory that states that when many items are produced repetitively, the unit cost of those items normally decreases in a regular pattern as more units are produced.

- a) Learning curve theory
- b) Earned value (EV)
- c) Determining the budget
- d) Planned value (PV)
- e) B and C
- f) All of the above

72. Cash included in a cost estimate to allow for future situations that are unpredictable (sometimes called unknown unknowns Risk).

- a) Indirect costs
- b) Management reserves
- c) Contingency reserves
- d) Direct costs
- e) A and B
- f) C and D

73. The critical path can be defined as the longest track through a network. The computation of the network will determine that there are:

- a) Only one critical path
- b) One or more critical paths
- c) Always more than one critical path

d) Always more than two critical paths

74. What is crashing technique used for?

a) Network Diagramming

b) Duration Compression

c) Cost Reduction

d) Activity Sequencing

75. Which one is an incorrect statement with regards to ground rules for developing a network?

a) Events should have a distinct number

b) The Network must have definite points of beginning and finish.

c) Each event should have preceding and succeeding event except the starting and ending event

d) There should not be a loop formation in a network

e) The network must be continuous

f) None

76. Pick the incorrect statement about dummy activity in drawing project network:

a) Dummy activity is an activity with zero duration consumes no resources

b) Dummy activity drawn as dashed lines, and used to adjust the network diagram.

c) A dummy activity is also used when one activity depends upon two preceding activities and another activity depends only upon one of these two preceding activities.

d) Dummy is used to maintain unique numbering of activities.

e) None

77. In a precedence diagram, the placement of connecting lines to other activities is

significant because the lines indicate:

- a) One of the relationships of logic
- b) A dashed connectivity for dummy activities
- c) The required delay between the finish of one activity and the start of another
- d) Resources needed to complete the next activity

78. A detail project schedule can be created after only creating the_

- a) Project budget
- b) Work breakdown structure
- c) Project management plan
- d) Detailed risk assessment

79. Which of the following is true about critical path of a project?

- a) It is the longest path in the network diagram
- b) It can be used to calculate project finish time
- c) It is a path consisting of activities with zero slack
- d) All of above

80. Which of the following is true regarding construction performance?

- a) The construction sector is one of the largest sectors in the world economy
- b) The construction sector's labor-productivity growth is much higher than manufacturing sector
- c) Productivity in the construction sector is better than the other sectors
- d) Construction is a type of sector that is not fragmented
- e) None of the above is true.

81. The Ethiopian construction performance is low when compared to advanced countries. In addition, some researchers showed that the Ethiopian construction

performance is also lower than some countries with similar economic development. What should be avoided to improve the performance and approach to reach developed countries performance level?

- a) Rethink design and engineering processes
- b) Improve procurement and supply-chain management
- c) Improve on-site execution
- d) Use of new materials and advanced automation
- e) Re-skill the workforce
- f) Inspire mass-production system
- g) Keep Ethiopian current construction performance trend

82. Identify the wrong statement:

- a) Balanced score card is both performance improvement and performance measurement tool.
- b) EVA/EVM is a construction performance improvement management tool.
- c) TQM, ISO 9001, Benchmarking, lean construction and kaizen are management tools that can be used for performance improvement.
- d) Planning & Scheduling, Controlling, Supervision, Materials & Tools availability; lack of motivation of workers are some of management related factors that affect construction productivity positively & negatively

83. Which of the following is true about risk?

- a) One of the strategies of dealing with negative risks is avoiding.
- b) One needs to exploit the opportunity of positive risk and make sure its value is realized.
- c) Opportunity and risk decrease when a construction project reaches to its completion stage

d) Project risk management is proactive

e) All of the above are true

84. What will be the cost of a construction project if actual construction productivity is higher than planned?

a) Cost of a project will be lower as far as inflation is not affecting

b) Cost of a project will be higher like that of productivity as far as inflation is not affecting

c) Productivity has no effect on Cost of a project

d) All of the above are not right answers

85. How is Safety and Health defined in a construction industry?

a) The protection of people from physical injury

b) The protection of minds and bodies of people from illness

c) The protection of assets and material of the client from damage only

d) A & B

e) A,B & C

86. From the following alternatives, which one causes accidents in construction?

a) Unplanned work method, equipment and procedure

b) The dynamic nature of construction

c) Improper use of safety sign and signal

d) Use of different machinery and plants

e) All of the above

87. Which one of the following does not belong to indirect costs of a construction accident?

a) Cost of lost time of supervisory crew

b) Lost time of injured worker

c) Idle equipment

- d) Medical costs
- e) All of the above

88. Role of Client in Construction Safety & Health (SH) is to:

- a) Make sure that the facilities for all of the workers are fulfilled & implemented
- b) Make sure there will be no risks or hazards whilst still in design stage
- c) Ensure that employees comply with the SH site regulations
- d) Make sure site staff are responsible for day-to-day management of SH
- e) A and C

89. In a construction, risk is defined as:

- a) Any uncertain event or condition that might affect a project objective negatively
- b) Probability & Impact
- c) Highly exposed to safety and health related issues
- d) All of the above

90. A public body intends to build a highway connecting two business cities.

Unfortunately, the entity does not have sufficient budget to complete the project with due urgency. What kind of delivery system is best suitable for this project?

- a) Force Account
- b) Design Bid Build
- c) Finance Design Build Operate and Transfer (FDBOT)
- d) Design Build Operate Transfer (DBOT)

91. Which one of the following Procurement & Contract Management processes specifically involves Claim and Change Management?

- a) Procurement Management

b) Contract Administration

c) Contract Closing

d) Contract Planning

92. Which is the correct prioritization of contract document contents?

a) Letter of Acceptance, Signed Contract Form, Special & General Conditions of Contract, Specification

b) Special & General Condition of Contract, Letter of Acceptance, Signed Contract Form, Specification

c) Letter of Acceptance, Signed Contract Form, Specification, Special & General Conditions of Contract

d) Signed Contract Form, Letter of Acceptance, Special & General Conditions of Contract, Specification

93. What would happen after Final Acceptance is issued?

a) The retention money will be released.

b) The contracting parties will be relieved from the contractual obligations upon the closing of all accounts.

c) The retention money will be released along with other payments.

d) Defect liability period will effectively begin.

94. Which one of the following is true?

a) Offer and Acceptance are the basis of contract formation.

b) A procurement committee is composed of at least two professionals.

c) A Claim matures to be a dispute whenever it's settled.

d) Fragmentation is the disadvantage of Design Bid delivery system.

95. Which one of the following is a typical Contractor claim?

a) Extension of time

b) Liquidated Damage

c) Cost Compensation

d) A & C

96. Which one is a false statement regarding a contract?

a) A contract signed by a minor or judiciary interdicted persons is invalid.

b) Termination will not have a retroactive effect unlike contract invalidation and cancelation on the contracting parties.

c) The formation of contract needs only the consent of contracting parties.

d) Contract cancelation will be effective upon the non-performance of one of the contracting parties.

97. What kind of skill is required for a construction site supervisor?

a) Contractual b) Technical c) Interpersonal d) All

98. Which one of the following is not a routine activity of construction site supervisor?

a) Quality inspection

b) Safety inspection

c) Structural analysis

d) None

99. Which one of the following does not describe a project?

a) Has start & end point

b) Consume resources

c) Is a continuous process

d) Unique

100. Which one of the following is a variation?

a) Change in material type

b) Change in contract clause

c) Extra quantity

d) Omission

e) All

1 F

2 F

3 F

4 B

5 C

6 D

7 A

8 C

9 C

10 D

11 A

12 D

13 D

14 B

15 E

16 D

17 D

18 B

19 A

20 E

21 C

22 C

23 A

24 D

25 B

26 C

27 C

28 B

29 A

30 D

31 A

32 C

33 A

34 D

35 B

36 C

37 B

38 D

39 B

40 C

41 D

42 C

43 D

44 A

45 D

46 A

47 A

48 C

49 D

50 B

51 B

52 C

53 C

54 D

55 C

56 A

57 B

58 A

59 C

60 B

61 A

62 B & D

63 D

64 C

65 D

66 B

67 D

68 A

69 C

70 B

71 A

72 B

73 B

74 B

75 F

76 E

77 A

78 B

79 D

80 A

81 G

82 B

83 E

84 A

85 D

86 E

87 E

88 E

89 D

90 C

91 B

92 D

93 B

94 A

95 D

96 C

97 D

98 C

99 C

100 E