

MIZORAM PUBLIC SERVICE COMMISSION
COMMON COMPETITIVE EXAMINATION FOR
GROUP 'B' NON-GAZETTED (TECHNICAL)
JUNIOR ENGINEER (CIVIL) UNDER HORTICULTURE DEPARTMENT,
GOVERNMENT OF MIZORAM, NOVEMBER-2024

PAPER-IV (TECHNICAL SUBJECT)

Time Allowed : 2 hours

FM : 200

All questions carry equal mark of 2 each.
Attempt all questions.

1. _____ is the horizontal distance between the centroid of the cutting to the centroid of the filling.
(a) Lift (b) Earthwork
(c) Lead (d) Excavation
2. In _____ the mean depth is to be calculated first by averaging the depths of two consecutive sections.
(a) Trapezoidal formula (b) Mid - Section formula
(c) Prismoidal formula (d) Simpson's rule
3. The excavation exceeding 1.5m in width 10 sqm in plan area with a depth not exceeding 30 cm, is termed as -
(a) Excavation (b) Surface dressing
(c) Cutting (d) Surface excavation
4. If B is the width of formation, d is the height of the embankment, side slope S : 1, for a highway with no transverse slope, the area of cross section is -
(a) $B + d + Sd$ (b) $Bd + Sd^2$
(c) $B + d$ (d) $\frac{1}{2}(Bd + Sd^2)$
5. The damp proof course (DPC) is measured in -
(a) sq.m (b) cu.m
(c) m (d) r.m
6. The detention period in a septic tank is assumed -
(a) 20 minutes (b) 15 minutes
(c) 30 minutes (d) 40 minutes
7. The plinth area of a building does not include -
(a) Area of the walls at the floor level
(b) Internal shaft for sanitary installations up to 2 sqm in area
(c) Lift and wall including landing
(d) Area of cantilevered porch

8. The center line method is specially adopted for estimating -
 - (a) Circular buildings
 - (b) Hexagonal buildings
 - (c) Octagonal buildings
 - (d) All of these
9. For 12mm thick cement plastering 1:6 on 100 sqm new brickwork, the quantity of cement required is -
 - (a) 0.274 m^3
 - (b) 0.247 m^3
 - (c) 0.724 m^3
 - (d) 0.427 m^3
10. The weight of an item is measured correct to nearest -
 - (a) 0.75 kg
 - (b) 1 kg
 - (c) 0.5 kg
 - (d) 0.25 kg
11. The minimum width of a septic tank is taken -
 - (a) 60 cm
 - (b) 65 cm
 - (c) 70 cm
 - (d) 75 cm
12. _____ is a building material used for the protective and/or decorative coating of walls and ceilings and for moulding and casting decorative elements.
 - (a) Paint
 - (b) Plaster
 - (c) Cement
 - (d) Pointing
13. Thickness of plastering is usually -
 - (a) 12 mm
 - (b) 20 mm
 - (c) 10 mm
 - (d) 6 mm
14. The value of the property at the end of its useful life (without being dismantled) is known as -
 - (a) Salvage value
 - (b) Scrap value
 - (c) Book value
 - (d) Junk value
15. The process of calculating and assigning a value to a company or an asset is called -
 - (a) Scrap value
 - (b) Cost
 - (c) Valuation
 - (d) Asset value
16. The value of the dismantled material is called -
 - (a) Valuation
 - (b) Salvage value
 - (c) Assessed value
 - (d) Scrap value
17. Scrap value =
 - (a) Cost of asset - Useful life
 - (b) Cost of asset - (D x Useful life)
 - (c) Cost of asset + (D x Useful life)
 - (d) Depreciation
18. The value assigned to a property, such as a home, by the local government is called -
 - (a) Property value
 - (b) Sinking value
 - (c) Assessed value
 - (d) Property valuation
19. A _____ is an account containing money set aside to pay off a debt or bond.
 - (a) Bond fund
 - (b) Sinking fund
 - (c) Set cost
 - (d) Debt fund
20. Obsolescence refers to the decline in the useful life of an asset because of one of the factors -
 - (a) Technological advancement
 - (b) Accidents
 - (c) Profit or losses
 - (d) Replacement of assets

21. The main objective of depreciation is -
(a) To show the previous profit (b) To calculate net profit
(c) To reduce tax (d) To satisfy the tax department
22. According to straight line method of providing depreciation, the depreciation -
(a) Remains constant (b) Increase each year
(c) Decrease each year (d) None of these
23. Depreciation is calculated under diminishing balance method, based on -
(a) Original value (b) Book value
(c) Scrap value (d) None of these
24. Total amount of depreciation of an asset cannot exceed its -
(a) Depreciable value (b) Scrap value
(c) Market value (d) None of these
25. Depreciation amount charged on a machinery will be debited to -
(a) Repair account (b) Cash account
(c) Depreciation account (d) Machinery account
26. The portion of a road surface which is used normally by high speed vehicular traffic is known as -
(a) Expressway (b) Highway
(c) Carriage way (d) Right of way
27. For a design speed of 80 km/hr, the minimum stopping sight distance for moving vehicles on a roadway is-
(a) 80 m (b) 120 m
(c) 150 m (d) 200 m
28. Total reaction time of a driver does not depend upon -
(a) Perception time (b) Brake reaction time
(c) Condition of mind of the driver (d) Speed of the vehicle
29. What is the value of headlight sight distance for a highway with a design speed of 65 kmph?
(a) 66.5 m (b) 81.3 m
(c) 91.4 m (d) 182.8
30. If superelevation is not provided on a horizontal curve of a highway, then on which portion of the road, are potholes likely to develop?
(a) Outer edge of road (b) Inner edge of road
(c) Center of road (d) Shoulder of road
31. For a flexible pavement, the thickness of a sub-base course ranges between -
(a) 100 - 200 mm (b) 100 - 300 mm
(c) 50 - 100 mm (d) 150 - 300 mm
32. _____ consists of removing or controlling surface water and subsurface water away from the road surface and the subgrade supporting it.
(a) Road drainage (b) Side drain
(c) Highway drainage (d) Surface drainage
33. The amount of patching needed to make up pot-holes and localised failures may vary from _____ percent of the surface area annually.
(a) 0 - 30 (b) 0 - 20
(c) 0 - 35 (d) 0 - 25

34. _____ is a physical structure or a painted object found on roads and roadside.
- (a) Divisional island (b) Traffic island
(c) Refuge island (d) Channelizing island
35. The distance between two consecutive hair-pin bends should be a minimum of -
- (a) 60 m (b) 50 m
(c) 40 m (d) 65 m
36. The camber required for a pavement depends on -
- (a) Speed of vehicle (b) Type of pavement
(c) Load and tyre pressure (d) Road lane
37. The gradient on a road is 1 in 20, the camber on the road is -
- (a) 1 in 10 (b) 1 in 20
(c) 1 in 30 (d) 1 in 40
38. The ideal form of valley curve is -
- (a) Cubic parabola (b) Lammen spiral
(c) Spiral (d) Square parabola
39. As per IRC, the minimum width of shoulder should be -
- (a) 3.5 m (b) 2.5 m
(c) 4.5 m (d) 5.5 m
40. The distance from the centre line of road on either side, within which construction of building is not permitted is called -
- (a) Road boundary (b) Central line
(c) Building line (d) Setback distance
41. The survey carried out to fix the boundary of a building site is -
- (a) Engineering survey (b) Topographic survey
(c) Cadastral survey (d) EDM survey
42. The basic principle of surveying is working from -
- (a) Part to whole (b) Whole to part
(c) Lower to higher level (d) Higher to lower level
43. Reciprocal ranging is adopted when the following is encountered -
- (a) A river (b) A tall building
(c) A dense forest (d) A hillock
44. In collimation method, there is a check on -
- (a) B.S and F.S only (b) B.S and I.S only
(c) B.S only (d) B.S, F.S and I.S
45. A lighthouse is just visible above the horizon from a ship. If the height of the lighthouse is 200 m, the distance between the lighthouse and the ship in 'km' is -
- (a) 50.45 (b) 54.49
(c) 5.45 (d) 550.9
46. If the vertical circle verniers do not read zero when line of sight is horizontal, the error is called -
- (a) Zero error (b) Residual error
(c) Vernier error (d) Index error

47. A series of closely spaced contours represent a -
(a) Gentle slope (b) Uniform slope
(c) Plane surface (d) Steep slope
48. The multiplying constant of tacheometer is generally about -
(a) 200 (b) 100
(c) 50 (d) 1
49. Refraction error is the least in case of -
(a) Stadia tacheometry (b) Tangential tacheometry
(c) Subtense bar tacheometry (d) Omnimeters
50. The shortest distance between the point of commencement and the point of tangency of a Circular curve is known as -
(a) Long chord (b) Normal chord
(c) Sub - chord (d) Half - chord
51. The coliform organism in 100 ml of drinking water should not be more than -
(a) 1000 (b) 450
(c) 100 (d) 1
52. The most common cause of acidity in water is -
(a) Oxygen (b) Hydrogen
(c) Nitrogen (d) Carbon dioxide
53. Temporary hardness in water is caused by -
(a) Bicarbonates of Ca and Mg (b) Sulphates of Ca and Mg
(c) Chlorides of Ca and Mg (d) Nitrates of Ca and Mg
54. Valve which allows water in one direction only is known as -
(a) Sluice valve (b) Scour valve
(c) Air valve (d) Reflux valve
55. The method of refuse disposal involving burial in trenches is called -
(a) Incineration (b) Pulverisation
(c) Land filling (d) Composting
56. Elutriation is the process of -
(a) Sludge digestion (b) Filtration
(c) Sedimentation (d) Washing digested sludge
57. Large concentration of pollens in the air may cause -
(a) Anaemia (b) Hay fever
(c) Typhoid (d) Influenza
58. The filter system which filters out gaseous emissions is called -
(a) Trickling filter (b) Moving bed filter
(c) Bag house filter (d) Biofilter
59. A rainfall is generally classified as acidic if its pH is less than or equal to -
(a) 5 (b) 6.5
(c) 7 (d) 7.5

60. Longer exposure to NO₂ even in small concentrations may cause diseases pertaining to -
(a) Liver (b) Heart
(c) Lungs (d) Kidneys
61. A high strength bolt may be used for -
(a) Slip resistant connection (b) Bearing type connection
(c) Shear connection (d) Both (a) & (b)
62. High strength bolts are designed for -
(a) Tension (b) Compression
(c) Friction (d) Shear
63. The partial safety factor for the material of site is -
(a) 1.10 (b) 1.00
(c) 1.50 (d) 1.25
64. The fillet welds are effective in resisting -
(a) Axial stresses (b) Torsion
(c) Bending stress (d) Shear stresses
65. Which of the following is not a compression member?
(a) Strut (b) Tie
(c) Principal rafter (d) Boom
66. Minimum number of battens required in built up column are -
(a) 4 (b) 3
(c) 5 (d) 2
67. Failure in a long column is generally by -
(a) Crushing of material (b) Elastic buckling
(c) Torsional buckling (d) Inelastic buckling
68. For equal cross sectional area, the most efficient section for column is -
(a) I - Section (b) Channel section
(c) Circular section (d) Circular hollow section
69. For connecting lacing flat to column section with M20 bolts, the minimum width of flat should be -
(a) 36 mm (b) 60 mm
(c) 54 mm (d) 65 mm
70. For steel structural connections, the process of welding adopted is -
(a) Carbon arc welding (b) Pressure welding
(c) Metal arc welding (d) Oxy hydrogen welding
71. A revised estimate is made when there is a change amounting to more than _____ of the original value due to price hiking or change in specification.
(a) 4% (b) 6%
(c) 5% (d) 8%
72. Which one of the following is the factor to be considered during preparation of a Detailed Estimate?
(a) Quantity of materials (b) Survey data
(c) Cost Analysis (d) Rate Analysis

73. Which one of the following is not the purpose of an approximate estimate?
(a) To save time and money (b) To investigate feasibility
(c) For Insurance and Tax Schedule (d) None of these
74. _____ is required for preliminary studies of various aspects of a work or project.
(a) Supplementary Estimate (b) Plinth Area Estimate
(c) Revised Estimate (d) Abstract Estimate
75. Lump Sum contract is -
(a) Followed by many agencies (b) Followed only by local bodies
(c) Followed only in private contracts (d) Followed only by Govt. Departments
76. In rate contract -
(a) Only the quantities to be supplied are specified (b) Only the rates are specified
(c) Both (a) & (b) are specified (d) Only (b)
77. A contract is an agreement between -
(a) Two parties valid in law (b) Several agencies
(c) Three agencies (d) Two parties without legal binding
78. Earnest Money Deposit (E.M.D) is -
(a) Depositing 2% of the contract value (b) Same as security deposit
(c) Depositing 10% of the contract value (d) Depositing only 5% of the contract value
79. The basis for arriving at a correct rate per unit work or supply of work specifications such as labour, materials, and equipment is -
(a) Cubic rate estimate (b) Tender
(c) Analysis of rates (d) Schedule of Rates
80. Bar charts are suitable for -
(a) Minor works (b) Major works
(c) Large projects (d) All of these
81. The following tools can be used to generate the project schedule:
(a) Microsoft Excel (b) Microsoft Project
(c) Primavera (d) All of these
82. Various activities of a project, are shown on bar charts by -
(a) Vertical lines (b) Horizontal lines
(c) Dots (d) Crosses
83. Consider the following statements regarding tendering for a civil work:
1. Earnest money deposit (EMD) is a prerequisite to tender for a work.
2. It is not essential to call for the contractor's credentials when a tender is invited.
Which of the above statements is/are correct?
(a) 1 only (b) 2 only
(c) Both 1 & 2 (d) Neither 1 nor 2
84. _____ involves the preparation of tenders based on a typical or notional bill of quantities or schedule of works.
(a) Open tendering (b) Serial tendering
(c) Selective tendering (d) Framework tendering

85. A short tender notice is given when -

- (a) The work is to be completed quickly
- (b) No contractor is prepared to offer acceptance to the original tender
- (c) The cost of the tender is very high
- (d) Both (a) & (b)

86. Find the next number in the series:

1, 2, 6, 24, 120, ___?

- (a) 240
- (b) 360
- (c) 720
- (d) 1440

87. Find the next number in the series:

15, 36, 58, 81, ___?

- (a) 105
- (b) 108
- (c) 125
- (d) 130

88. Find the next number in the series:

21, 34, 55, 89, ___?

- (a) 144
- (b) 123
- (c) 102
- (d) 101

89. Find the next number in the series:

2, 10, 30, 68, ___?

- (a) 130
- (b) 120
- (c) 110
- (d) 100

90. Choose the correct word that best completes the sentence:

The professor's explanation was so _____ that even the most attentive students struggled to grasp the concept.

- (a) Perspicuous
- (b) Obfuscating
- (c) Lucid
- (d) Articulate

91. Identify the word that is most opposite in meaning to "Mendacious":

His mendacious nature made it difficult to trust anything he said.

- (a) Untruthful
- (b) Honest
- (c) Sincere
- (d) Deceitful

92. Select the word that correctly fills the blank:

Despite his _____ personality, he managed to lead the team successfully through the crisis.

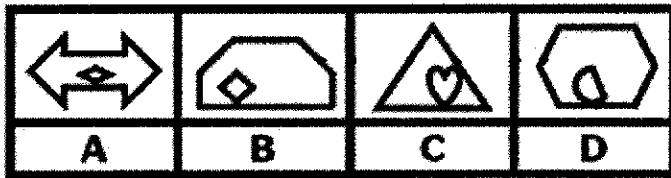
- (a) Garrulous
- (b) Taciturn
- (c) Effervescent
- (d) Gregarious

93. Choose the best word to complete the analogy:

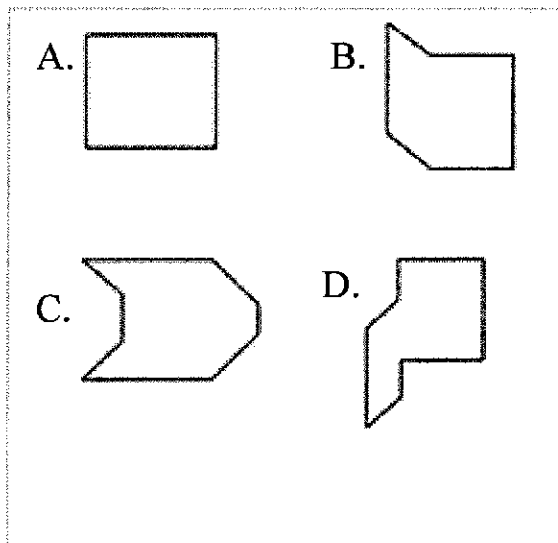
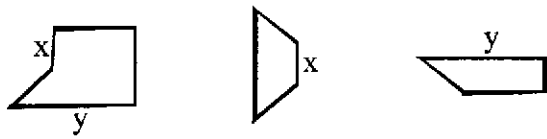
Ebullient is to Enthusiastic as _____ is to Indifferent.

- (a) Phlegmatic
- (b) Animated
- (c) Zealous
- (d) Ardent

94. This question has four shapes in a row. They all have something in common, except one. You must find the odd one out. Choose the shape that you think does not go with the other three and select A,B,C or D as your answer.

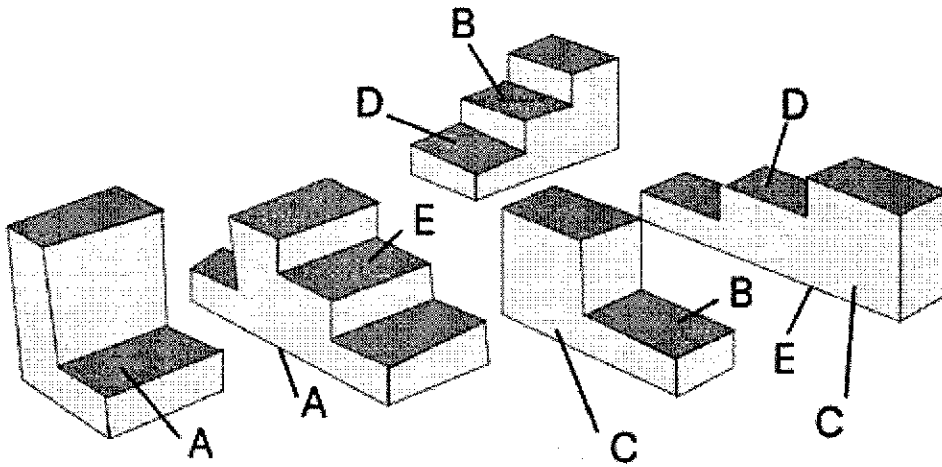


- (a) A (b) B
(c) C (d) D
95. When put together properly, the top three puzzle pieces will create one of the following shapes (A - D). Note that a side marked X has to touch X and a side marked Y has to touch Y. Choose the correct answer.



- (a) A (b) B
(c) C (d) D

96. When put together properly, the top three puzzle pieces will create one of the following shapes (1-4). Note that a side marked A has to touch A and so forth.

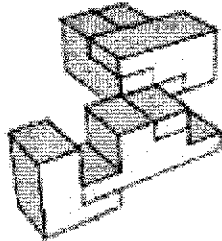


Choose the correct answer.

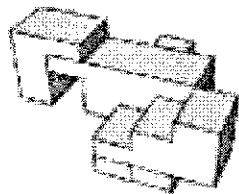
(a)



(b)



(c)



(d)



97.

?	~ # %	! % !
& # &	& @ !	~ ! ~
\$! \$	\$ ~ @	# @ #

Which of the following boxes should replace the question mark (?) to complete the pattern?

A	B	C	D
# & #	% ! ~	% ! %	~ @ ~

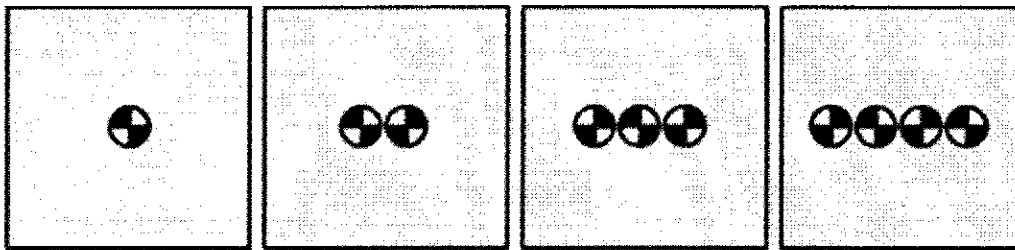
(a) A

(b) B

(c) C

(d) D

98.



Which of the following sequence should come next?

A	B	C	D
5 circles with cross	5 circles with cross	5 circles with cross	5 circles with cross

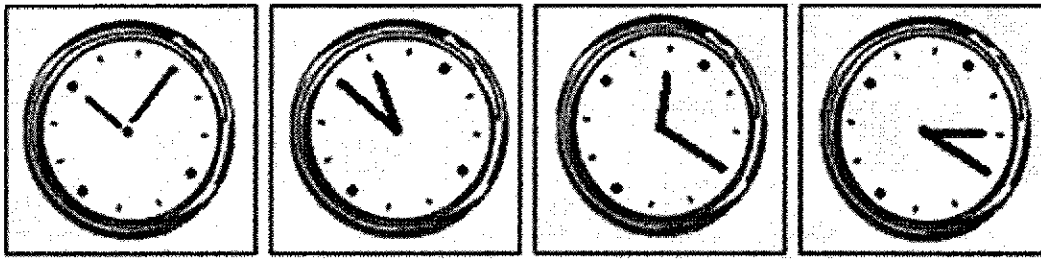
(a) A

(2) B

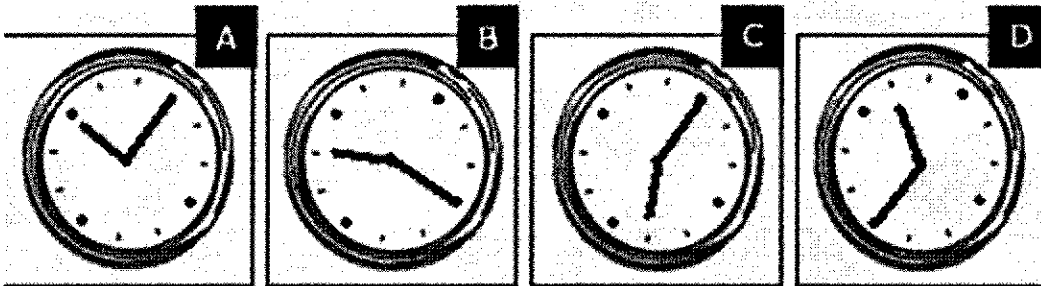
(c) C

(4) D

99.



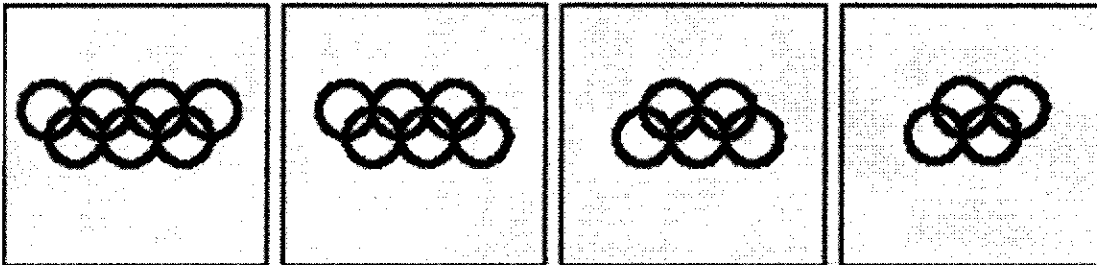
Complete the time sequence



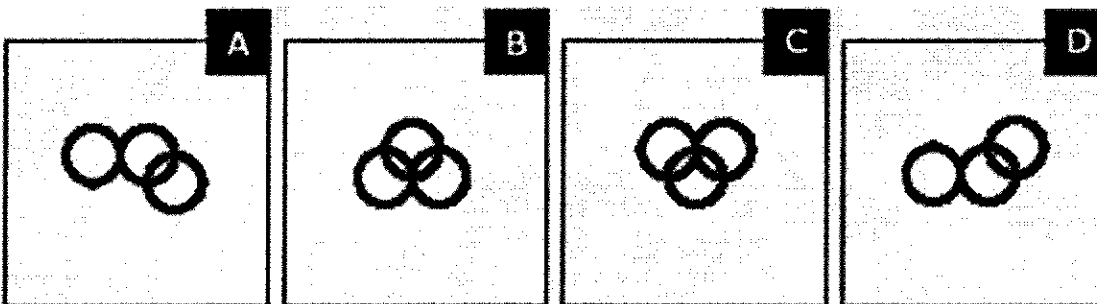
- (a) A
- (c) C

- (b) B
- (d) D

100.



Which figure will come next in the series



- (a) A
- (c) C

- (b) B
- (d) D
