

**GOVERNMENT OF MIZORAM
PUBLIC WORKS DEPARTMENT**

**COMPETITIVE EXAMINATION FOR RECRUITMENT TO
THE POST OF SECTION ASSISTANT (PE)
(SEPTEMBER -2026)**

**PAPER-III
(TRANSPORTATION ENGINEERING AND SURVEYING,
ENVIRONMENTAL ENGINEERING, PROFESSIONAL
PRACTICES & APTITUDE TEST)**

Full Marks : 200
Time Allowed : 3 Hours

Signature of Invigilator _____

CODE :

(For official use)

SUBJECT	MARK CARRIED BY EACH QUESTION / TOPIC	NO. OF CORRECT ANSWERS	MARKS OBTAINED
Paper-III	2		
TOTAL			

Signature of Examiner : _____

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All questions carry 2 marks.

Put a tick (✓) mark against the correct answer in the space given in each question.

If a candidate gives more than one answer to one question, it will be treated as wrong answer even if one of the given answers happens to be correct.

TRANSPORTATION ENGINEERING AND SURVEYING - 50 MARKS

1. A building is an obstacle to:

- (a) Chaining but not ranging ()
- (b) Ranging but not chaining ()
- (c) **Both chaining and ranging** ()
- (d) Neither chaining nor ranging ()

2. In the prismatic compass:

- (a) The magnetic needle moves with the box ()
- (b) The line of the sight does not move with the box ()
- (c) **The magnetic needle and graduated circle do not move with the box** ()
- (d) The graduated circle is fixed to the box and the magnetic needle always remains in the N-S direction ()

3. Local attraction in compass surveying may exist due to:

- (a) Incorrect levelling of the magnetic needle ()
- (b) Loss of magnetism of the needle ()
- (c) Friction of the needle at the pivot ()
- (d) **Presence of magnetic substances near the instrument** ()

4. The temporary adjustments of a prismatic compass are:

- (i) centering
- (ii) levelling
- (iii) focussing the prism

The correct order is:

- (a) (i), (iii), (ii) ()
- (b) **(i), (ii), (iii)** ()
- (c) (ii), (iii), (i) ()
- (d) (iii), (i), (ii) ()

5. Theodolite is an instrument used for:

- (a) Tightening the capstan-headed nuts of level tube ()
- (b) Measurement of horizontal angles only ()
- (c) Measurement of vertical angles only ()
- (d) **Measurement of both horizontal and vertical angles** ()

6. Closed contours, with higher values inwards represent a:
- (a) Depression ()
 - (b) Hillock** ()
 - (c) Plain surface ()
 - (d) None on the above ()
7. Contour interval is:
- (a) The vertical distance between two consecutive contours** ()
 - (b) The horizontal distance between two consecutive contours ()
 - (c) The vertical distance between two points on same contour ()
 - (d) The horizontal distance between two points on same contour ()
8. The main principle of surveying is to work:
- (a) From part to the whole ()
 - (b) From whole to the part** ()
 - (c) From higher level to lower level ()
 - (d) From lower level to higher level ()
9. In chain surveying, field work is limited to:
- (a) Linear measurements only** ()
 - (b) Angular measurements only ()
 - (c) Both linear and angular measurements ()
 - (d) All of the above ()
10. In setting up a plane table at any station:
- (a) Levelling is done first** ()
 - (b) Centering is done first ()
 - (c) Both levelling and centering are done simultaneously ()
 - (d) Orientation is done first ()
11. The sequence of four stages of survey in a highway alignment is:
- (a) Reconnaissance, map study, preliminary survey and detailed survey ()
 - (b) Map study, preliminary survey, reconnaissance and detailed survey ()
 - (c) Map study, reconnaissance, preliminary survey and detailed survey** ()
 - (d) Preliminary survey, map study, reconnaissance and detailed survey ()
12. The shoulder provided along the road edge should be:
- (a) Rougher than the traffic lanes** ()
 - (b) Smoother than the traffic lanes ()
 - (c) Of same colour as that of the pavement ()
 - (d) Of very low load bearing capacity ()
13. Camber in the road is provided for:
- (a) Effective drainage** ()
 - (b) Counteracting the centrifugal force ()
 - (c) Having proper sight distance ()
 - (d) None of the above ()

14. Which drainage structure is primarily provided to carry water across the road embankment?
- (a) Kerb drain ()
 - (b) Culvert** ()
 - (c) Catch water drain ()
 - (d) Side drain ()
15. Which of the following tests measures the toughness of road aggregates?
- (a) Crushing strength test ()
 - (b) Abrasion test ()
 - (c) Aggregate Impact Value (AIV) test** ()
 - (d) Shape test ()
16. The maximum allowable Los Angeles abrasion value for high quality surface course is:
- (a) 10% ()
 - (b) 20% ()
 - (c) 30%** ()
 - (d) 45% ()
17. Which of the following represents hardest grade of bitumen?
- (a) 30/40** ()
 - (b) 60/70 ()
 - (c) 80/100 ()
 - (d) 100/120 ()
18. Penetration test on bitumen is used for determining its:
- (a) Grade** ()
 - (b) Viscosity ()
 - (c) Ductility ()
 - (d) Temperature susceptibility ()
19. Bottom most layer of pavement is known as:
- (a) Wearing course ()
 - (b) Base course ()
 - (c) Sub base course ()
 - (d) Subgrade** ()
20. In highway construction on superelevated curves, the rolling shall proceed from:
- (a) Sides towards the centre ()
 - (b) Centre towards the sides ()
 - (c) Lower edge towards the upper edge** ()
 - (d) Upper edge towards the lower edge ()
21. For the construction of water bound macadam roads, the correct sequence of operations after spreading coarse aggregates is:
- (a) Dry rolling, wet rolling, application of screening and application of filler ()
 - (b) Dry rolling, application of filler, wet rolling and application of screening ()
 - (c) Dry rolling, application of screening, wet rolling and application of filler** ()
 - (d) Dry rolling, application of screening, application of filler and wet rolling ()

22. Raising of outer edge of a road with respect to inner edge, is known as:

- (a) **Superelevation** ()
- (b) Camber ()
- (c) Summit ()
- (d) Saddle ()

23. As per IRC guidelines, the carriageway width of single lane road is:

- (a) 3.50 m ()
- (b) **3.75 m** ()
- (c) 4.00 m ()
- (d) 4.25 m ()

24. The standard shape of a STOP sign is:

- (a) Circular ()
- (b) Triangular ()
- (c) **Octagonal** ()
- (d) Rectangular ()

25. A continuous (solid) white line marked at the centre of a road generally indicates that:

- (a) Overtaking is permitted ()
- (b) **Overtaking is prohibited where the marking applies** ()
- (c) Parking is permitted ()
- (d) Vehicles must stop ()

ENVIRONMENTAL ENGINEERING - 50 MARKS

26. Which of the following values of pH represents a stronger acid?

- (a) **2** ()
- (b) 5 ()
- (c) 7 ()
- (d) 10 ()

27. The treatment of water with bleaching powder is known as:

- (a) prechlorination ()
- (b) super chlorination ()
- (c) dechlorination ()
- (d) **hypochlorination** ()

28. The suitable layout of a distribution system for irregularly growing town is:

- (a) **Dead end system** ()
- (b) Grid iron system ()
- (c) Radial system ()
- (d) Ring system ()

29. A sewer that receives the discharge of a number of house sewers is called:

- (a) House sewer ()
- (b) Lateral sewer** ()
- (c) Intercepting sewer ()
- (d) Submain sewer ()

30. The sewer which transports the sewage to the point of treatment is called:

- (a) House sewer ()
- (b) Branch sewer ()
- (c) Out fall sewer** ()
- (d) Main sewer ()

31. Most suitable section of sewer in separate sewage system is:

- (a) Circular section** ()
- (b) Rectangular section ()
- (c) Standard form of egg shaped sewer ()
- (d) Modified egg shaped section ()

32. The type of sewer which is most suitable for combined sewer system is:

- (a) Circular sewer ()
- (b) Horse shoe type sewer ()
- (c) Semi elliptical sewer ()
- (d) Egg shaped sewer** ()

33. Sewage treatment units are designed for:

- (a) Maximum flow only ()
- (b) Minimum flow only ()
- (c) Average flow only** ()
- (d) Maximum and minimum flow ()

34. Select the primary air pollutants among the following:

- (a) Sulphur dioxide and nitrogen oxides** ()
- (b) Ozone and carbon monoxide ()
- (c) Sulphur dioxide and ozone ()
- (d) Nitrogen oxide and ozone ()

35. The acid rains are caused by the following pollutants:

- (a) SO_2 and O_3 ()
- (b) SO_2 and NO_x** ()
- (c) O_3 and NO_x ()
- (d) SO_2 and CO ()

36. Turbidity in water is mainly caused by:

- (a) Dissolved oxygen ()
- (b) Suspended particles** ()
- (c) Chlorine ()
- (d) Carbon dioxide ()

37. Which of the following is commonly used to disinfect drinking water?
- (a) Alum ()
 - (b) Lime ()
 - (c) **Chlorine** ()
 - (d) Sand ()
38. Which of the following is generally considered the safest natural source of water?
- (a) River ()
 - (b) Pond ()
 - (c) **Deep groundwater** ()
 - (d) Lake ()
39. Which process removes suspended impurities from water by allowing them to settle?
- (a) Filtration ()
 - (b) Chlorination ()
 - (c) Aeration ()
 - (d) **Sedimentation** ()
40. Alum is commonly added during water treatment to:
- (a) Increase hardness ()
 - (b) Increase pH ()
 - (c) **Aid coagulation and settling of suspended particles** ()
 - (d) Remove chlorine ()
41. The primary purpose of filtration is to:
- (a) Increase turbidity ()
 - (b) **Remove fine suspended impurities and microorganisms** ()
 - (c) Increase alkalinity ()
 - (d) Add oxygen ()
42. Oval (Egg-shaped) sewers are generally preferred because they:
- (a) Are cheaper than circular sewers in all cases ()
 - (b) **Provide higher velocity at low flow, reducing the risk of silting** ()
 - (c) Are easier to manufacture ()
 - (d) Carry only storm water ()
43. A manhole in a sewerage system is provided primarily for:
- (a) Water storage ()
 - (b) **Inspection, cleaning, and maintenance of sewers** ()
 - (c) Pumping sewage ()
 - (d) Increasing velocity of flow ()
44. Which unit is usually the first treatment unit in a sewage treatment plant (STP)?
- (a) Aeration Tank ()
 - (b) **Screening Chamber** ()
 - (c) Chlorination Tank ()
 - (d) Sludge Drying Bed ()

45. The primary purpose of a surface water drainage system is to:
- (a) **Collect and safely dispose of storm water** ()
 - (b) Supply drinking water ()
 - (c) Increase groundwater ()
 - (d) Convey sewage ()
46. Which of the following is classified as biodegradable solid waste?
- (a) Plastic bottles ()
 - (b) Glass ()
 - (c) **Vegetable waste** ()
 - (d) Metal cans ()
47. Which of the following is considered a major air pollutant emitted from motor vehicles?
- (a) **Carbon monoxide (CO)** ()
 - (b) Oxygen (O) ()
 - (c) Nitrogen (N) ()
 - (d) Water vapour ()
48. Which greenhouse gas is primarily responsible for global warming?
- (a) Oxygen ()
 - (b) Nitrogen ()
 - (c) **Carbon dioxide** ()
 - (d) Helium ()
49. The intensity of sound is measured in:
- (a) Pascal ()
 - (b) **Decibel (dB)** ()
 - (c) Newton ()
 - (d) Watt ()
50. According to the Noise Pollution (Regulation and Control) Rules, the permissible daytime ambient noise level for a residential area is:
- (a) **55 dB** ()
 - (b) 65 dB ()
 - (c) 75 dB ()
 - (d) 45 dB ()

PROFESSIONAL PRACTICES - 50 MARKS

51. The primary purpose of the Schedule of Rates (SOR) is to:
- (a) Fix the contractor's profit ()
 - (b) Determine GST ()
 - (c) Fix labour wages ()
 - (d) **Provide standard rates for preparation of estimates** ()

52. If an item is not available in the SOR, it should generally be:
- (a) Ignored ()
 - (b) Paid at any market rate ()
 - (c) **Analysed as a non-schedule item** ()
 - (d) Deleted from estimate ()
53. Cost Index is primarily used to:
- (a) Calculate cost difference ()
 - (b) **Update old estimates to current price levels** ()
 - (c) Calculate GST ()
 - (d) Calculate contractor's profit ()
54. Administrative Approval (AA) is accorded to:
- (a) **The proposal to undertake a work and incur expenditure** ()
 - (b) The detailed estimate prepared by the engineer ()
 - (c) The tender documents ()
 - (d) The contractor's quotation ()
55. Technical Sanction certifies that:
- (a) The contractor has accepted the work ()
 - (b) The work has been completed satisfactorily ()
 - (c) **The estimate is technically sound and quantities/rates are correct** ()
 - (d) The bill has been paid ()
56. Which approval normally precedes Technical Sanction?
- (a) Completion Certificate ()
 - (b) **Administrative Approval** ()
 - (c) Measurement Book ()
 - (d) Final Bill ()
57. Which sequence is generally correct before commencement of a Government work?
- (a) Technical Sanction → Administrative Approval → Tender ()
 - (b) **Administrative Approval → Expenditure Sanction → Technical Sanction → Tender** ()
 - (c) Tender → Administrative Approval → Technical Sanction ()
 - (d) Technical Sanction → Tender → Administrative Approval ()
58. Technical Sanction is accorded by:
- (a) **The competent engineering authority** ()
 - (b) The contractor ()
 - (c) The Finance Department ()
 - (d) The Treasury Officer ()
59. Which estimate is prepared when additional works, not included in the original estimate, become necessary during execution?
- (a) Preliminary Estimate ()
 - (b) Annual Repair Estimate ()
 - (c) Revised Estimate ()
 - (d) **Supplementary Estimate** ()

60. Revised Estimate is generally prepared when:

- (a) The work has been completed. ()
- (b) **The sanctioned cost is likely to exceed the original sanctioned amount beyond the permissible limit.** ()
- (c) A contractor requests additional payment. ()
- (d) Only the completion period is extended. ()

61. A deviation statement is prepared when:

- (a) **The executed quantities differ from the sanctioned estimate** ()
- (b) No work has been executed ()
- (c) Materials are unavailable ()
- (d) Tender is cancelled ()

62. Deviation beyond the permissible powers of the sanctioning authority requires:

- (a) No approval ()
- (b) Contractor's approval only ()
- (c) **Approval of the competent authority** ()
- (d) Finance department approval only ()

63. An extra item is one which:

- (a) Exists in the Schedule of Rates ()
- (b) **Was not included in the original agreement but becomes necessary** ()
- (c) Is omitted from execution ()
- (d) Has zero quantity ()

64. A substituted item is:

- (a) An additional item beyond the scope of work ()
- (b) A defective item ()
- (c) A deleted item ()
- (d) **An item executed instead of the originally specified item** ()

65. The contingency provision in an estimate is mainly intended to meet:

- (a) Contractor's profit ()
- (b) **Unforeseen expenses during execution of work** ()
- (c) Salary of engineers ()
- (d) GST payment ()

66. A work-charged establishment is primarily engaged for:

- (a) **Execution of a specific work or project** ()
- (b) Permanent Government service ()
- (c) Treasury operations ()
- (d) Departmental audit ()

67. Earnest Money Deposit (EMD) is primarily intended to:

- (a) Pay the contractor's wages ()
- (b) Replace the Performance Security ()
- (c) **Ensure that bidders do not withdraw or modify their bids improperly during the bid validity period** ()
- (d) Cover maintenance expenses ()

68. Performance Security is generally submitted by:
- (a) Every bidder before bid opening ()
 - (b) The Executive Engineer ()
 - (c) The Finance Department ()
 - (d) **The successful bidder after acceptance of the tender** ()
69. The purpose of a Security Deposit is to:
- (a) Finance the project ()
 - (b) **Safeguard the Government against defects, poor workmanship, or non-performance by the contractor** ()
 - (c) Pay GST ()
 - (d) Meet contingent expenses ()
70. A contractor fails to submit the required Performance Security within the stipulated period after receiving the Letter of Acceptance. The department may:
- (a) Immediately release the Earnest Money Deposit. ()
 - (b) **Cancel the award and take action in accordance with the tender conditions.** ()
 - (c) Allow the contractor to start work without any security. ()
 - (d) Issue the completion certificate. ()
71. Extension of Time (EOT) may be granted when the delay is due to:
- (a) **Valid reasons beyond the contractor's control, as permitted under the contract** ()
 - (b) The contractor's negligence alone ()
 - (c) Poor financial planning by the contractor ()
 - (d) Delay without any justification ()
72. Liquidated Damages (LD) are imposed primarily to:
- (a) Reward early completion ()
 - (b) **Compensate the employer for delay in completion as provided in the contract** ()
 - (c) Increase the contractor's profit ()
 - (d) Replace the Security Deposit ()
73. Measurement Book is considered a:
- (a) Personal notebook of the engineer ()
 - (b) Confidential contractor's document ()
 - (c) **Permanent Government record and an important financial document** ()
 - (d) Temporary site register ()
74. The primary purpose of a Measurement Book is to:
- (a) **Record actual measurements of works executed and supplies received** ()
 - (b) Record attendance of labourers ()
 - (c) Record contractor's quotations ()
 - (d) Record site inspection notes only ()
75. Entries in the Measurement Book should ordinarily be recorded:
- (a) From memory at the end of the month ()
 - (b) **At the time the measurements are taken at site** ()
 - (c) After preparation of the final bill ()
 - (d) Only after payment is made ()

APTITUDE TEST - 50 MARKS

76. Find the next number in the series : 2, 6, 12, 20, 30, ?
(a) 38 ()
(b) 40 ()
(c) **42** ()
(d) 44 ()
77. Find the next number in the series : 2, 6, 18, 54, ?, 486.
(a) **162** ()
(b) 108 ()
(c) 144 ()
(d) 216 ()
78. Find the next number in the series : 4, 9, 19, 39, 79, ?
(a) 119 ()
(b) 139 ()
(c) **159** ()
(d) 169 ()
79. Which number replaces the question mark? $12 : 18 :: 20 : ?$
(a) 24 ()
(b) **30** ()
(c) 27 ()
(d) 32 ()
80. Which number replaces the question mark? $8 : 24 :: 15 : ?$
(a) 30 ()
(b) 40 ()
(c) **45** ()
(d) 60 ()
81. Which number replaces the question mark? $8 : 17 :: 14 : ?$
(a) 25 ()
(b) 28 ()
(c) 32 ()
(d) **29** ()
82. Which number replaces the question mark? $5 : 125 :: 4 : ?$
(a) 16 ()
(b) 32 ()
(c) **100** ()
(d) 256 ()
83. Choose the word nearest in meaning to "Diligent".
(a) Careless ()
(b) Lazy ()
(c) **Hardworking** ()
(d) Weak ()

84. Choose the word opposite in meaning to “Scarce”.

- (a) **Plenty** ()
- (b) Rare ()
- (c) Limited ()
- (d) Costly ()

85. Choose the correct meaning of “Feasible”.

- (a) Impossible ()
- (b) Dangerous ()
- (c) Expensive ()
- (d) **Practical** ()

86. Fill in the blanks: The estimate _____ approved yesterday.

- (a) were ()
- (b) is ()
- (c) **was** ()
- (d) are ()

87. Fill in the blanks: Neither the engineer nor the contractors _____ present.

- (a) was ()
- (b) **were** ()
- (c) is ()
- (d) be ()

88. The idiom “Once in a blue moon” means:

- (a) Every day ()
- (b) Very often ()
- (c) **Rarely** ()
- (d) Suddenly ()

89. Choose the correct preposition: The contractor is responsible _____ the quality of work.

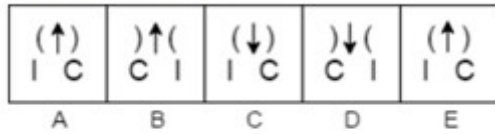
- (a) to ()
- (b) with ()
- (c) **for** ()
- (d) at ()

90. Choose the correct sentence.

- (a) The contractor have completed the work. ()
- (b) **The contractor has completed the work.** ()
- (c) The contractor have complete the work. ()
- (d) The contractor has complete the work. ()

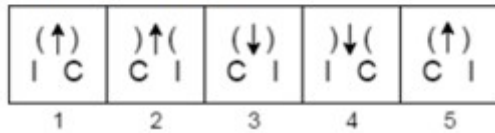
Direction (Question Nos. 91-95) : Observe the problem figures given and select one option from the answer figures which will continue the same pattern followed in the problem figures:

Problem figures:



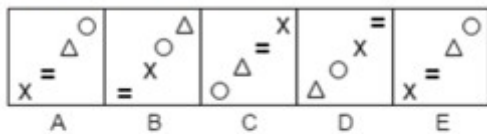
91.

Answer figures:



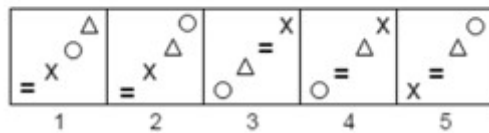
- | | |
|-------|-----|
| (a) 5 | () |
| (b) 4 | () |
| (c) 3 | () |
| (d) 2 | () |

Problem figures;



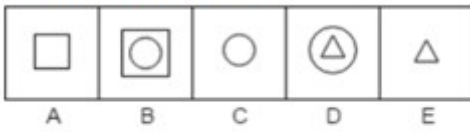
92.

Answer figures;



- | | |
|-------|-----|
| (a) 1 | () |
| (b) 3 | () |
| (c) 5 | () |
| (d) 4 | () |

Problem figures;



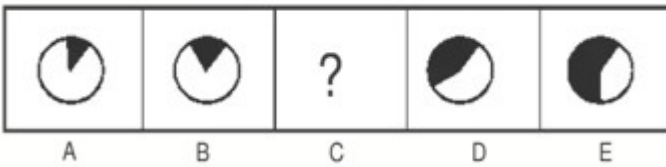
93.

Answer figures



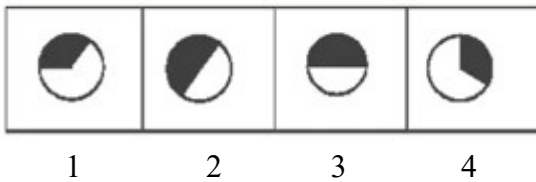
- (a) 5 ()
 (b) 3 ()
 (c) 4 ()
 (d) 2 ()

Problem Figure



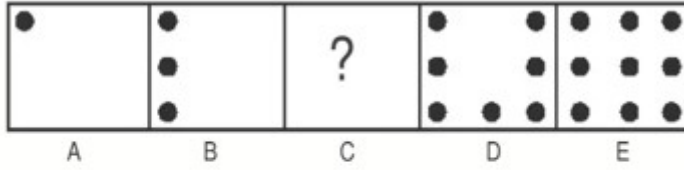
94.

Answer Figure



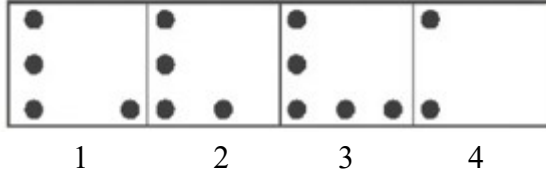
- (a) 1 ()
 (b) 2 ()
 (c) 3 ()
 (d) 4 ()

Problem Figure



95.

Answer Figure



- (a) 1 ()
 (b) 2 ()
 (c) **3** ()
 (d) 4 ()

96. Which pair follows the same relationship?

AB : BC :: PQ : ?

- (a) **QR** ()
 (b) PR ()
 (c) QS ()
 (d) RS ()

97. Which comes next in the sequence?

A, C, F, J, O, ?

- (a) R ()
 (b) S ()
 (c) T ()
 (d) **U** ()

98. Which group is different from the others?

- (a) ACE ()
 (b) GIK ()
 (c) MOQ ()
 (d) **RUX** ()

99. If 'BUILD' is coded as 'CVJME', how is 'ROAD' coded using the same rule?

- (a) **SPBE** ()
 (b) QNAD ()
 (c) SQBE ()
 (d) TQCF ()

100. Six persons A, B, C, D, E and F are standing in a queue facing forward. F is at the front. A is immediately behind C but ahead of D, B is behind D and E is at the end of the queue. Who is immediately behind F?

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

* * * * *