

MIZORAM PUBLIC SERVICE COMMISSION
TECHNICAL COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO
JUNIOR ENGINEER (JE) CONTRACT BASIS
UNDER RURAL DEVELOPMENT DEPARTMENT, NOVEMBER, 2016.

CIVIL ENGINEERING
PAPER - I

Time Allowed : 2 hours

Full Marks : 150

All questions carry equal marks of 2 each.

Attempt all questions

1. Crushing strength of first class brick should be
 - (a) 10 to 15 N/mm²
 - (b) 7 to 10.5 N/mm²
 - (c) 9 to 12.5 N/mm²
 - (d) 5 to 10 N/mm²
2. Water for first class brick should be not more than
 - (a) 15%
 - (b) 18%
 - (c) 20%
 - (d) 25%
3. Standard sizes of brick are
 - (a) 190mm x 90mm x 90mm and 190mm x 90mm x 40mm
 - (b) 200mm x 90mm x 100mm and 200mm x 90mm x 50mm
 - (c) 180mm x 100mm x 100mm and 180mm x 100mm x 50mm
 - (d) None of these
4. The Main Ingredient of good quality brick earth is
 - (a) Magnesia
 - (b) Lime
 - (c) Silica
 - (d) Alumina
5. For practical purposes, Portland Cement is considered as composed of four principal compounds such as:
 - (a) Lime, Silica, Alumina and Magnesia
 - (b) Lime, Silica, Alumina and Iron Oxide
 - (c) Lime, Silica, Alumina and Soda
 - (d) Lime, Silica, Alumina and Sulphur Oxide
6. Water Cement ration in a concrete mix must be kept minimum for the following reasons:
 - (a) To help cement concrete to set early and keep moisture inside the concrete
 - (b) For easy compaction and workability
 - (c) To help chemical reaction and To impart workability
 - (d) Both (a) & (b)
7. The Optimum moisture content in Timber for Doors, windows etc. should be
 - (a) 10%
 - (b) 12%
 - (c) 14%
 - (d) 15%

8. Seasoning of timber is used
- (a) To improve the strength
 - (b) To reduce the grain size
 - (c) To increase the moisture content
 - (d) To brought down moisture content to a permissible limit
9. Sand stone is
- (a) Sedimentary
 - (b) Igneous rock
 - (c) Volcanic rock
 - (d) Metamorphic rock
10. The hardest rock is
- (a) Quartzite
 - (b) Marble
 - (c) Diamond
 - (d) Talc
11. For good building stone, its specific gravity should be greater than
- (a) 1.8
 - (b) 2.0
 - (c) 2.5
 - (d) 2.7
12. Glazing of clay product s is done
- (a) to improve their appearance
 - (b) to protect them from atmospheric effect
 - (c) to protect them from corrosive action
 - (d) all of these
13. French polish is
- (a) Oil paint
 - (b) Distemper
 - (c) Spirit varnish
 - (d) None of these
14. PVC stand for
- (a) Polythene Vanadium Carbide
 - (b) Plastic Very compact
 - (c) Polythene Vinyl Chloride
 - (d) Polythene Vinyl Carbon
15. Asbestos
- (a) is a natural fibrous mineral substance
 - (b) is composed of hydrous silicates of calcium and magnesium ($\text{CaSiO}_3, 3\text{MgSO}_3$)
 - (c) contain iron oxide and alumina
 - (d) all of these
16. The soil which contains finest grain particles, is
- (a) Coarse sand
 - (b) Fine sand
 - (c) Silt
 - (d) Clay
17. The ratio of the volume of voids to the total volume of the given soil mass, is known as
- (a) Porosity
 - (b) Specific gravity
 - (c) Void ration
 - (d) Water content
18. The ratio of the weight of water to the weight of solids in a given mass of soil, is known as
- (a) Porosity
 - (b) Specific gravity
 - (c) Void ration
 - (d) Water content

19. The ratio of the volume of water present in a given soil mass to the total volume of its void, is known as
- (a) Porosity (b) Void ratio
(c) Percentage void (d) Degree of od saturation
20. A fundamental equation of void ratio (e), specific gravity (G) water content (w) and degree of saturation (S_r) is
- (a) $W = eG/S_r$ (b) $E = wG/S_r$
(c) $G = ew/S_r$ (d) $S_r = ew/G$
21. The liquid limit and plastic limit exist in
- (a) Silty soil (b) Clay soil
(c) Gravel soil (d) Sandy soil
22. The maximum water content at which a reduction in water content does not cause a decrease in volume of soil mass, is known as
- (a) Liquid limit (b) Plastic limit
(c) Shrinkage limit (d) Permeability limit
23. The plasticity index is the numerical difference between
- (a) Liquid limit and plastic limit (b) Plastic limit and shrinkage limit
(c) Liquid limit and shrinkage limit (d) None of these
24. The property of a soil which allows it to be deformed rapidly without rupture , elastic rebound and also volume change is known as
- (a) Porosity (b) Plasticity
(c) Permeability (d) Ductility
25. Soil classification of composite soils, exclusively based on the particle size distribution is known as
- (a) Particle classification (b) Textural classification
(c) High Way Research Classification (d) Unified classification
26. The shear strength in plastic undrained clay is due to
- (a) Internal friction (b) Cohesion
(c) Inter-granular friction (d) None of these
27. Failure of the stability of the slopes generally occurs along
- (a) Slip plane (b) A horizontal surface
(c) A curved surface (d) All the surfaces.
28. The maximum pressure which a soil can carry without shear failure is called
- (a) Net safe bearing capacity (b) Safe bearing capacity
(c) Net ultimate bearing capacity (d) Ultimate safe bearing capacity
29. The minimum depth of building foundation on
- (a) Sandy soil is 800mm to 1000mm (b) Clay soil is 900mm to 1600mm
(c) Rocky soil is 50mm to 500mm (d) All of these
30. Pile foundation are generally preferred to for
- (a) Bridge foundation (b) Sky crapper building
(c) Residential building (d) Public building

- 31.** Shallow foundation is suitable for
- (a) Structures constructed on rock bed
 - (b) Low rise building
 - (c) Assam type building
 - (d) All of these
- 32.** In nature water may occur as
- (a) Liquid
 - (b) Solid
 - (c) Vapour
 - (d) All of these
- 33.** Hydrology is the science which deals with
- (a) Rain water
 - (b) River water
 - (c) Sea water
 - (d) Surface and underground water
- 34.** The surface run off is due to
- (a) Initial rain
 - (b) Residual rain
 - (c) Residual rain in the net supply interval
 - (d) All of these
- 35.** Run off includes
- (a) Precipitation over catchment area of the stream and its tributaries
 - (b) Surface run off
 - (c) Ground water
 - (d) All of these
- 36.** The water table of underground water generally corresponds to water level of
- (a) streams
 - (b) rivers
 - (c) sea
 - (d) all of these
- 37.** The amount of infiltration of rain water mostly depends on
- (a) rain characteristics
 - (b) soil characteristics
 - (c) soil cover
 - (d) all of these
- 38.** Rain water harvested from roof is
- (a) Extremely soft and reasonably clean
 - (b) Extremely hard
 - (c) Contaminated
 - (d) None of these
- 39.** The choice of source of water supply depends on
- (a) Location and quantity of water
 - (b) Quality of water
 - (c) Cost
 - (d) All of these
- 40.** Run off is measured in
- (a) Cubic metres
 - (b) Cubic meter per sec.
 - (c) Cubic meter per min.
 - (d) Cubic metre per hour
- 41.** The time required by rain water to reach the outlet of drainage basin is generally called
- (a) Time of overland flow
 - (b) Concentration time and over land flow
 - (c) Time of concentration
 - (d) Duration of the rainfall
- 42.** The quantity of water retained by the sub-soil against gravity is known as
- (a) Specific yield
 - (b) Specific retention
 - (c) Yield
 - (d) Porosity

43. Phytometer method is generally used for measurement of
- (a) Interception
 - (b) Evaporation
 - (c) Transpiration
 - (d) None of these
44. Quantity of water extracted by gravity-drainage from a saturated water bearing stratum is called
- (a) Ground water yield
 - (b) Permeability
 - (c) Ground water velocity
 - (d) Ground water flow
45. An ideal fluid
- (a) Is frictionless and incompressible
 - (b) Obeys Newton's law of velocity
 - (c) Is similar to gas
 - (d) Is very viscous
46. In singly reinforced beam, the effective depth is measured from its compression edge to
- (a) Tensile edge
 - (b) Neutral axis of the beam
 - (c) Tensile reinforcement
 - (d) Longitudinal central axis
47. The section of reinforced beam where most distance concrete fibre in compression and tension in steel attains permissible stresses simultaneously, is called
- (a) Balanced section
 - (b) Critical section
 - (c) Economical section
 - (d) All of these
48. In singly reinforced beam, if the permissible stress in steel reaches earlier than in concrete, the beam section is called
- (a) Under-reinforced
 - (b) Over re-forced
 - (c) Economical section
 - (d) None of these
49. By over reinforcing a beam, the moment of resistance can be increased not more than
- (a) 10%
 - (b) 15%
 - (c) 25%
 - (d) 30%
50. The minimum thickness of the cover at the end of a reinforcing bar should not be less than twice the diameter of the bar subject to a minimum of
- (a) 10mm
 - (b) 20mm
 - (c) 30mm
 - (d) 40mm
51. The diameter of a longitudinal reinforcement bar of a column should never be less than
- (a) 8 mm
 - (b) 10mm
 - (c) 12mm
 - (d) 16mm
52. Minimum curing period of cement concrete work is
- (a) 7 days
 - (b) 14 days
 - (c) 21 days
 - (d) 28 days
53. The weight of a reinforced concrete is generally taken as
- (a) 25KN/m³
 - (b) 20KN/m³
 - (c) 18KN/m³
 - (d) 24KN/m³
54. The effective span of a simply supported slab is
- (a) Distance between the centre of the bearing
 - (b) Clear distance between the inner faces of the walls plus twice the thickness of the wall
 - (c) Clear span plus effective depth of the slab
 - (d) Edge to edge distance of the beam

55. For liquid retaining member an IS code used is
(a) IS: 1370 – 2009 (b) IS: 3370 - 2009
(c) IS: 3394 – 2009 (d) None of these
56. Nominal cover to meet durability requirement as per IS:456-2000 for moderate exposure area is
(a) 15mm (b) 20mm
(c) 30mm (d) 40mm
57. Cover for reinforcement to be provided in water situated in moderate exposure for RCC footing in non aggressive soil is
(a) 30mm (b) 35mm
(c) 40mm (d) 50mm
58. For reinforcement bar having diameter larger than 36mm in water retaining structures
(a) Lap shall be used where stress is minimum (b) Lap shall be used at the centre of the span
(c) Lap shall not be used (d) All of these
59. As per IS:456-2000, the reinforcement in column should not be less than
(a) 0.5% and not more than 5% of cross-sectional area
(b) 0.6% and not more than 6% of cross-sectional area
(c) 0.7% and not more than 7% of cross-sectional area
(d) 0.8% and not more than 8% of cross-sectional area
60. In volume batching of cement concrete, M25 grade mixed the approximate proportion of cement: sand : aggregate is
(a) 1:1.5:3 (b) 1.5:1.5.:3
(c) 1:1:2 (d) 1:1:1
61. Brick laid in alternate layers of headers and stretchers is called
(a) Flemish bond (b) Facing Bond
(c) English Bond (d) Dutch Bond
62. Stone Masonry is broadly classified as:
(a) Random rubble (b) Coursed Random rubble
(c) Ashlar and rubble (d) All of these
63. The angle in natural equilibrium formed by the material with horizontal is called
(a) Angle of internal friction (b) Angle of Friction
(c) Angle of repose (d) None of these
64. Thrust exerted by the retaining-soil to the retaining wall is
(a) Active earth pressure (b) Passive earth pressure
(c) Coulomb's earth pressure (d) Load pressure
65. Revetment wall is
(a) a protective covering on an embankment of earth designed to maintain the slope or to protect it from erosion
(b) a solid retaining structure
(c) a river training wall
(d) none of these

- 66.** Concrete crib wall is
- (a) a gravity retaining walls, constructed from interlocking, pre-cast, concrete components.
 - (b) a an architectural wall for decoration of retaining wall
 - (c) is a non structural wall
 - (d) none of these
- 67.** There are ___ nos. principal types of mass movement (landslide) as per IS:14680
- (a) 3
 - (b) 4
 - (c) 5
 - (d) 6
- 68.** In landslide terminology Toe is
- (a) The margin of displaced material most distant from the main scarp.
 - (b) The side of the landslide.
 - (c) The upper part of the slide material.
 - (d) The area within which the displaced material lies above the original ground surface.
- 69.** The following Remedial measure(s) of land slide is called direct method
- (a) Retaining structure
 - (b) Easing of pressure & reconstruction slope
 - (c) Rock reinforcement
 - (d) All of these
- 70.** Random rubble dry stone masonry retaining wall is usually constructed up to a height of
- (a) 2m
 - (b) 2.5m
 - (c) 3m
 - (d) 4m
- 71.** Plastic sheet commonly used in Mizoram to cover up the landslide area is for
- (a) Giving better filling to the public
 - (b) Permanent prevention of further slide
 - (c) To hold entry of water in to the slide area and temporarily preventing immediate further slide.
 - (d) None of these
- 72.** Benching in high hill cut slope is provided for
- (a) Beautification of the slope
 - (b) Tree plantation
 - (c) Increase in stability of the slope
 - (d) Easy access of the slope
- 73.** The main function of providing Weep hole in retaining is
- (a) To increase the gravitational weight of the wall
 - (b) To provide easy form work construction for the worker
 - (c) To drain off water from the retained soil
 - (d) None of these
- 74.** In construction of Stone Masonry retaining wall, to strengthen the structure integrity it is important to provide
- (a) Key stone
 - (b) Alternate header and stretcher layer
 - (c) Through/bond stone
 - (d) All of these
- 75.** The thickness of the top of stone masonry retaining wall is usually
- (a) 450mm thick
 - (b) 500m thick
 - (c) 600mm thick
 - (d) 1000mm thick