

MIZORAM PUBLIC SERVICE COMMISSION
TECHNICAL COMPETITIVE EXAMINATIONS FOR JUNIOR GRADE OF
MIZORAM ENGINEERING SERVICE (M.E.S.) UNDER PUBLIC WORKS DEPARTMENT,
GOVERNMENT OF MIZORAM, MARCH, 2020

ARCHITECTURE
PAPER - III

Time Allowed : 3 hours

FM : 200

SECTION - A (Multiple Choice questions)

(100 Marks)

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

*This Section should be answered only on the **OMR Response Sheet** provided.*

1. In an Environment Impact Assessment, what does EIS stand for?
 - (a) Environmental Impact Summary
 - (b) Environmental Intensity Summary
 - (c) Environmental Impact Statement
 - (d) Environmental Intensity Statement
2. What is the SI unit of Bending moment?
 - (a) kN
 - (b) kN²
 - (c) kNm
 - (d) km
3. In Leopold Interaction Matrix, what does M signify?
 - (a) Management
 - (b) Mass
 - (c) Momentum
 - (d) Magnitude
4. Which of the following valves is used to maintain pressure in the system?
 - (a) Pressure relief valve
 - (b) Check valve
 - (c) Manual control valve with variable flow plug
 - (d) Pneumatic control valve with variable-flow plug
5. As per Council of Architecture Schedule of Payment, how many stages of payment are there excluding retainer?
 - (a) 5
 - (b) 6
 - (c) 7
 - (d) 8
6. Right to acquire light and air from the neighbor's land is an example of
 - (a) Easement by express grant
 - (b) Easement by implied grant
 - (c) Easement by custom
 - (d) Easement by prescription
7. A Demolition Contract for a building is awarded to the
 - (a) Lowest bidder
 - (b) Highest bidder
 - (c) Second lowest bidder
 - (d) Second highest bidder

8. Intercepting trap has a water seal of?
(a) 200 mm (b) 150 mm
(c) 100 mm (d) 75 mm
9. What is night soil?
(a) Soil containing urea (b) Human excreta
(c) Animal excreta (d) Human excreta, animal excreta and urea
10. What is the time period for which the water is stored in fill and draw type of sedimentation tank?
(a) 24 hours (b) 48 hours
(c) 52 hours (d) 76 hours
11. Which of the following is considered a negative environmental impact?
(a) Green spaces (b) Pedestrian pathways
(c) Construction noise (d) None of these
12. While calculating the handling capacity of lift, the weight of a person is taken as
(a) 60 kg (b) 62 kg
(c) 64 kg (d) 68 kg
13. Up to which point on the stress-strain curve is Hooke's law valid?
(a) Elastic limit (b) Yield point
(c) Proportionality limit (d) Fracture point
14. What is the unit for stress?
(a) N/m^2 (b) Nm^2
(c) N/m (d) Nm
15. Young's Modulus of elasticity is
(a) Tensile stress / Tensile strain (b) Shear stress / Shear strain
(c) Tensile stress / Shear strain (d) Shear stress / Tensile strain
16. Aeration of water is done to remove
(a) Odour (b) Colour
(c) Bacteria (d) Hardness
17. What is the first step of Environmental Impact Assessment?
(a) Project Monitoring (b) Project Appraisal
(c) Project Implementation (d) Project Identification and Proposal
18. As per IS: 1172-1963, water required per head per day for average domestic purposes is
(a) 65 litres (b) 85 litres
(c) 105 litres (d) 135 litres
19. How many times can a notice of change of office address of an Architect be published?
(a) 2 (b) 3
(c) 4 (d) 5
20. What is the maximum letter size allowed for advertisement for an Architect in an office or construction site?
(a) 9 cm (b) 9.5 cm
(c) 10 cm (d) 10.5 cm

21. In an Architectural Competition, how many Architects should be there as Assessors?
- (a) Less than half comparing to promoter's organization
 - (b) At least half comparing to promoter's organization
 - (c) Majority of at least by one comparing to promoter's organization
 - (d) Majority of at least by two comparing to promoter's organization
22. As per Council of Architecture Schedule of Payment, how much percentage of payment can be received at stage 1?
- (a) 10 %
 - (b) 12 %
 - (c) 15 %
 - (d) 18 %
23. In a multi-storied building, the type of plumbing system suitable for reusing the sullage for non-potable use is
- (a) Single stack system
 - (b) Partially ventilated single stack system
 - (c) One pipe system
 - (d) Two pipe system
24. Which wood should be used for first class building chauhats?
- (a) Sesame wood
 - (b) Saal wood
 - (c) Teak wood
 - (d) Arjun wood
25. What is the full form of HVAC?
- (a) Heating Ventilation and Air Conditioning
 - (b) Heating Ventilation and Cooling
 - (c) Humidity Ventilation and Air Conditioning
 - (d) Humidity Ventilation and Air Cooling
26. A steel truss with parallel upper and lower chords and inclined connecting members forming a series of equilateral triangles is known as
- (a) Bowstring Truss
 - (b) Warren Truss
 - (c) Kingpost Truss
 - (d) Scissors Truss
27. With respect to energy conservation and cost efficiency, the nature of an ideal built form should be
- (a) High Rise Low Density
 - (b) Medium Rise High Density
 - (c) Low Rise High Density
 - (d) Low Rise Low Density
28. What does Turbidity of raw water measure?
- (a) Suspended solids
 - (b) Acidity of water
 - (c) B.O.D
 - (d) Repair Work
29. What does BOD stand for with reference to waste water?
- (a) basis of distribution
 - (b) biodegradable oxygen demand
 - (c) biochemical oxygen demand
 - (d) basis of design
30. As per NBC 2006 norms, provision of lifts shall be made for buildings _____ m or more in height.
- (a) 15m
 - (b) 18m
 - (c) 12m
 - (d) 20m
31. What is not a type of beam failure?
- (a) flexure-compression-failure
 - (b) development of cracks
 - (c) shear-compression-failure
 - (d) buckling
32. Different Air Conditioners are given Star rating based on their
- (a) cooling capacity
 - (b) power consumption
 - (c) technology used
 - (d) energy efficiency ratio

33. What is a solar chimney?
(a) a type of solar heating and cooling system (b) a cooking stove that uses solar energy
(c) a solar water heater (d) none of these
34. The floor of a septic tank should be sloping towards
(a) the inlet side (b) the outlet side
(c) should not be sloping (d) should be lowest at the middle of the tank
35. What is the pipe diameter of domestic water supply from distribution point to home?
(a) 20mm (b) 25mm
(c) 30mm (d) 10mm
36. What is a box union in plumbing?
(a) A device for joining together two threaded pipes
(b) A spigot and socket joint
(c) A pipe fitting with inside threads only
(d) A fitting for providing a sharp change of direction
37. What does the term VRF stand for?
(a) Variable refrigerant flow (b) Variating refrigerant flow
(c) Variable refrigerant floor (d) Variant refrigerant flow
38. What does HYSD stand for in reinforcement bars?
(a) High Yield Strength Deformed (b) High Yield Strong Deformed
(c) Highest Yield Strength Deformed (d) Hard Yield Strength Deformed
39. In RCC beams, the end cover of concrete should not be less than
(a) 15 mm (b) 20 mm
(c) 25mm (d) 30 mm
40. For initial calculation of an RCC beam design, the depth is assumed to be
(a) 1/8th of span (b) 1/20th of span
(c) 1/15th of span (d) 1/10th of span
41. Slenderness ratio is expressed with the Greek letter
(a) lambda (λ) (b) alpha (α)
(c) gamma (γ) (d) mu (μ)
42. The property by which a body returns to its original shape after removal of force is called
(a) Ductility (b) Elasticity
(c) Malleability (d) Plasticity
43. Prestressed concrete means
(a) compressive stress induced in concrete before loading
(b) compressive stress induced in steel before loading
(c) tensile stress induced in steel before loading
(d) none of these
44. In sewage treatment plants, the oil and grease is removed by:
(a) filtration (b) oxidation
(c) screening (d) skimming

45. As per IS 2502-1963, the hook allowance for stirrups of RCC columns and beams should not be less than
- (a) 50mm (b) 75 mm
(c) 100mm (d) 25 mm
46. For one way slab, the ratio in between length and breadth of the slab should be
- (a) less than 1 (b) between 1.0 to 1.5
(c) less than 2 (d) more than 2
47. If the ph of water is 10, it indicates that the sample is
- (a) acidic (b) alkaline
(c) neutral (d) none of these
48. Sewers are designed to run
- (a) Partially/ half full (b) Full
(c) 2/3rd full (d) 1/3rd full
49. How many levels of rating does the Indian Green Building Council have for residential sectors?
- (a) 4 (b) 5
(c) 3 (d) 6
50. What is the curing period of concrete work under normal weather conditions when using Ordinary Portland Cement?
- (a) 20 days (b) 12 days
(c) 14 days (d) 25 days

SECTION - B (Short answer type question)
(100 Marks)

All questions carry equal marks of 5 each.

This Section should be answered only on the Answer Sheet provided.

1. What is the difference between a One-pipe Drainage and Two pipe Drainage system?
2. What is the meaning of the term invert level? What is it associated with?
3. What is an RCC shear wall? Name the areas where they are usually provided.
4. What is a bio-digester? How does it differ from a traditional septic tank?
5. What are the advantages and disadvantages of providing sunk floor for toilets? How can the problems associated with it be mitigated in construction? You can make sketches to support your answer.
6. Name any one building which uses non-conventional source of energy. Elaborate your answer.
7. What design considerations will you give to an RCC building when designing in a high seismic zone like Mizoram?
8. What is the difference between long and short columns?
9. What do you mean by monolithic structure. Give the advantages of monolithic structures.
10. What is the Architect's role as an Arbitrator?

11. Explain in brief the working of a Fire Hydrant
12. What are Easements? What are the different types of Easements?
13. What is self – cleansing velocity? Define Manhole and Inspection chamber
14. How should Architectural Competitions be conducted?
15. A room of size 150 m^2 is illuminated by 12 lamps of 40 W having a luminous efficacy of 50 lm/W. Calculate the total flux emitted by the lamps in lumens.
16. The water consumption of a high-rise apartment building with 50 dwelling units having an average household size of 6 persons is 125 lpcd. Assuming 75% of the total use is met with recycled water supply, calculate the daily domestic demand for the building.
17. One litre of acrylic paint can cover 16 sqm of wall area for the first coat and 24 sqm for the second coat. The walls of a lecture hall measuring $12\text{m} \times 8\text{m} \times 4\text{m}$ (L×B×H) need to be painted with two coats of this paint. The hall has total glazed fenestration area of 12 sqm. Calculate the number of 2 litre paint containers required

18. Match the Terms in Group I with the related terms in Group II

Group I

- (a) Acquisition
- (b) Planning permission
- (c) Building plan
- (d) Mutation
- (e) Arbitration

Group II

- 1) Ownership
- 2) Construction
- 3) Land cover
- 4) Land use
- 5) Land
- 6) Disputes

19. Match the Type of Trap in Group I with their location of use in Group II

Group I

- (a) P – Trap
- (b) Grease – Trap
- (c) Bottle Trap
- (d) Gully Trap
- (e) Floor Trap

Group II

- 1) Wash Basin
- 2) Inspection Chamber
- 3) Bathing area
- 4) European W.C
- 5) Garage
- 6) Indian W.C

20. Match the Energy Efficient Building Elements in Group I with their Associated working Principles in Group II

Group I

- (a) Solar Chimney
- (b) Chilled Slab
- (c) Earth Air Tunnel
- (d) Trombe Wall
- (d) Wind Tower

Group II

- 1) Thermal Storage
- 2) Radiant Cooling
- 3) Stack Effect
- 4) Cross Ventilation
- 5) Geothermal Energy
- 6) Energy conversion