

MIZORAM PUBLIC SERVICE COMMISSION

**DEPARTMENTAL EXAMINATIONS FOR JUNIOR ENGINEER (CIVIL & ELECTRICAL)
UNDER POWER & ELECTRICITY DEPARTMENT, SEPTEMBER, 2018.**

CIVIL ENGINEERING PAPER

Time Allowed : 3 hours

FM : 100 PM : 40

*The figures in the margin indicate full marks for the questions.
Attempt all questions.*

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DEPARTMENTAL EXAMINATION FOR J.E (CIVIL) UNDER POWER AND ELECTRICITY
DEPARTMENT, GOVERNMENT OF MIZORAM

FULL MARK-100
PASS MARK-40

Objective type questions (Question Nos. 1 - 20):

(2×20=40)

1. Which of the following represent the crushing strength (MPa) for the good quality stone that are used in the construction of buildings?
 - (a) Less than 20
 - (b) 20 to 60
 - (c) 60 to 80
 - (d) Greater than 100
2. The slump test is performed to check the _____.
 - (a) presence of water in cement
 - (b) ratio of concrete ingredients
 - (c) temperature resistance
 - (d) workability of concrete
3. Which one of the following method is used for the approximate estimation?
 - (a) Both central line and short wall and long wall method
 - (b) Central line method
 - (c) Plinth area method
 - (d) Short wall and long wall method
4. Which one of the following is the largest scale?
 - (a) 1 :500
 - (b) 1 :1000
 - (c) 1 :2500
 - (d) 1 :50000
5. Which of the following is used for determining the location of station occupied by the plane table?
 - (a) Both intersection and radiation
 - (b) Intersection method
 - (c) Radiation method
 - (d) Two point problem
6. Concrete is:-
 - (a) Good in compression, good in tension
 - (b) Good in compression, weak in tension
 - (c) Weak in compression, weak in tension
 - (d) Weak in compression, good in tension
7. Permanent dimension changes due to loading of concrete is termed as:
 - (a) Strain
 - (b) Extent
 - (c) Creep
 - (d) Ambit
8. Which of the following statements is false?
 - (a) Workability of the concrete mix decreases with an increase in the moisture content
 - (b) Concrete for which preliminary tests are conducted, is called controlled concrete
 - (c) Bulking of sand depends upon the fineness of grains
 - (d) All option are correct
9. The property of a material by which it can be beaten or rolled into plates, is called
 - (a) ductility
 - (b) plasticity
 - (c) elasticity
 - (d) malleability
10. Which ratio of cement mortar is used for stone masonry?
 - (a) 1:6
 - (b) 1:3
 - (c) 1:8
 - (d) 1:4

11. In Ashler masonry, face stones are:
- (a) Chisel dressed
 - (b) Hammer dressed
 - (c) Axe dressed
 - (d) Plain dressed
12. Which of the following is examined to determine the age of timber?
- (a) Annular ring
 - (b) Sapwood
 - (c) Pith
 - (d) Timber defects
13. Air permeability method is used in which of the following test of cement?
- (a) Compressive strength test
 - (b) Fineness test
 - (c) Soundness test
 - (d) Slump test
14. The ratio of the length of the column to the minimum radius of gyration of the cross sectional area of the column is known as
- (a) slenderness ratio
 - (b) buckling ratio
 - (c) crippling ratio
 - (d) compressive ratio
15. What is the ratio of components in grade M20 concrete?
- (a) 1:3:6
 - (b) 1:1.5:3
 - (c) 1:1:2
 - (d) 1:2:4
16. Which of the following is the correct reason for soaking the brick in water before its use?
- (a) For preventing adsorption of moisture from mortar by bricks
 - (b) For reducing air void
 - (c) For reducing efflorescence
 - (d) For cleaning
17. What is the correct sequence of the temporary adjustment of level?
- (a) Centering, leveling and setting
 - (b) Leveling, setting and centering
 - (c) Setting, centering and leveling
 - (d) Setting, leveling and centering
18. The main object of compaction of concrete is
- (a) to eliminate air holes
 - (b) to achieve maximum density
 - (c) to provide intimate contact between the concrete and embedded materials
 - (d) All option are correct
19. Maximum impulse will be developed in hydraulic ram when _____.
- (a) when valve closes suddenly
 - (b) supply pipe is long
 - (c) supply pipe is short
 - (d) ram chamber is large
20. Which IS code gives details regarding water to be used in concrete?
- (a) IS 456
 - (b) IS 383
 - (c) IS 565
 - (d) IS 3012

Short answer questions (Question Nos. 21 - 30):

(3×10=30)

21. For a concrete mix 1:2:4 and water cement ratio 0.6 both by weight, what is the quantity of cement required for 1 cubic meter?
- (a) 10 bags
 - (b) 12 bags

- (c) 6 bags
- (d) None of these

22. In the leveling between two points A and B on the opposite sides of a pond, the level is first set up near the point A and staff reading on A and B are 2.5 m and 2.0 m respectively. Then the level is moved and set near the point B, staff reading on points A and B are 1.2 m and 1.7 m respectively. Calculate the difference of heights between the two points A and B (in metre).

- (a) 0
- (b) 0.5
- (c) 1
- (d) 1.85

Correct Answer: 0

23. Calculate the area (square metre) of the formwork required for a beam of 2 m span and cross section dimension of 400 mm x 200 mm.

- (a) 0.8
- (b) 0.16
- (c) 1.2
- (d) 2

Correct Answer: 2

24. Calculate the number of bricks in 1 cubic metres brick works.

- (a) 500
- (b) 100
- (c) 1000
- (d) 300

Correct Answer: 500

25. The depth of water below the spillway and after hydraulic jump are 1 m and 6m respectively, the head loss will be.....?

- (a) 1.74 m
- (b) 6 m
- (c) 1.7 m
- (d) None of these

Correct Answer: None of these

26. A turbine generates the power of 150,000 kW while working at the speed of 300 rpm at the head of 100 m. What is the specific speed of the turbine?

- (a) 300
- (b) 340
- (c) 367
- (d) 452

Correct Answer: 367

27. State the classification of roads as per Indian Road Congress.

28. Define Dead storage.
29. Define water cement ratio and its importance.
30. Define super elevation.

Descriptive type questions (Question Nos. 31 - 36):

(5×6=30)

31. Prepare an estimate for an underground RCC water tanky of length 4m, breadth 2m and height 2.5 m with additional free board of 0.2m at the top. PCC layer 100mm thick, tanky base and wall 200mm thick and slab 150mm thick. Take quantity of RCC at 200kg/cum.
Concrete rate @ Rs. 7116.00/ cum
Steel rate @ Rs.130.00/kg
PCC rate @ Rs. 7000.00/cum
32. State the different types of stone masonry and explain them.
33. Write a note on V-notch weir with diagram.
34. What are the various test conducted for fine aggregate? Explain each in short.
35. Define curing of concrete and its importance.
36. What are the various test done for cement.

