

MIZORAM PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATIONS FOR JUNIOR GRADE OF M.E.S.
UNDER POWER & ELECTRICITY DEPARTMENT, AUGUST, 2018.

CIVIL ENGINEERING
PAPER - II

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. The property by virtue of which liquid opposes relative motion between its different layer is called
 - (a) Viscosity
 - (b) Surface tension
 - (c) Compressibility
 - (d) All of these
2. When a body floating in a liquid is displaced slightly, it oscillates about
 - (a) C.G of body
 - (b) Centre of pressure
 - (c) Centre of buoyancy
 - (d) Metacentre
3. The unit of kinematic viscosity is
 - (a) N-m/s
 - (b) N sec/m²
 - (c) m²/s
 - (d) N-m
4. Manometers are used to measure
 - (a) Pressure in water channel, pipes etc.
 - (b) Difference in pressure at two points
 - (c) Atmospheric pressure
 - (d) Very low pressure
5. The Bernoulli equation $\frac{P}{W} + \frac{V^2}{2g} + Z = \text{constant}$ is based on the following assumptions regarding the fluid flow:
 - (a) Steady, frictionless, uniform and along a streamline
 - (b) Steady, frictionless, incompressible and along a streamline
 - (c) Steady, frictionless, incompressible and uniform
 - (d) All of these
6. A fluid is a substances that:
 - (a) Is essentially in compressible
 - (b) Has viscosity that decrease with temperature
 - (c) Cannot remain at rest when subjected to shear stress
 - (d) Cannot be subjected to shear forces
7. Rain drops are spherical because of
 - (a) Surface tension force
 - (b) Viscosity
 - (c) Air resistance
 - (d) Atmospheric pressure

8. The sheet of water flowing over a notch or weir is known as
 - (a) Sill or crest
 - (b) Nappe or vein
 - (c) Orifice
 - (d) None of these
9. A triangular notch is preferred to rectangular notch because
 - (a) Only one reading is required
 - (b) Its formula is simple to remember
 - (c) It gives more accurate results for low discharges
 - (d) All of these
10. With an increase in size of tube, the rise or depression of liquid in the tube due to surface tension will
 - (a) Decrease
 - (b) Increase
 - (c) Remain unchanged
 - (d) Depends on characteristics of liquid
11. The minor loss of energy in pipes is due to
 - (a) Sudden enlargement
 - (b) Sudden contraction
 - (c) Gradual contraction or enlargement
 - (d) All of these
12. The surface runoff is the quantity of water
 - (a) Absorbed by soil
 - (b) Intercepted by buildings and vegetative cover
 - (c) Required to fill surface depression
 - (d) That reaches the stream channels
13. The most efficient section of channel is
 - (a) Triangular
 - (b) Rectangular
 - (c) Trapezoidal
 - (d) Square
14. The flow mass curve is a graphical representation of
 - (a) Cumulative discharge and time
 - (b) Discharge percentage probability of flow being equalled or exceeded
 - (c) Cumulative discharge, volume and time in chronological order
 - (d) Discharge and time in chronological order
15. For determining the velocity of flow of underground water, the most commonly used non-empirical formula is
 - (a) Lacy's formula
 - (b) Slichter's formula
 - (c) Hazen formula
 - (d) Darcy's formula
16. The groundwater extracted from water bearing soil strata is known as,
 - (a) Aquifer
 - (b) Aquitard
 - (c) Aquiclude
 - (d) None of these
17. The time required by rain water to reach the outlet of drainage basin, is generally called
 - (a) Time of overland flow
 - (b) Time of concentration
 - (c) Time base of direct runoff
 - (d) Concentration time of overland flow
18. S hydrograph is used to obtain unit hydrograph of
 - (a) Shorter duration from longer duration
 - (b) Longer duration from shorter duration
 - (c) Both (a) & (b)
 - (d) None of these

19. Precipitation caused due to striking of air mass with topography, is called
(a) Orographic precipitation (b) Convective precipitation
(c) Cyclonic precipitation (d) None of these
20. The major resisting force in a gravity dam is
(a) Water pressure (b) Wave pressure
(c) Self weight of dam (d) Uplift pressure
21. The surface runoff is affected by
(a) Size of the basin (b) Shape of the basin
(c) Elevation of the watershed (d) All of these
22. Isohytes are the imaginary lines joining a point of equal
(a) Pressure (b) Elevation
(c) Humidity (d) Rainfall
23. When the reduced level of the water source is higher than the reduced level of the consumers place, the water is generally supplied
(a) By pumping systems (b) By gravitational system
(c) Both (a) & (b) (d) None of these
24. Turbidity of raw water is a measure of
(a) Suspended solid (b) Acidity of water
(c) BOD (d) Colloidal particles
25. According to Indian Standard code:1172-1993 the domestic water consumption in liter per capita per day (lpcd) is:
(a) 100 lpcd (b) 115 lpcd
(c) 125 lpcd (d) 135 lpcd
26. The process of passing water through beds of granular materials is called
(a) Filtration (b) Coagulation
(c) Screening (d) Sedimentation
27. A distilled water placed in open atmospheric environment may be slightly acidic due to:
(a) Oxygen (b) Carbon-dioxide
(c) Hydrogen (d) Nitrogen
28. Methamoglobinemia or blue baby syndrome disease is caused due to
(a) Chloride (b) Sulfate
(c) Nitrates (d) Nitrite
29. Bio-chemical oxygen demand (BOD) of safe drinking water must be (mg/l)
(a) 0 (b) 10
(c) 15 (d) 20
30. The units of Alkalinity is express as mg/l in terms of equivalent
(a) Calcium carbonate (b) Magnesium carbonate
(c) Sodium carbonate (d) Calcium hydroxide
31. Bacteria require free oxygen for their survival are called
(a) Facultative bacteria (b) Pathogenic bacteria
(c) Anaerobic bacteria (d) Aerobic bacteria

32. The self-cleansing velocity recommended for Indian conditions, in order to prevent settling down of sewage at bottom or on the sides of large sewer is:
- (a) 0.5 m/s (b) 0.75 m/s
(c) 1 m/s (d) 1.25 m/s
33. In rapid sand filter, air binding is caused due to excessive
- (a) Negative pressure (b) Positive pressure
(c) Turbidity (d) Microbes
34. Removal of oil and grease from sewage, is known
- (a) Screening (b) Skimming
(c) Filtration (d) None of these
35. The consumptive use of water for a crop
- (a) Is measured as the volume of water per unit area
(b) Is measured as depth of water on irrigated area
(c) May be supplied partly by precipitation and partly by irrigation
(d) All of these
36. The structure constructed to allow drainage water to flow under pressure through an inverted syphon below a canal, is called
- (a) Syphon (b) Super passage
(c) Super aquaduct (d) Syphon aquaduct
37. According to Kennedy, the critical velocity (V_o) in meters in a channel is the mean velocity which keeps the channel free from silting and scouring. Its value is given by
- (a) $V_o = 0.84 m D^{0.64}$ (b) $V_o = 0.55 m D^{0.64}$
(c) $V_o = 0.84 m D^{0.54}$ (d) $V_o = 0.55 m D^{0.54}$

Where, m is the critical velocity ratio and D is the depth of the channel.

38. V and R are the regime mean velocity and hydraulic mean depth respectively in meters. Lacey's silt factor is
- (a) $\frac{2V^2}{\sqrt{3R}}$ (b) $\frac{3V^2}{4R}$
(c) $\frac{5V^2}{2R}$ (d) $\frac{2V^2}{5R}$
39. Regime conditions in a channel may occur if
- (a) Discharge is constant
(b) Channel flows uniformly in incoherent alluvium as transported in suspension
(c) Silt grade and silt charge are constant
(d) All of these
40. Irrigation canals are generally aligned along
- (a) Ridge line (b) Contour line
(c) Valley line (d) Straight line

41. Meandering pattern of a river a river is developed by
(a) Average discharge (b) Dominant discharge
(c) Maximum discharge (d) Critical discharge
42. Which of the following methods of applying water may be used on rolling land
(a) Border flooding (b) Check flooding
(c) Furrow flooding (d) Free flooding
43. The ratio of quantity of water stored in the root zone of the crops to the quantity of water actually delivered in the field is known as
(a) Water conveyance efficiency (b) Water application efficiency
(c) Water use efficiency (d) None of these
44. The amount of irrigation water required to meet the evapotranspiration needs of the crop during its full growth is called
(a) Effective rainfall (b) Consumptive use
(c) Consumptive irrigation requirement (d) Net irrigation requirement
45. The maximum pressure to which a pipe is subjected during its operation is known as
(a) Working pressure (b) Design pressure
(c) Pipe pressure (d) Test pressure
46. Horizontal acceleration due to earthquake results in
(a) Hydrodynamic pressure (b) Inertial force into the body of the dam
(c) Both (a) & (b) (d) None of these
47. The pH value of water for public water supplies is limited from
(a) 2.5 to 6 (b) 6.5 to 8
(c) 7 to 8.5 (d) 8 to 10
48. Muskingum method of flood routing is
(a) Reservoir routing method (b) Channel routing method
(c) Hydraulic method of flood routing (d) None of these
49. A Pelton wheel is
(a) Tangential flow impulse turbine (b) Inward flow impulse turbine
(c) Outward flow impulse turbine (d) Inward flow reaction turbine
50. For standing crops in undulating sandy fields the best method of irrigation is
(a) Sprinkler irrigation (b) Free flooding
(c) Check method (d) Furrow method

