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MPSC 2019 : Main Exam
ASSISTANT ENGINEER

CIVIL ENGINEERING

Test 12

Full Syllabus Test-6 | Paper-II

ANSWER KEY

1.	(c)	18.	(d)	35.	(c)	52.	(c)	69.	(a)	86.	(c)
2.	(a)	19.	(b)	36.	(c)	53.	(b)	70.	(a)	87.	(c)
3.	(d)	20.	(c)	37.	(b)	54.	(d)	71.	(d)	88.	(d)
4.	(b)	21.	(b)	38.	(c)	55.	(d)	72.	(d)	89.	(c)
5.	(b)	22.	(d)	39.	(d)	56.	(a)	73.	(d)	90.	(a)
6.	(d)	23.	(c)	40.	(b)	57.	(c)	74.	(c)	91.	(a)
7.	(b)	24.	(c)	41.	(d)	58.	(a)	75.	(c)	92.	(b)
8.	(c)	25.	(c)	42.	(d)	59.	(d)	76.	(d)	93.	(a)
9.	(b)	26.	(b)	43.	(c)	60.	(b)	77.	(c)	94.	(c)
10.	(c)	27.	(a)	44.	(d)	61.	(c)	78.	(a)	95.	(a)
11.	(d)	28.	(a)	45.	(a)	62.	(b)	79.	(c)	96.	(c)
12.	(b)	29.	(d)	46.	(b)	63.	(c)	80.	(b)	97.	(b)
13.	(a)	30.	(a)	47.	(a)	64.	(d)	81.	(b)	98.	(a)
14.	(c)	31.	(d)	48.	(d)	65.	(a)	82.	(a)	99.	(a)
15.	(b)	32.	(b)	49.	(d)	66.	(d)	83.	(b)	100.	(c)
16.	(d)	33.	(b)	50.	(d)	67.	(d)	84.	(b)		
17.	(c)	34.	(d)	51.	(c)	68.	(a)	85.	(d)		

1. (c)

A cyclone is a more or less circular area of low atmospheric pressure in which winds blow spirally inward in counter clockwise direction in the Northern hemisphere and in clockwise direction in the Southern hemisphere.

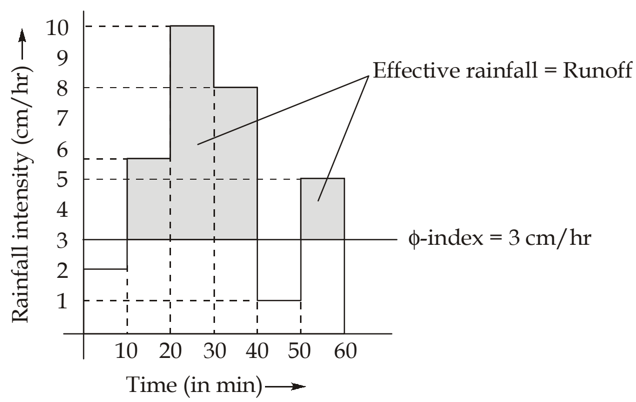
2. (a)

$$\text{Average precipitation, } \rho_{avg} = \frac{\sum A_i P_m}{\sum A_i} \qquad P_m = \text{Mean of isohyets}$$

$$= \frac{1200 \times \left(\frac{70+80}{2}\right) + 1800\left(\frac{80+90}{2}\right) + 1650\left(\frac{90+100}{2}\right) + 940\left(\frac{100+110}{2}\right)}{1200+1800+1650+940}$$

$$= 89.17 \text{ cm}$$

3. (d)



$\therefore$ Runoff = Area of shaded portion

$$= (6-3)\times\frac{10}{60} + (10-3)\times\frac{10}{60} + (8-3)\times\frac{10}{60} + (5-3)\times\frac{10}{60}$$

$$= 2.83 \text{ cm} = 28.3 \text{ mm}$$

4. (b)

Assumption made in the theory of unit hydrograph (As proposed by Sherman) are as follows:

(i) Effective rainfall should be uniformly distributed over the basin.

(ii) Effective rainfall is constant over the catchment during the unit time i.e. intensity is constant.

(iii) Time invariance and linear response.

5. (b)

Muskingum routing equation,

$$Q_2 = C_0 I_2 + C_1 I_1 + C_2 Q_1$$

where,

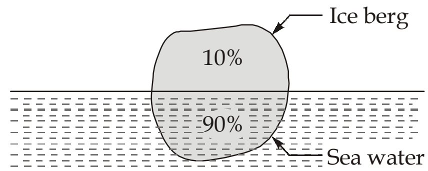
$$C_0 = \frac{-kx + 0.5\Delta t}{k - kx + 0.5\Delta t}$$

$$C_1 = \frac{kx + 0.5\Delta t}{k - kx + 0.5\Delta t}$$

$$C_2 = \frac{k - kx - 0.5\Delta t}{k - kx + 0.5\Delta t}$$

$$C_0 + C_1 + C_2 = 1.0$$

7. (b)



$$F_B = (0.9V)\gamma_{sea}$$

$$W = V \cdot \gamma_{iceberg}$$

In equilibrium, $F_B = W$

$$(0.9)V\gamma_{sea} = V \cdot \gamma_{iceberg}$$

$$\gamma_{iceberg} = 0.9 \times 1025 \times g$$

$\therefore$ $\rho_{iceberg} = 0.9 \times 1025 = 922.5 \text{ kg/m}^3$

8. (c)

(Uniform and non-uniform flow) : When velocity does not change with location over a specified region, at a particular instant of time, flow is said to be uniform otherwise non-uniform

i.e. $\left.\frac{\partial V}{\partial S}\right|_{t=t_0} = 0 \quad \Rightarrow$ Flow is uniform flow

$\left.\frac{\partial V}{\partial S}\right|_{t=t_0} \neq 0 \quad \Rightarrow$ Flow is non-uniform flow

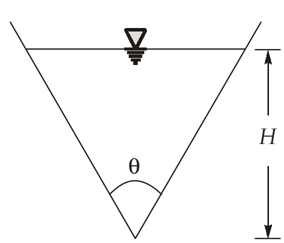
(Steady and unsteady flow):

If flow and fluid property at any given location does not change with time, flow is called steady otherwise unsteady.

i.e. $\frac{\partial P}{\partial t} = 0; \frac{\partial \rho}{\partial t} = 0; \frac{\partial V}{\partial t} = 0 \quad \Rightarrow$ Flow is steady

9. (b)

Flow over a triangular weir or V-notch is



$$Q = \frac{8}{15} c_d \sqrt{2g} \tan\left(\frac{\theta}{2}\right) H^{5/2} \quad \text{...(i)}$$

Given $Q = 1.37\, H^{5/2}$ ...(ii)

Comparing equation (i) and (ii),

$$(\tan\theta)\frac{8}{15}C_d\sqrt{2g} = 1.37$$

$$C_d = \frac{15\times1.37}{8\times\sqrt{2\times9.81}} = 0.58$$

10. (c)

Surgue tank is an open reservoir provided in between penstock to

(i) absorb the pressure wave due to sudden blockage of flow in the turbine which will reduce water hammer problem.

(ii) To serve for emergency supply and to maintain constant head at inlet of turbine.

12. (b)

$$\text{Percentage slip} = \frac{Q_{th}-Q_{act}}{Q_{th}}\times100$$

$$= (1-C_d)\times100$$

If $C_d < 1$, then percentage slip > 0

- Reciprocating pump is best suited if relatively very small discharge is to be pumped to high head.
- It is used in oil drilling operation and in concrete pumps.

13. (a)

$$E = y+\frac{V^2}{2g}$$

$$= 1.0+\frac{(2.22)^2}{2\times9.81} = 1.25 \text{ m}$$

$$= 1.25 \text{ m-kg/kg}$$

14. (c)

Given, Jet ratio, m = 12

∴ Number of buckets, Z = 0.5 m + 15 = 0.5 × 12 + 5

= 21

16. (d)

- Sluice valve can be used to isolate any part of the distribution system during repairs.
- Air inlet valves release high pressure and admit air during vacuum. Thus they ensure gravity flow under atmospheric pressure.
- Ball valves are provided in the cistern to maintain constant level of water.
- Check valves, also known as non-return valve or reflux valves, allow water to flow in one direction only.

17. (c)

1. **Mechanical straining** : Most of the particles are removed in upper layers. Arrested impurities including the coagulated flocs form a mat on top which further helps in straining.
2. **Flocculation** : The colloidal matters are arrested in the void spaces present in the filter which are gelatinous mass and therefore attract other finer particles.
3. **Sedimentation** : Particles finer than voids are removed by sedimentation.
4. **Biological action** : Certain micro-organism and bacteria are generally present in the voids of the filters. These organism require organic impurities as their food for survival. These organism utilize such organic impurities and convert it into harmless compounds by the process of biological metabolism.

18. (d)

Alum requires alkalinity in water. If it is not present in water it may be added from external sources.

- Copperas is used as a coagulant for raw waters that are not coloured.
- Chlorinated coppers is effective in removing colour also.
- Sodium aluminate reduces the temporary as well as permanent hardness present in raw water supplies. This is therefore widely used for treating boiler feed waters, which permits very low value of hardness.

19. (b)

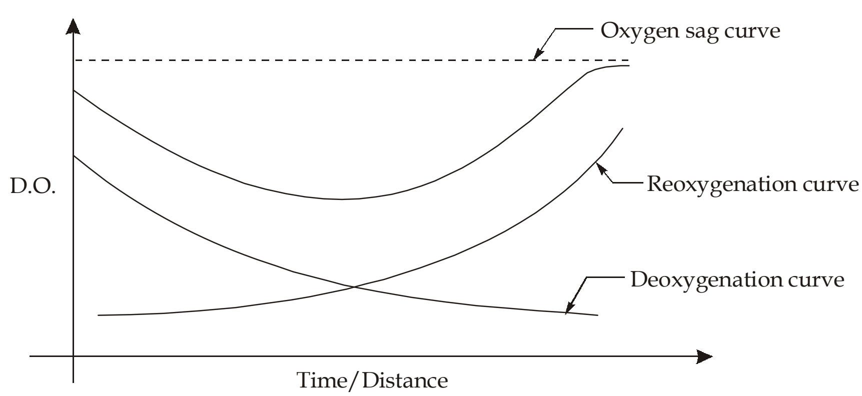
Indore method : It uses manual turning of piled up mass for its decomposition under aerobic conditions.

22. (d)

A combined sewer refers to a single sewer of a larger diameter which transports domestic sewage, industrial wastes and storm water.

23. (c)

Oxygen sag curve is a result of reoxygenation and deoxygenation curve. Therefore, sag in the dissolved oxygen curve is a function of both addition and depletion of oxygen from the stream.



25. (c)

$$\text{SVI} = \frac{200 \text{ ml}}{\left(\frac{2800}{1000}\right)} = 71.43 \text{ ml/gm}$$

26. (b)

A septic tank may be defined as a primary sedimentation tank with a longer detention period (12 to 36 hours) with an extra provision for digestion of the settled sludge. Since, the digestion of the settled sludge is carried out by anaerobic decomposition process, the septic tank unit is generally classified under the units which work on the principle of anaerobic decomposition. It is called an onsite treatment because raw sewage is directly fed and no other treatment unit is used in the septic tank.

27. (a)

Camber 'or' cross fall : It is the rising of the middle of the road surface in the transverse direction to drain off rain water from road surface.

As per IRC:

Surface type	High Rainfall Area	Light Rainfall Area
Cement concrete/High bituminous	2%	1.7%
Thin bituminous	2.5%	2%
WBM/Gravel Road	3%	2.5%
Earthern Road	4%	3%

28. (a)

$$\text{SSD} = 0.278Vt_r + \frac{V^2}{254f}$$

$$= 0.278 \times 80 \times 2.5 + \frac{(80)^2}{254 \times 0.35} = 127.59 \text{ m}$$

$$\simeq 128 \text{ m}$$

29. (d)

For mixed traffic condition, $e = \frac{V^2}{225R} = \frac{(100)^2}{225 \times 500}$

$$= 0.089 = 8.9\% > 7\%$$

Provide, $e = 0.07$

Now, $f = \frac{V^2}{127R} - e$

$$= \frac{(100)^2}{127 \times 500} - 0.07$$

$$= 0.087 < 0.15 \quad \text{(OK)}$$

$\therefore$ Superelevation = 7%

30. (a)

$$\text{Extra widening} = \text{Mechanical widening} + \text{Psychological widening}$$
$$W_e = W_m + W_p$$
$$= \frac{nl^2}{2R} + \frac{V}{9.5\sqrt{R}}$$
$$= \frac{2\times 6^2}{2\times 400} + \frac{95}{9.5\sqrt{400}} = 0.59 \text{ m}$$

33. (b)

$$C = \frac{1000V}{S}$$

S = SSD + L = 20 + 5 = 25 m

V = 40 kmph

$$C = \frac{1000\times 40}{25} = 1600 \text{ VPh}$$

34. (d)

Position of summit point from first tangent point $= \frac{n_1}{N}\times L_s$

$$= \frac{4}{|4-(-2)|}\times 150$$
$$= \frac{4}{6}\times 150 = 100 \text{ m}$$

36. (c)

Critical combination of stresses

(i) During summer mid day at bottom of slab, (load stress + warping stress – friction stress), at edge region

$$= 210 + 290 - 10 = 490 \text{ N/mm}^2$$

(ii) During winder mid-day at bottom of slab, (load stress + warping stress – friction stress), at edge region

$$= 210 + 290 + 10 = 590 \text{ N/mm}^2$$

37. (b)

$$\text{Rigidity factor} = \frac{\text{Contact pressure}}{\text{Tyre pressure}}$$

Tyre pressure = 0.7 MPa, RF = 1

Tyre pressure > 0.7 MPa, RF < 1

Tyre pressure < 0.7 MPa, RF < 1

39. (d)

Freeboard is the vertical distance between the H.F.L. of the river and bottom level of the girder or springing level in case of arch bridges.

Generally following values of freeboards are provided in bridges.

Type of bridge	Free board
Arch bridges	30 cm
Girder bridges	60 - 90 cm
Navigable rivers	240 - 300 cm
High level bridges	60 cm

45. (a)

In cost-plus-fee contracts, the client agrees to pay all the costs incurred by the contractor in execution of works plus an agreed fee to cater for contractor overhead and profit. Therefore, this contract permits the choice of best qualified, not lowest bidding contractor.

46. (b)

In case of partition or verandah walls and other T-junctions the centre line length shall be reduced by half the width of wall.

47. (a)

Cover Note : It is a temporary document issued by an insurance company that provide proof of insurance coverage until a final insurance policy can be issued.

Progress Chart : It is a chart showing the actual performance in comparison with a predetermined schedule or estimate of expected performance.

48. (d)

The main purpose of valuation is following:

(i) For purchase of property
(ii) For sale of property
(iii) Tax fixation
(iv) Rent fixation
(v) Mortage value
(vi) Assessment of wealth tax
(vii) Assesment of stamp fees
(viii) So assess compensatory amount in case government takes over the property

49. (d)

Cost of material and labour are not calculated separately.

51. (c)

(Particular)	(Unit of measurement)
Cornice	Running metre
Concrete work	Cubic metre
Shuttering	Square metre
Steel reinforcement bar	Quintal

52. (c)

The contract have a lawful objective not just any definite objective.

Essential features of a contract agreement are:

(i) Mutual agreement on offer and its acceptance.

(ii) Lawful consideration

(iii) Lawful objective

(iv) Competent contracting parties

53. (b)

The effective size of modular brick (19 cm × 9 cm × 9 cm) in a brick wall is 20 cm × 10 cm × 10 cm

∴ Quantity of wet mortar in 1 m^3 of brickwork

$$= \left[\frac{(0.2\times0.1\times0.1)-(0.19\times0.19\times0.09)}{0.2\times0.1\times0.1}\right]\times 1$$

$$= 0.2035 \text{ m}^3$$

Volume of dry mortar is approximately 1.27 times of wet mortar

∴ Volume of dry mortar required = 1.27 × 0.2305

= 0.3 m^3

For a cement mortar 1 : 4, quantity of cement in 0.3 m^3 of mortar $= 0.3\times\left(\frac{1}{1+4}\right) = 0.06 \text{ m}^3$

56. (a)

The difference of F.B. and B.B. of line DE is 180°;

Hence station D and E is free from local attraction.

∴ Correct FB of EA = 212°30′

Correct BB of EA = 212°30′ – 180° = 32°30′

But observed BB of EA = 31°45′

∴ Correction at Station A = 32°30′ – 31°45′ = 0°45′

∴ Correct FB of line AB = 126°45′ + 0°45′

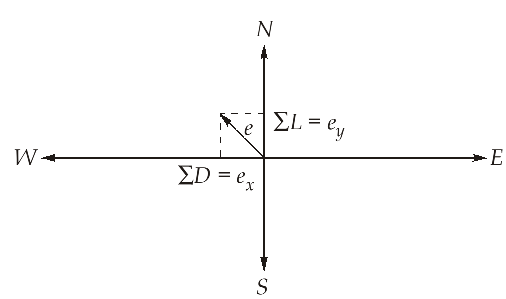
= 127°30′

57. (c)

$\Sigma L = \Sigma L_N - \Sigma L_S$ $\quad\quad$ $\Sigma D = \Sigma D_E - \Sigma D_W$

$\Sigma L_N = \Sigma L_S$ $\quad\quad$ $\Sigma D_W = \Sigma D_E$

∴ ΣL = +ve (North) $\quad$ ∴ ΣD = –ve (West)



From figure it is clear that the closing error lies in N-W quadrant.

58. (a)

$$D = KS + C$$
$$K = 100,\ C = 0.3 \text{ m}$$
$$D = 100 \times (1.555 - 0.900) + 0.3$$
$$= 65.8 \text{ m}$$

59. (d)

Station	*BS*	*IS*	*FS*	*HI*	*RL*
0	0.650			84.425 m	
20		1.355			
40		1.765			
60		2.125			82.30 m
80		2.995			
100			3.125		

$$\text{H.I.} - 2.125 = 82.30$$
$$\text{H.I.} = 82.30 + 2.125 = 84.425 \text{ m}$$
$$\text{RL of BM} + \text{B.S.} = \text{H.I.}$$
$$\text{RL of BM (Station 0)} = 84.425 - 0.652 = 83.775 \text{ m}$$

60. (b)

The correction for curvature is generally expressed as

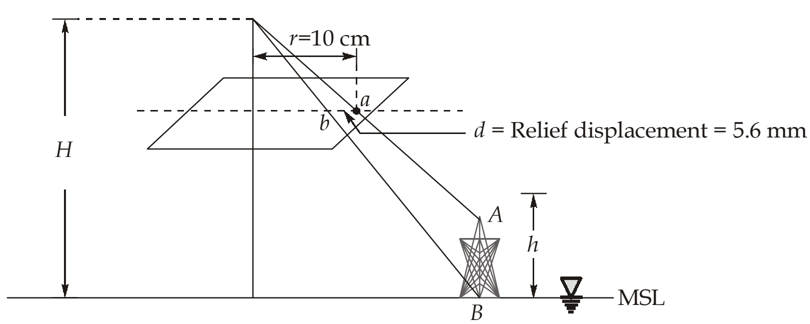
$$C_C = -0.0785\, d^2$$

where, C_C = Correction of curvature (in m), d = distance between staff and instrument (in km)

61. (c)

Alidade is used in plane table survey.

62. (b)



$$d = \frac{hr}{H - h_{avg}} \qquad (h_{avg} = 0)$$

$$d = \frac{hr}{H}$$

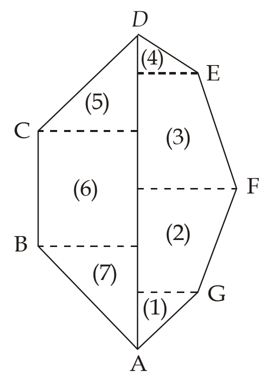
$$\left(\frac{5.6}{10}\right) = \frac{112 \times 10}{H}$$

$$H = 2000 \text{ m}$$

63. (c)

Removal of parallax may be achieved by refocusing the eye piece as well as the objective.

64. (d)



$$\text{Area of (1)} = \frac{1}{2} \times 100 \times 25 = 1250 \text{ m}^2$$

$$\text{Area of (2)} = \frac{1}{2} \times (25 + 125) \times 200 = 15000 \text{ m}^2$$

$$\text{Area of (3)} = \frac{1}{2} \times (125 + 105) \times 350 = 40250 \text{ m}^2$$

$$\text{Area of (4)} = \frac{1}{2} \times (105) \times 100 = 5250 \text{ m}^2$$

$$\text{Area of (5)} = \frac{1}{2} \times 90 \times 260 = 11700 \text{ m}^2$$

$$\text{Area of (6)} = \frac{1}{2} \times 310 \times 170 = 26350 \text{ m}^2$$

$$\text{Area of (7)} = \frac{1}{2} \times 180 \times 80 = 7200 \text{ m}^2$$

∴ Total area (Area of ABCDEFGAA) = 1250 + 15000 + 40250 + 5250 + 11700 + 26350 + 7200

= 107000 sqm = 10.7 ha

65. (a)

$$\text{Shift, } S = \frac{L^2}{24R} = \frac{(90)^2}{24 \times 300}$$

$$= 1.125 \text{ m}$$

66. (d)

Spire test is done to make the horizontal axis perpendicular to the vertical axis.

67. (d)

Calcium carbide method : It is one of the quickest methods to find water content of soil which gives the result within 5 to 7 min.

68. (a)

Given, %air void $(n_a) = 30\% = 0.3$

Porosity $(n) = 0.4$

We know that,

$$n_a = na_c$$
$$0.3 = 0.4 \times a_c$$
$$a_c = \frac{0.3}{0.4} = 0.75$$

69. (a)

Hydrometer readings observed in the test are further corrected for following:

1. Meniscus correction (c_m):

- Hydrometer reading is always corresponding to the upper level of meniscus, therefore, meniscus correction is always positive.

2. Dispersing/Deflocculating agent correction (c_d):

- The correction due to rise in specific gravity of the suspension on account of the addition of the deflocculating agent is called dispersing agent correction.
- c_d is always negative.

3. Temperature correction:

- The hydrometer is generally calibrated at 27°C.
- If temperature is more than 27°C, the temperature correction is positive.
- If temperature is less than 27°C, the temperature correction is negative.

70. (a)

$$\text{Consistency index } (I_c) = \frac{w_L - w_n}{w_L - w_p} = \frac{40-30}{40-25}$$
$$= \frac{10}{15} = 0.67$$

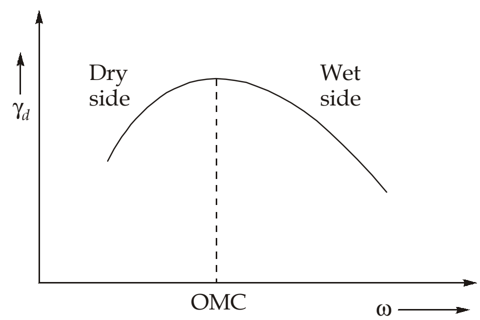
71. (d)

$$\gamma_d^{\max} = \frac{G r_w}{1+e}$$
$$1 + e = \frac{2.66 \times 1}{1.77} = 1.5028$$
$$\Rightarrow \quad e = 0.5028$$
$$s = \frac{wG}{e} = \frac{0.1444 \times 2.66}{0.5028}$$
$$= 0.7639 \simeq 0.77$$

72. (d)

- In dispersed structure, clay platelets are aligned face to face orientation.
- If the net force during deposition are repulsive, it results in the formation of dispersed structure.

74. (c)



On dry side of OMC, for a given compactive effort, the permeability decreases with increase in water content. The minimum permeability reaches at maximum dry density at OMC.

76. (d)

$$\frac{m_{v_A}}{m_{v_B}} = \frac{2}{1}; \qquad \frac{C_{V_A}}{C_{V_B}} = \frac{16}{9}$$

$$k = C_V \cdot m_v \cdot \gamma_w$$

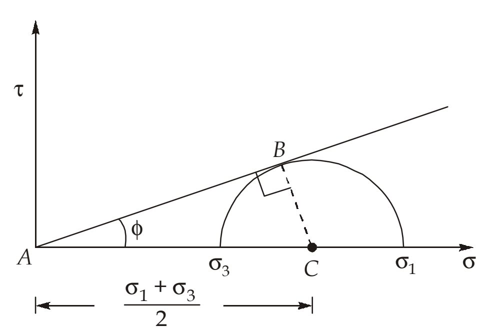
$$\therefore \quad \frac{k_A}{k_B} = \frac{(C_V)_A}{(C_V)_B} \cdot \frac{(m_v)_A}{(m_v)_B}$$

$$= \frac{2}{1} \times \frac{16}{9} = \frac{32}{9}$$

77. (c)

Final/ultimate consolidation settlement does not depends upon drainage condition. So, the ultimate settlement will be 10 cm.

78. (a)



$$BC = \left(\frac{\sigma_1 - \sigma_3}{2}\right)$$

$$AC = \left(\frac{\sigma_1 + \sigma_3}{2}\right)$$

$$\sin\phi = \frac{BC}{AC} = \frac{(\sigma_1 - \sigma_3)}{(\sigma_1 + \sigma_3)}$$

$$= \frac{200 - 100}{200 + 100} = \frac{1}{3}$$

$$\phi = \sin^{-1}\left(\frac{1}{3}\right)$$

80. (b)

$$\sigma_1 = \sigma_3 N_\phi + 2c\sqrt{N_\phi}$$

$$N_\phi = \tan^2\left(45° + \frac{\phi}{2}\right)$$

$$= \frac{1 + \sin\phi}{1 - \sin\phi}$$

81. (b)

$$A_f = \frac{A_0}{1 - \varepsilon} = \frac{15}{1 - 0.25}$$

$$= \frac{15}{0.75} = 20 \text{ cm}^2$$

82. (a)

Given, on U/S side, $h_1 = 16$ m

D/S side, $h_2 = 2$ m

Head loss, $h_L = 16 - 2 = 14$ m

$N_f = 7$, $N_d = 21$

$k_H = 6 \times 10^{-3}$ cm/s; $k_V = 3 \times 10^{-4}$ cm/s

$\therefore$

$$k_{eq} = \sqrt{k_h \times k_v}$$

$$= \sqrt{6 \times 10^{-3} \times 3 \times 10^{-4}} = 1.34 \times 10^{-3} \text{ cm/s}$$

Now,

$$q = k_{eq} H \frac{N_f}{N_d}$$

$$= 1.34 \times 10^{-3} \times 14 \times 100 \times \frac{7}{21}$$

$$= 0.626 \text{ cm}^2/\text{sec} = 0.626 \text{ cm}^3/\text{s/m}$$

83. (b)

As per Kozney Carman equation,

$$K = \frac{1}{K_K}\left(\frac{\gamma}{\mu}\right)_{fluid}\left(\frac{e^3}{1+e}d^2\right)_{medium}$$

K_K = Content

γ and μ = Unit weight and dynamic viscosity of fluid respectively

e = Void ratio

d = Particle size

84. (b)

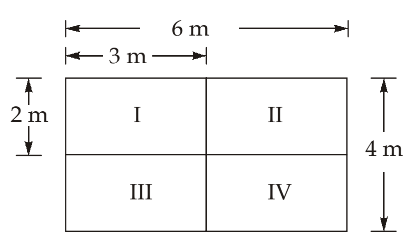
Vertical stress due to a line load of infinite length of intensity q per unit length (at a depth z) is given by

$$\sigma_z = \frac{2q}{\pi z}\left[\frac{1}{1+\left(\frac{x}{z}\right)^2}\right]^2$$

At the centre of load, $x = 0$

$$\therefore \quad \sigma_z = \frac{2q}{\pi z}$$

85. (d)



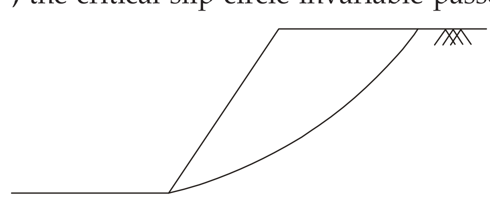
$\therefore$ Vertical stress at the centre of rectangular footing (4 m × 6 m)

= [Vertical stress at the corner of part-I (2 m × 3 m)] × 4

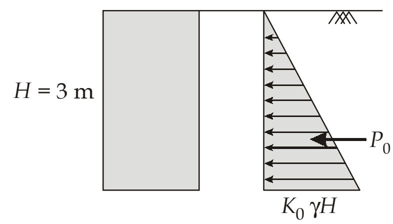
= 100 × 4 = 400 kN/m^2

87. (c)

For slopes greater than 53°; the critical slip circle invariable passes through the toe.



88. (d)



$$K_0 = 1 - \sin\phi = 1 - \sin 30° = \frac{1}{2}$$

$\therefore$ Total horizontal thrust, $P_0 = \frac{1}{2}K_0\gamma H^2$

$$= \frac{1}{2}\times\frac{1}{2}\times 20\times(3)^2$$

$$= 45 \text{ kN/m}$$

89. (c)

Coulomb's theory of earth pressure is based on following assumptions:

(1) The backfill is dry, cohesionless, homogeneous, isotropic and ideally plastic material.

(2) The slip surface is a plane surface which passes through heel of the wall.

(3) The wall surface is rough.

(4) The sliding wedge itself acts as a rigid body.

90. (a)

$$q_{nu} = c_u N_c s_c$$

$$s_c = \left(1 + 0.3\frac{B}{L}\right) = \left(1 + 0.3\times\frac{4}{6}\right) = 1.2$$

$$q_{nu} = 120 \times 5.7 \times 1.2 = 820.8 \text{ kN/m}^2$$

91. (a)

Given: q_u = 130 kN/m^2, Q_{ap} = 480 kN; FOS = 2.5, α = 0.6

$$Q_{up} = 480 \times 2.5 = 1200 \text{ kN};$$

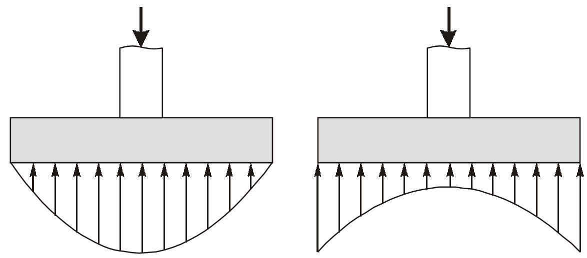
For friction pile,

$$Q_{up} = \alpha c_u A_s = \alpha c_u (4B)\times L$$

$$1200 = 0.6\times\left(\frac{130}{2}\right)\times 4\times 0.5\times L$$

$$L = 15.38 \text{ m}$$

92. (b)



Pressure distribution beneath a rigid footing on a cohesionless soil

Pressure distribution beneath a rigid footing on a cohesive soils

94. (c)

Sensitivity is defined as the ratio of the rate of change of discharge through outlet to the rate of change of water level of distributory. Hence rigid/modular outlet has zero sensitivity as discharge is constant in rigid module irrespective of water level of distributory of watercourse.

95. (a)

$$R = 1.35\left(\frac{q^2}{f}\right)^{1/3}$$

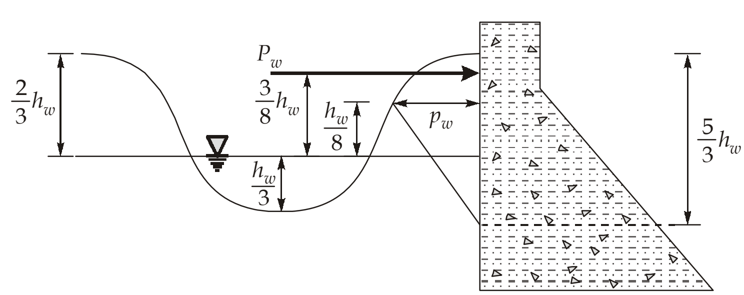
$$q = \frac{Q}{B} = \frac{\text{Discharge}}{\text{Width}}$$

$$f = \text{Silt factor}$$

96. (c)

Assumption of Kennedy's theory is that silt is in suspension due to eddy formed from bottom of the channel.

97. (b)



The force due to wave action (P_w) acts at a distance $\frac{3h_w}{8}$ above the reservoir surface.

100. (c)

The rate at which the water is removed by a drain is called the drainage coefficient.
It's recommended value is 1% of the average annual rainfall to be removed per day.

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