DETAILED SOLUTIONS

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ESE 2026 : Prelims Exam
CLASSROOM TEST SERIES

CIVIL ENGINEERING

Test 2

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Section B : Environmental Engineering

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DETAILED EXPLANATIONS

Section A : Geo-technical & Foundation Engineering

1. (b)

Given:

Volume of water, $V_w = 0.25\ V$

Volume of air, $V_a = 0.15\ V$

$\because$ Volume of voids, $V_v = V_w + V_a$

$\Rightarrow V_v = 0.25\ V + 0.15\ V$

$\Rightarrow \dfrac{V_v}{V} = 0.40$

Porosity, $n = 0.4$

$\therefore e = \dfrac{n}{1-n} = \dfrac{0.4}{1-0.4} = 0.67$

2. (c)

Given: $(I_p)_{soil} = 20\%$

Percent fineness $= 100 - 25\% = 75\% > 12\%$

$(I_p)_{A\text{-line}} = 0.73\ (w_L - 20)$

$= 0.73\ (45 - 20) = 18.25\%$

$(I_p)_{soil} = 20\%$

$\because (I_p)_{soil} > (I_p)_{A\text{-line}}$

and $w_L = 45\%$. It is lies between (35% and 50%)

So, soil can be classified as intermediate compressible clay i.e. clay of intermediate compressibility (CI).

3. (d)

Given: Critical height, $H_c = 5$ m

Critical depth of cut in clay is given by

$$H_c = 2Z_c = \frac{4C_u}{\gamma\sqrt{K_a}}$$

$\Rightarrow 5 = \dfrac{4C_u}{18\sqrt{1}}$

$\Rightarrow C_u = 22.5\ kN/m^2 = 22.5\ kPa$

4. (b)

Given: $G = 2.65, \quad e = 0.5$

Critical hydraulic gradient

$$i_c = \frac{G-1}{1+e}$$

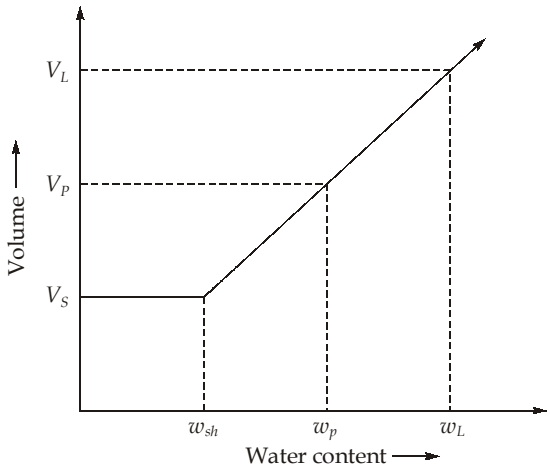
$\Rightarrow i_c = \dfrac{2.65-1}{1+0.50} = \dfrac{1.65}{1.50}$

$\Rightarrow i_c = 1.10$

5. (c)

- Water displacement method → Determination of unit weight of soil
- Casagrande's apparatus → Determination of consistency limits
- Pycnometer method → Specific gravity of soil solids and water content.
- Oedometer → Consolidation characteristic.

6. (b)



- Plasticity Index, $I_p = w_L - w_p$
- At liquid limit, all the soils have almost same and negligible shear strength = 2.7 kN/m^2 (not zero).

7. (d)

Given: $H_i = 50$ mm, $H_f = 35$ mm, $e_o = 1.5$, $e_f = ?$

The volume of solids does not change during consolidation and for a soil specimen of constant cross-sectional area,

$$V_S = \frac{V_i}{1+e_o} = \frac{V_f}{1+e_f}$$

$$\Rightarrow \quad \frac{A \times 50}{1+1.5} = \frac{A \times 35}{1+e_f}$$

$$\Rightarrow \quad 1 + e_f = 1.75$$

$$\Rightarrow \quad e_f = 0.75$$

Alternative solution:

$$\because \quad \frac{\Delta H}{H_o} = \frac{\Delta e}{1+e_o}$$

$$\Rightarrow \quad \frac{50-35}{50} = \frac{1.5-e_f}{1+1.5}$$

$$\Rightarrow \quad 0.75 = 1.5 - e_f$$

$$\Rightarrow \quad e_f = 0.75$$

8. (d)

Comparison of Dry of Optimum with Wet of Optimum Compaction

Property	Dry of optimum	Wet of optimum
Structure after compaction	Flocculated (random)	Dispersed (oriented)
Water deficiency	More	Less
Permeability	More, isotropic	Less, anisotropic ($k_H > k_v$)
Compressibility at low stress at high stress	 Low High	 Higher Lower
Swell ability	High	Low
Shrinkage	Low	High
Stress-strain behavior	Brittle; high peak higher elastic modulus	Ductile; no peak, lower elastic modulus
Construction pore	Low	High
water pressures Strength (undrained) as moulded, after saturation	 High somewhat higher if swelling prevented	 Much lower Low

9. (b)

- The phreatic line separates the saturated zone (below it) from the unsaturated zone (above it).
- Every point on this line is at atmospheric pressure, so the pressure head is zero.
- Therefore, total head = elevation head.
- It starts at the upstream water surface and ends at the downstream filter.

10. (c)

Given: $e_{\text{in-situ}} = 0.50$

$e_{\max} = 0.90$, $e_{\min} = 0.35$

$G_s = 2.7$

$$\because \quad \gamma_{d,\max} = \frac{G\gamma_w}{1+e_{\min}}$$

$$\gamma_{d,(\text{insitu})} = \frac{G\gamma_w}{1+e_{in-\text{situ}}}$$

$$\therefore \quad \text{Relative compaction} = \frac{\gamma_{d,\text{in-situ}}}{\gamma_{d,\max}} \times 100 = \frac{1+e_{\min}}{1+e_{\text{in-situ}}} \times 100$$

$$= \frac{1+0.35}{1+0.50} \times 100 = 90\%$$

11. (a)

Terzaghi's theory neglects secondary consolidation (creep).

It assumes that the relationship between void ratio and effective stress is time-independent, and once excess pore pressure is fully dissipated, settlement stops. Secondary consolidation (long-term creep) is beyond the scope of this theory.

12. (b)

Shear strength of clay is given by

$$\tau = \frac{T}{\pi D^2\left(\frac{H}{2}+\frac{D}{12}\right)} \text{ for one way shearing}$$

$$\tau = \frac{T}{\pi D^2\left(\frac{H}{2}+\frac{D}{6}\right)} \text{ for two way shearing}$$

13. (a)

Active earth pressure at a depth z, acting parallel to the slope, is given by

$$p_a = K_a \gamma z \cos\beta$$

where, $$K_a = \frac{\cos\beta - \sqrt{\cos^2\beta - \cos^2\phi}}{\cos\beta + \sqrt{\cos^2\beta - \cos^2\phi}}$$

Total active thrust P_A for a wall of height H is given by

$$P_a = \frac{1}{2}K_a\gamma H^2 \cos\beta$$

$$\Rightarrow \quad P_a = \frac{1}{2}\gamma H^2 \cos\beta \left[\frac{\cos\beta - \sqrt{\cos^2\beta - \cos^2\phi}}{\cos\beta + \sqrt{\cos^2\beta - \cos^2\phi}}\right]$$

14. (b)

Here, total number of equipotential drops, $N_d = 10$

Total head $\Delta H = 18$ m

Hydraulic potential at point A

$$= \Delta H - \frac{\Delta H}{N_d}\times 3 = 18 - \frac{18}{10}\times 3 = 12.6 \text{ m of water}$$

15. (d)

Area ratio of the sampler is given by

$$A_r = \left(\frac{A_o - A_i}{A_i}\right)\times 100$$

$$\Rightarrow \quad A_r = \left(\frac{D_o^2 - D_i^2}{D_i^2}\right)\times 100$$

$$\Rightarrow \quad A_r = \left(\frac{55^2 - 50^2}{50^2}\right)\times 100 = 21\%$$

16. (c)

Depth of excavation, $H = \dfrac{C_u}{S_n \gamma_t (FOS)}$

For maximum depth of excavation,

$FOS = 1$

$\therefore \quad H_{max} = \dfrac{C_u}{S_n \gamma_t}$

$\Rightarrow \quad H_{max} = \dfrac{50}{0.167 \times 20} = 14.97 \text{ m}$

$\Rightarrow \quad H_{max} \simeq 15 \text{ m}$

17. (c)

We know, $\sigma_1 = \sigma_3 \tan^2\left(45 + \dfrac{\phi}{2}\right) + 2c \tan\left(45 + \dfrac{\phi}{2}\right)$

$\Rightarrow \quad 70\sqrt{3} = 0 + 2c \tan\left(45 + \dfrac{30}{2}\right)$

$\Rightarrow \quad 70\sqrt{3} = 2c \times \sqrt{3}$

$\Rightarrow \quad c = 35 \text{ kN/m}^2$

18. (b)

Total head loss at, $x = \dfrac{90}{30} \times 20 = 60 \text{ cm}$

Total head = 90 – 60 = 30 cm

Datum head = 40 cm

$\therefore$ Pressure head = $TH - DH$

= 30 – 40 = – 10 cm

19. (c)

When effective stress (σ') on a soil mass increases:

- The soil particles are pressed closer together,
- The voids between particles get reduced.
- Hence, the void ratio (e) decreases.

Thus, permeability k depends on the size and connectivity of the voids (pores).

As void ratio decreases, pore channels become narrower, and so permeability also decreases.

20. (c)

$Se = wG$

$S = 1$ (Saturated clay)

$e_1 = 0.3 \times 2.7 = 0.81$

$e_2 = 0.26 \times 2.7 = 0.702$

$\therefore \quad \Delta e = 0.81 - 0.702 = 0.108$

$\therefore$ Settlement $= \dfrac{\Delta e}{1 + e_1} \times H = \dfrac{0.108}{1.81} \times 2000 = 119.34 \text{ mm} \simeq 120 \text{ mm (say)}$

21. (a)

22. (b)

Permeability as per Hazen's equation is

$$K = CD_{10}^2$$

$$\Rightarrow \quad K = 100\,(0.01)^2 \text{ cm/sec.}$$

$$\Rightarrow \quad K = 1 \times 10^{-4} \text{ m/sec}$$

Discharge per unit length of dam is given by

$$q = K\Delta H \frac{N_f}{N_d}$$

Here, number of flow channels, $N_f = 7 - 1 = 6, \quad N_d = 10$

$$\therefore \quad q = 1 \times 10^{-4} \times 5 \times \frac{6}{10}$$

$$\Rightarrow \quad q = 3 \times 10^{-4} \text{ m}^3/\text{sec/m length of sheet pile wall}$$

23. (c)

Given: $B = 2$ m, $Q = 400$ kN

$E_S = 4$ MPa, $\mu = 0.4$, $I_f = 0.5$

Immediate settlement of the soil is given by

$$S_i = \frac{qI_f B\left(1-\mu^2\right)}{E_S}$$

$$\Rightarrow \quad S_i = \frac{400}{2\times 2} \times \frac{0.5 \times 2\left(1-0.4^2\right)}{4\times 10^3} = 0.021 \text{ m}$$

$$\Rightarrow \quad S_i = 21 \text{ mm}$$

24. (a)

Let at depth Z_o, the active earth pressure becomes equal to zero.

$$P_a = K_a q + K_a \gamma Z - 2C\sqrt{K_a}$$

At $Z = Z_o$, $P_a = 0$

$$\therefore \quad 0 = K_a q + K_a \gamma Z_o - 2C\sqrt{K_a}$$

$$\Rightarrow \quad Z_o = \frac{2C}{\gamma\sqrt{K_a}} - \frac{q}{\gamma}$$

Critical depth of vertical cut, $H_C = 2\,Z_o$

$$\Rightarrow \quad H_C = \frac{4C}{\gamma\sqrt{K_a}} - \frac{2q}{\gamma}$$

25. (a)

- When soil settles more than pile → Negative skin friction develops.
- When pile settles more than soil → Positive skin friction (resistance) develops.

26. (d)

- Hydrostatic loading means $\sigma_1 = \sigma_2 = \sigma_3 = \sigma_h$. The Mohr's circle therefore collapses to a single point on the normal-stress axis at σ_h distance from origin.
- The stress state is within the safe (non-failure) region, so the soil is stable under that stress state.

27. (a)

28. (b)

$\because$ For normally consolidated clay, $C = 0$

$$q_u = CN_c + qN_q + 0.5\,B\gamma N_\gamma$$

$$\Rightarrow \quad q_u = 1 \times 16 \times 60 + 0.5 \times 16 \times 1.5 \times 75 = 1860\ \text{kN/m}^2$$

29. (b)

Given: $\gamma_t = 19\ \text{kN/m}^3, \quad w = 0.14$

$G = 2.68$

Dry unit weight, $\gamma_d = \dfrac{\gamma_t}{1+w} = \dfrac{19}{1+0.14}$

$= 16.67\ \text{kN/m}^3$

$$\therefore \quad 16.67 = \frac{2.68 \times 10}{1+e}$$

$$\Rightarrow \quad e = 0.61$$

30. (c)

$$C = \frac{q_u}{2} = \frac{110}{2} = 55\ \text{kN/m}^2$$

$$\therefore \quad q_{nu} = CN_c$$

For strip footing, $N_c = 5\left(1 + \dfrac{0.2D_f}{B}\right)$

$$\therefore \quad q_{nu} = 5C\left(1 + \frac{0.2D_f}{B}\right)$$

$$\therefore \quad \frac{P_{\text{safe}}}{B} = \frac{q_{nu}}{FOS}$$

$$\Rightarrow \quad \frac{100}{B} = \frac{5 \times 55}{2.5}\left(1 + \frac{0.2 \times 1}{B}\right)$$

$$\Rightarrow \quad \frac{100}{B} = 110 + \frac{22}{B}$$

$$\Rightarrow \quad B = 0.71\ \text{m}$$

31. (a)

1. **Sheep fool roller:** It is suited for compaction of cohesive soils. The rollers compact the soil by combination of tamping and kneading action.
2. **Smooth wheeled roller:** It is based on pressure action and is useful for finishing operations and for compacting granular base courses of highways.
3. **Rammers:** Tamper or rammer may be hand operated or machine operated. It is lifted to a particular height and dropped on the soil to be compacted.

32. (c)

As we know, $\gamma_d = \dfrac{G\gamma_w}{1+e} = \dfrac{G\gamma_w}{1+\dfrac{Gw}{S}}$

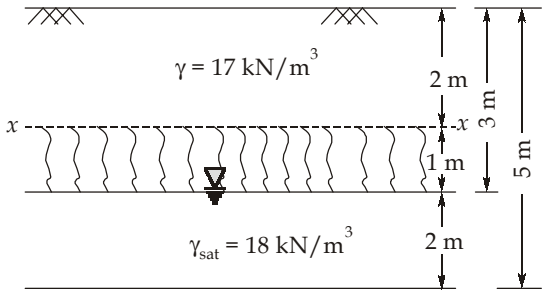
where $G = 2.7, \gamma_w = 9.81\ \text{kN/m}^3, S = 0.75$

$\therefore \quad \gamma_d = \dfrac{2.7\times 9.81}{1+\dfrac{2.7\times w}{0.75}} \simeq \dfrac{26.49}{1+3.6w}$

33. (d)

- Quicksand condition occurs when flow is upward through the soil.
- In clays, the shear stress does not get reduced to zero even when the effective stress becomes zero, owing to its cohesion.
- High artesian pressure in a coarse sand is major reason for development of quicksand condition.

34. (b)



σ'_{x-x} before capillary rise $= \sigma - \mu = 17(3) + 18(2) - 10(2) = 67\ \text{kN/m}^2$

σ'_{x-x} after capillary rise $= \sigma - \mu = 17(2) + 18(3) - 10(2) = 68\ \text{kN/m}^2$

$\Delta\sigma'_{x-x} = 1\ \text{kN/m}^2$

35. (c)

Dilatancy correction, is applied to saturated fine sands and silts when the overburden-corrected N-value (N) is greater than 15. This correction is given by,

$$N' = 15 + \frac{1}{2}(N - 15)$$

where N' = Final corrected value

N = Value after applying the standard overburden pressure correction.

36. (b)

Ultimate driving resistance as per Hiley's formula is given by

$$Q_u = \frac{\eta WH}{S + \dfrac{C}{2}} = \frac{0.6\times 60\times 100}{0.4 + \dfrac{0.6}{2}}$$

$\Rightarrow \quad Q_u = 5142.86\ \text{kN} \simeq 5142\ \text{kN}$

37. (b)

38. (b)

- For cohesionless soil, the shear strength parameter is internal friction angle whereas for cohesive soil, cohesion is shear strength parameter.
- Shear failure plane for cohesionless soil is a straight line, whereas for cohesive soil it is curvilinear.

Section B : Environmental Engineering

39. (b)

In arithmetic increase method the rate of change of population is assumed to be constant.

- It generally gives lower results.
- It is used for forecasting population of large cities who have reached their saturation population.

40. (d)

Colour matching method is used to determine the amount of nitrites and nitrates present in a water sample. Colour is developed first and then matched with samples of known concentrations. Colours are developed by,

For nitrites: Sulphonic acid and naphthamine

For nitrates: Phenol-di-sulphonic acid and potassium hydroxide.

41. (d)

If currents permit a substantial portion of the water to pass directly through the tank without being detained for the intended time, the flow is said to be short-circuited.

42. (b)

Sound pressure, $$L = 20\log_{10}\left(\frac{P_{rms}}{P_{rms_o}}\right) dB$$

$$\Rightarrow \quad L = 20\log_{10}\left(\frac{200}{20}\right) dB$$

$$\Rightarrow \quad L = 20\log_{10}(10)\ dB$$

$$\Rightarrow \quad L = 20\ dB$$

43. (b)

AQI	AQI	Possible Health impact
0-50	Good	Minimal impact
51-100	Satisfactory	Minor breathing discomfort to sensitive people
101-200	Moderate	Breathing discomfort to the people with asthma, lungs and heart diseases
201-300	Poor	Breathing discomfort to most people on prolonged exposure
301-400	Very Poor	Respiratory illness on prolonged exposure
401-500	Severe	Affects healthy people and seriously impacts those with existing diseases

44. (a)

Well development means stabilization of the walls of a well adjacent to the screen, by a process which removes the fine particles from the formation immediately surrounding the well screen, leaving coarser particles to contact and surround the screen..

The basic principle in well development is to cause reversal of flow through the screen openings, that will rearrange the aquifer particles.

45. (d)

46. (c)

Typical plant treating hard groundwater:

Raw water
↓
Aeration
↓
Softening
↓
Filtration
↓
Disinfection
↓
Storage
↓
Distribution system

47. (d)

The rate at which the oxygen is supplied to the water body depends upon:

1. The depth of the water body - Rate is more in shallow water bodies as compared to deeper water bodies.
2. The condition of the water body - Rate is more in a running stream than in a quiescent pond.
3. The saturation deficit or the oxygen deficit
4. The temperature of water body

48. (d)

Putrefaction refers to anaerobic decomposition of organic matter. Septic tanks, Imhoff tanks, Sludge digestion tanks and Anaerobic lagoons operate under anaerobic conditions.

49. (b)

50. (c)

Given: $DO_i = 9\ mg/l, \quad DO_f = 3\ mg/l$

$$BOD = (\text{Initial } DO - \text{Final } DO) \times \text{Dilution factor}$$

where, $$\text{Dilution factor} = \frac{\text{Volume of diluted sample}}{\text{Volume of undiluted sample}}$$

$$\therefore \quad BOD = (9 - 3) \times \frac{100}{2}$$

$$\Rightarrow \quad BOD = 300\ mg/l$$

51. (b)

$$L_t = L_o e^{-kt}$$

For 5 days,

$$L_t = 480\ e^{-0.20 \times 5}$$

$$\Rightarrow \quad L_t = 480\ e^{-1}$$

$$\Rightarrow \quad L_t = \frac{480}{2.72} = 176.47\ mg/l \simeq 176\ mg/l$$

52. (d)

53. (a)

A dead-end system or tree system of water distribution has the following disadvantages:

i. Any damage or repair work to any pipe line will completely halt the water supply to the area being fed by that pipeline.

ii. Presence of a number of dead ends in the system prevents the free circulation of water and may result in the stagnation of water at these ends.

54. (b)

- When the ambient lapse rate is greater than adiabatic lapse rate, a parcel of rising air remains warmer and lighter than surrounding air and thus continues to rise. This condition is referred to as unstable atmosphere.
- When ambient lapse rate is less than adiabatic lapse rate, the air parcel becomes cooler and denser and thus settles towards lower layers of atmosphere. This condition is referred to as stable atmosphere.
- If both are equal, then atmosphere is said to be in neutral stability.

55. (b)

Various methods which may be used for disposing of the hazardous wastes from hospitals are:

1. Chemical disinfection
2. Autoclaving
3. Microwaving
4. Hydroclaving
5. Incineration

56. (b)

Goodrich equation:

$$p = 180\ t^{-0.1}$$

where p is percentage of annual average consumption for time t days.

Maximum daily demand,

$$MDD = \frac{180(1)^{-0.1}}{100} \times q = 1.80\ q$$

Maximum monthly demand,

$$MMD = \frac{180(30)^{-0.1}}{100} \times q = 1.28\ q$$

Maximum weekly demand, $MWD = \dfrac{180(7)^{-0.1}}{100} = 1.48\ q$

57. (a)

Displacement efficiency is defined as the ratio of actual average time which a batch of water takes in passing through a settling tank and detention time.

58. (a)

Mesotrophic lakes have moderate productivity and moderate oxygen depletion in the hypolimnion, but it generally remains aerobic, not anaerobic.

59. (b)

SO_2 reacts with water to form sulphurous acid (H_2SO_3) while SO_3 reacts with water to form sulphuric acid (H_2SO_4). In the atmosphere, H_2SO_3 further gets oxidised to form sulphuric acid, which contributes to acid rain.

60. (b)

Non-equilibrium formula for confined aquifers:

$$s = \frac{Q}{4\pi T}\left[\log_e \frac{4Tt}{r^2 A} - 0.5772\right]$$

Where,

s = Drawdown in the observation well after a time t

T = Coefficient of transmissibility

Q = Constant discharge pumped out from the well.

A = Coefficient of storage of measured drawdown

r = Radial distance of the observation well from the main pumped well.

For any two drawdowns at times t_1 and t_2, the equation can be written as:

$$s_2 - s_1 = \frac{2.3\,Q}{4\pi T}\log_{10}\frac{t_2}{t_1}$$

61. (c)

Sewer appurtenances are those structures which are constructed at suitable intervals along a sewerage system and help in its efficient operation and maintenance. These devices include:

1. Manholes
2. Drop manholes
3. Lamp-holes
4. Clean-outs
5. Street inlets
6. Catch basins
7. Flushing tanks
8. Grease and oil traps
9. Inverted siphons
10. Storm regulators

62. (c)

In municipal water supplies, the displacement meter is commonly used for domestic or individual house connections. Velocity meters and inferential meters are generally used for larger mains.

63. (d)

64. (d)

Nephelometer → Turbidity
Tintometer → Colour
Olfactometer → Smell
Potentiometer → pH

65. (d)

66. (b)

- Aeration aids in both degassification and oxidation.
- From the oxidation equations:

$$4Fe^{2+} + O_2 + 10H_2O \rightarrow 4Fe(OH)_3 \downarrow + 8H^+$$
$$2Mn^{2+} + O_2 + 2H_2O \rightarrow 2MnO_2 \downarrow + 4H^+$$

Generation of H^+ shows pH decreases slightly during oxidation.

- The oxidized products are insoluble precipitates not soluble and are stable.

67. (a)

Area Category	Day-time	Night-time
Industrial area	75 dB(A)	70 dB(A)
Commercial area	65 dB(A)	55 dB(A)
Residential area	55 dB(A)	45 dB(A)
Silence zone	50 dB(A)	40 dB(A)

68. (a)

Advantages of A.C. sewer pipes:

- They have a smooth internal surface, which gives them good hydraulic efficiency and allows sewage to flow easily.
- Light in weight, so they are easy to handle, transport, and lay.
- Can be cut and jointed easily, even without highly skilled labour.
- Economical for smaller sizes

Disadvantages of A.C. sewer pipes:

- They are susceptible to corrosion by sulphuric acid, which forms in septic sewers.
- Limited structural strength, so they are unsuitable for deep sewers or under heavy traffic.

69. (c)

- Colloidal particles acquire a surface charge that attracts counter-ions, forming an electrical double layer.
- This causes electrostatic repulsion between similarly charged particles, preventing aggregation and maintaining colloidal stability.
- The zeta potential determines the magnitude of this repulsive force.

70. (a)

$$V_1 = 120\ \text{m}^3/\text{day}$$

$$V_2 = V_1\left[\frac{100-P_1}{100-P_2}\right] = 120\left[\frac{100-96}{100-90}\right]$$

$$\Rightarrow \quad V_2 = 120\left(\frac{4}{10}\right) = 48\ \text{m}^3/\text{day}$$

$$\therefore \quad \text{Capacity} = \left[V_1 - \frac{2}{3}(V_1 - V_2)\right]t$$

$$= \left[120 - \frac{2}{3}(120-48)\right]30$$

$$= [120 - 48]\ 30 = 2160\ \text{m}^3$$

71. (b)

The standard unit of colour is produced by 1 mg of platinum-cobalt complex dissolved in one litre of distilled water.

72. (c)

Polycyclic aromatic hydrocarbons (*PAHs*) are resistant to oxidation due to their stable fused ring structure and do not readily oxidise completely under typical COD test conditions. This is one of the reasons of underestimation of COD values.

73. (a)

Elevated temperatures often accompany increased metabolic rates. At lower temperatures, the rate of biological activity i.e. utilisation of food supplies, growth, reproduction etc. is slower. An increase of 10°C is usually sufficient to double the biological activity if essential nutrients are present.

74. **(c)**

Chlorination is more effective at lower pH as the dissociation shifts towards HOCl which is the more effective disinfectant.

75. **(c)**

Tapered flocculation is more efficient because the velocity gradient (G) is decreases gradually from inlet to outlet, promoting gentle mixing that allows flocs to grow without breaking. Hence, the velocity gradient at the inlet is higher than that at the outlet.

■■■■