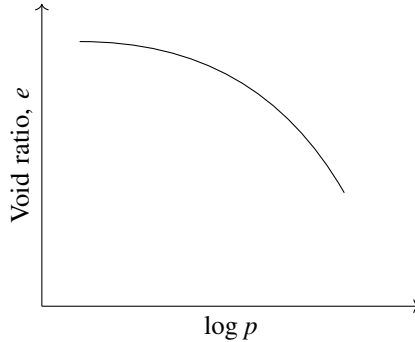# 2010 CE 14-26

AI24BTECH11031 - Shivram S

1) The e-$\log p$ curve shown in the figure is representative of

a) Normally consolidated clay   c) Under consolidated clay
b) Over consolidated clay   d) Normally consolidated clayey sand

2) If $\sigma_h, \sigma_v, \sigma'_h$, and σ'_v represent the total horizontal stress, total vertical stress, effective horizontal stress, and effective vertical stress on a soil element, respectively, the coefficient of earth pressure at rest is given by

a) $\frac{\sigma_h}{\sigma_v}$ b) $\frac{\sigma'_h}{\sigma'_v}$ c) $\frac{\sigma_v}{\sigma_h}$ d) $\frac{\sigma'_v}{\sigma'_h}$

3) A mild-sloped channel is followed by a steep-sloped channel. The profiles of gradually varied flow in the channel are

a) M_3, S_2 b) M_3, S_3 c) M_2, S_1 d) M_2, S_2

4) The flow in a rectangular channel is subcritical. If the width of the channel is reduced at a certain section, the water surface under no-choke condition will

a) drop at a downstream section   c) rise at an upstream section
b) rise at a downstream section   d) not undergo any change

5) The correct match of Group-I with Group-II is

Group-I	Group-II
P. Evapotranspiration	1. Penman method
Q. Infiltration	2. Snyder's method
R. Synthetic unit hydrograph	3. Muskingum method
S. Channel Routing	4. Horton's method

a) P-1, Q-3, R-4, S-2 c) P-3, Q-4, R-1, S-2
b) P-1, Q-4, R-2, S-3 d) P-4, Q-2, R-1, S-3

6) Group-I gives a list of devices and Group-II gives the list of uses.

Group-I	Group-II
P. Pitot tube	1. measuring pressure in a pipe
Q. Manometer	2. measuring velocity of flow in a pipe
R. Venturimeter	3. measuring air and gas velocity
S. Anemometer	4. measuring discharge in a pipe

The correct match of Group-I with Group-II is

a) P-1, Q-2, R-4, S-3 c) P-2, Q-1, R-4, S-3
b) P-2, Q-1, R-3, S-4 d) P-4, Q-1, R-3, S-2

7) A coastal city produces municipal solid waste (MSW) with high moisture content, high organic materials, low calorific value, and low inorganic materials. The most effective and sustainable option for MSW management in that city is

a) Composting   b) Dumping in sea   c) Incineration   d) Landfill

8) According to the Noise Pollution (Regulation and Control) Rules, 2000, of the Ministry of Environment and Forests, India, the day time and night time noise level limits in ambient air for residential areas expressed in dB(A) Leq are

a) 50 and 40   b) 55 and 45   c) 65 and 55   d) 75 and 70

9) An air parcel having $40°C$ temperature moves from ground level to 500 m elevation in dry air following the "adiabatic lapse rate". The resulting temperature of air parcel at 500 m elevation will be

a) $35°C$ b) $38°C$ c) $41°C$ d) $44°C$

10) Aggregate impact value indicates the following property of aggregates

a) Durability   b) Toughness   c) Hardness   d) Strength

11) As per IRC: 67-2001, a traffic sign indicating the Speed Limit on a road should be of
   a) Circular Shape with White Background and Red Border
   b) Triangular Shape with White Background and Red Border
   c) Triangular Shape with Red Background and White Border
   d) Circular Shape with Red Background and White Border

12) The local mean time at a place located in longitude 90°40′ E when the standard time is 6 hours and 30 minutes and the standard meridian is 82°30′ E is

   a) 5 hours, 2 minutes and 40 seconds   c) 6 hours and 30 minutes
   b) 5 hours, 57 minutes and 20 seconds   d) 7 hours, 02 minutes and 40 seconds

13) The solution to the ordinary differential equation $\frac{d^2y}{dx^2} + \frac{dy}{dx} - 6y = 0$ is

   a) $y = c_1e^{3x} + c_2e^{-2x}$ c) $y = c_1e^{-3x} + c_2e^{2x}$
   b) $y = c_1e^{3x} + c_2e^{2x}$ d) $y = c_1e^{-3x} + c_2e^{-2x}$