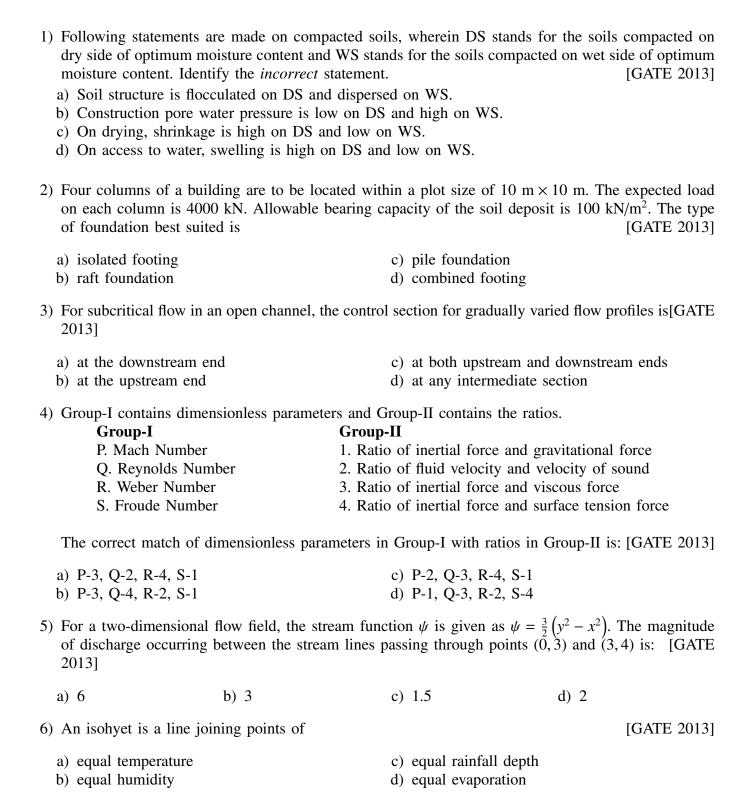
2013-CE

EE24BTECH11020 - Ellanti Rohith



7) Some of the water quality parameters are measured by titrating a water sample with a titrant. Group-I

gives a list of parameters and Group-II gives the list of titrants.

[GATE 2013]

P. Alkalinity Q. Hardness	1. N/35.5 AgNO ₃ 2. N/40 Na ₂ S ₂ O ₃
R. Chloride	3. N/50 H ₂ SO ₄
S. Dissolved ox	kygen 4. N/50 EDTA
The correct match of water quality parameters in Group-I with titrants in Group-II is:[GATE 2013]	
a) P-1, Q-2, R-3, S-4	c) P-2, Q-1, R-4, S-3
b) P-3, Q-4, R-1, S-2	d) P-4, Q-3, R-2, S-1
8) A water treatment plant is designed to treat $1 m^3/s$ of raw water. It has 14 sand filters. Surface area of each filter is 50 m^2 . What is the loading rate (in $\frac{m^3}{day \cdot m^2}$) with two filters out of service for routine backwashing?	
each filter is $50 m^2$. What is the loading	rate (in $\frac{m}{dav \cdot m^2}$) with two filters out of service for routine
backwashing?	[GATE 2013]
9) Select the strength parameter of concrete used in design of plain jointed cement concrete pavements from the following choices: [GATE 2013]	
a) Tensile strength	c) Flexural strength
b) Compressive strength	d) Shear strength
10) It was observed that 150 vehicles crossed a particular location of a highway in a duration of 30 minutes. Assuming that vehicle arrival follows a negative exponential distribution, find out the number of time headways greater than 5 seconds in the above observation? [GATE 2013]	
11) For two major roads with divided carriageway crossing at right angle, a full clover leaf interchange with four indirect ramps is provided. Following statements are made on turning movements of vehicles	
to all directions from both roads. Identify the <i>correct</i> statement: [GATE 2013]	
a) Merging from left is possible, but diverging to left is not possible.b) Both merging from left and diverging to left are possible.	
c) Merging from left is not possible, but diverging to left is possible.	
d) Neither merging from left nor diverging to left is possible.	
12) The latitude and departure of a line AB are +78 m and -45.1 m, respectively. The whole circle bearing of the line AB is: [GATE 2013]	
a) 30°	c) 210°
b) 150°	d) 330°
13) The state of 2D-stress at a point is given by the following matrix of stresses:	
$\begin{pmatrix} \sigma_{xx} & \sigma_{xy} \\ \sigma_{xy} & \sigma_{yy} \end{pmatrix} = \begin{pmatrix} 100 & 30 \\ 30 & 20 \end{pmatrix} \text{ MPa}$	

Group-II

Group-I

a) 50 b) 75 c) 100 d) 110

What is the magnitude of maximum shear stress in MPa?