Q : 1) The manhole in which a vertical pipe is used is called

A : Deep manhole

B : Drop manhole

C : Ramp

D : Lamp hole

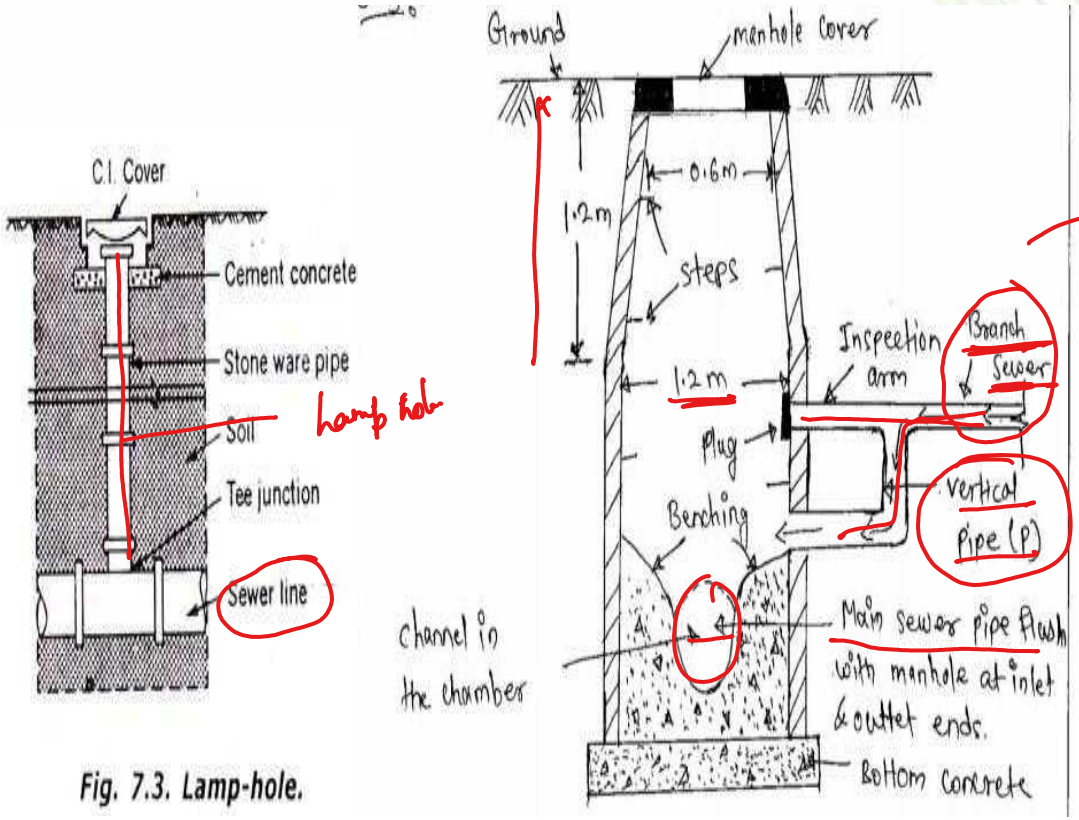

Fig. 7.3. Lamp-hole.

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Q : 2) Which one of the following test is conducted to evaluated the durability property of aggregate?

A : Water absorption test

B : Impact test

C : Soundness test

D : Abrasion test

Resistance to Weathering

Soundness test

C

Sudden loading

IS: 2386

disintegration

freezing & thawing / Resistance

Magnesium sulphate & Sodium (16-18hrs)

Oven dry (105° - 110°C)

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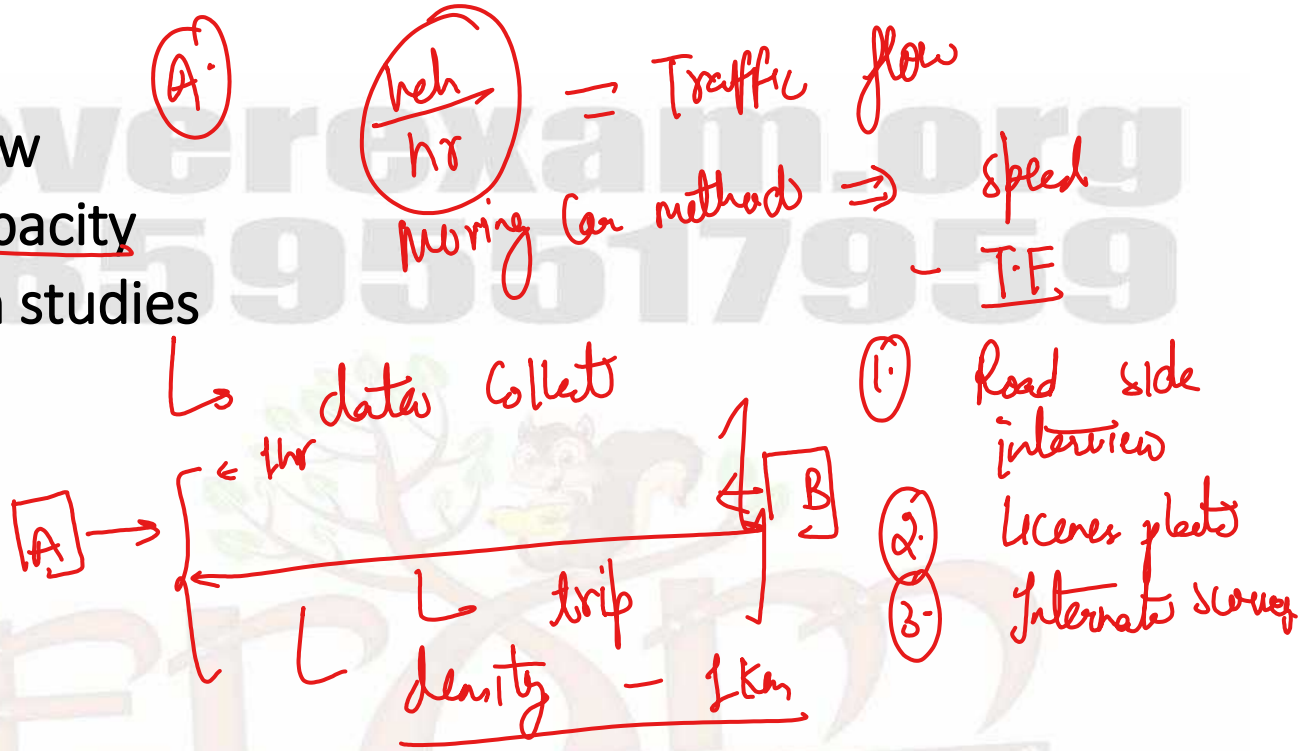
Q : 3) For which one of the following purpose, moving car observer method is adopted?

A : To determine traffic flow

B : To determine traffic capacity

C : For origin & destination studies

D : None of the above



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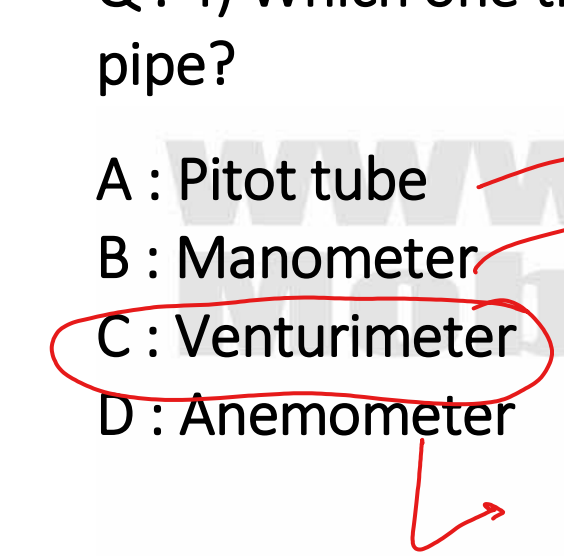
Q : 4) Which one the following device is used to measure discharge in a pipe?

A : Pitot tube

B : Manometer

C : Venturimeter

D : Anemometer



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Q : 5) Silt control devices which extract the silt from the canal-water the silted water has travelled a certain distance in the off-take is called

A : Silt excluders
B : Silt ejectors
C : Silt extractors
D : Both silt ejectors and extractors

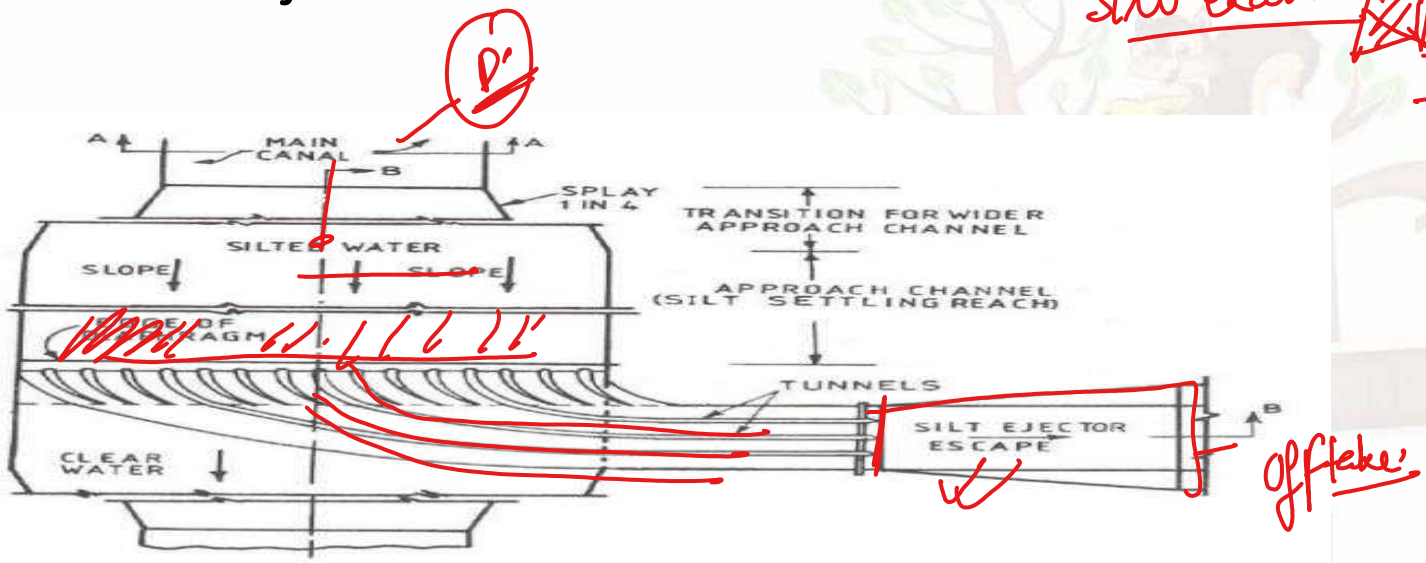

Fig: Plan of Silt Ejector

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Q : 6) Which one of the following substance is blended with bitumen for production of slow curing cutback bitumen?

A : Petrol

B : Diesel

C : High boiling point gases

D : None the the above

Bitumen Viscosity ↓ volatile substance

Slow curing – Blending Bitumen with oily petroleum fraction (375°C)

Medium curing – Hydrocarbon (Kerosene)

Rapid curing – gasoline, Naphtha

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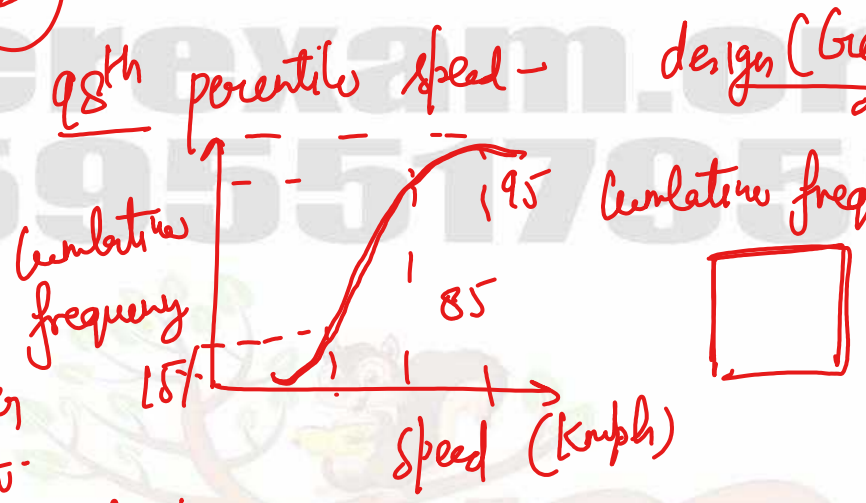
Q : 7) Which one of the following percentile speed is considered as upper safe unit for vehicles?

A : 15th percentile speed
B : 85th percentile speed
C : 98th percentile speed
D : None of the above

B.

98th percentile speed - design (Geometric design)



Civil Example

85 - Upper limit.

15th lower limit.

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Q : 8) Which of the following surveying is conducted in order to determine the boundaries of fields, estates, houses?

A : Topographical surveying

B : Cadastral surveying

C : City surveying

D : Engineering surveying

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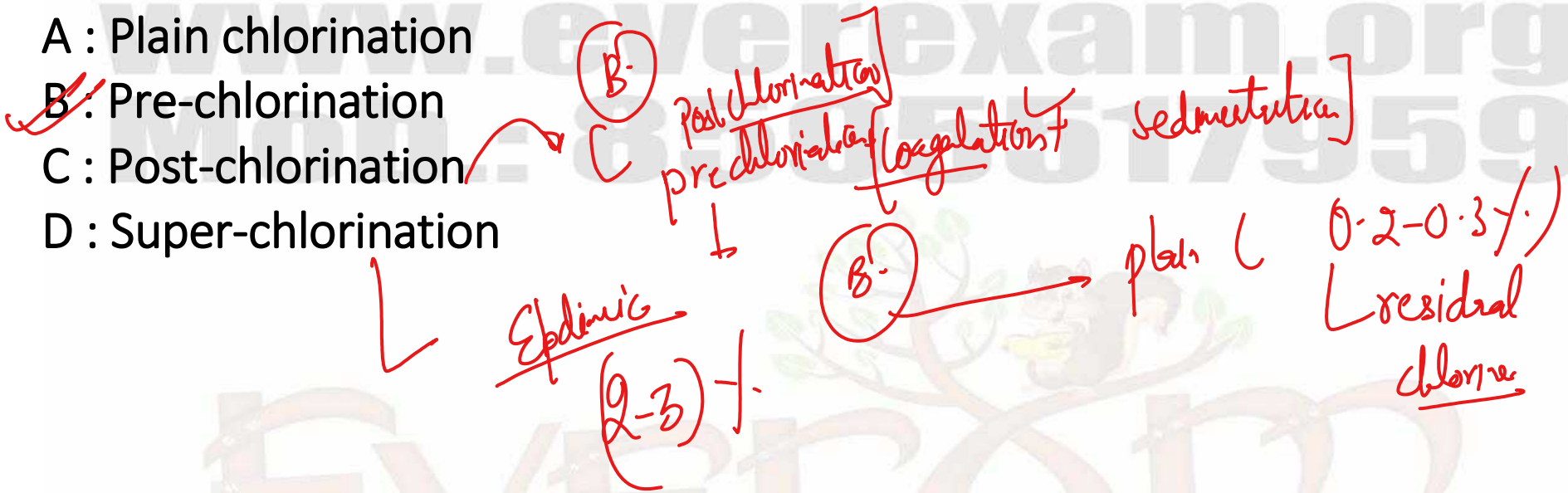
Q : 9) The process of applying chlorine to the water before filtration or rather before sedimentation coagulation is called as

A : Plain chlorination
B : Pre-chlorination
C : Post-chlorination
D : Super-chlorination



B. Post chlorination
pre chlorination
coagulation + sedimentation

B. plain (0.2-0.3%)
residual chlorine

Epidemic
(2-3)%

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Q : 10) For conducting light compaction proctor test as per Indian standard, what should be the value the free fall of hammer (in mm)?

A : 304.8
B : 457.2
C : 310
D : 450

C

BIS

	Light rainfall	Heavy Rainfall
mass	2.6 kg	4.89 kg
drop	310 mm	450 mm
no. of layers	3	5
no. of blows	25	25
~~Height of fall~~	592 kJ/m³	2700 kJ/m³

Cylindrical mould:
- Internal dia = 100 mm
- Height = 127.33 mm
- Vol = 1000 cc

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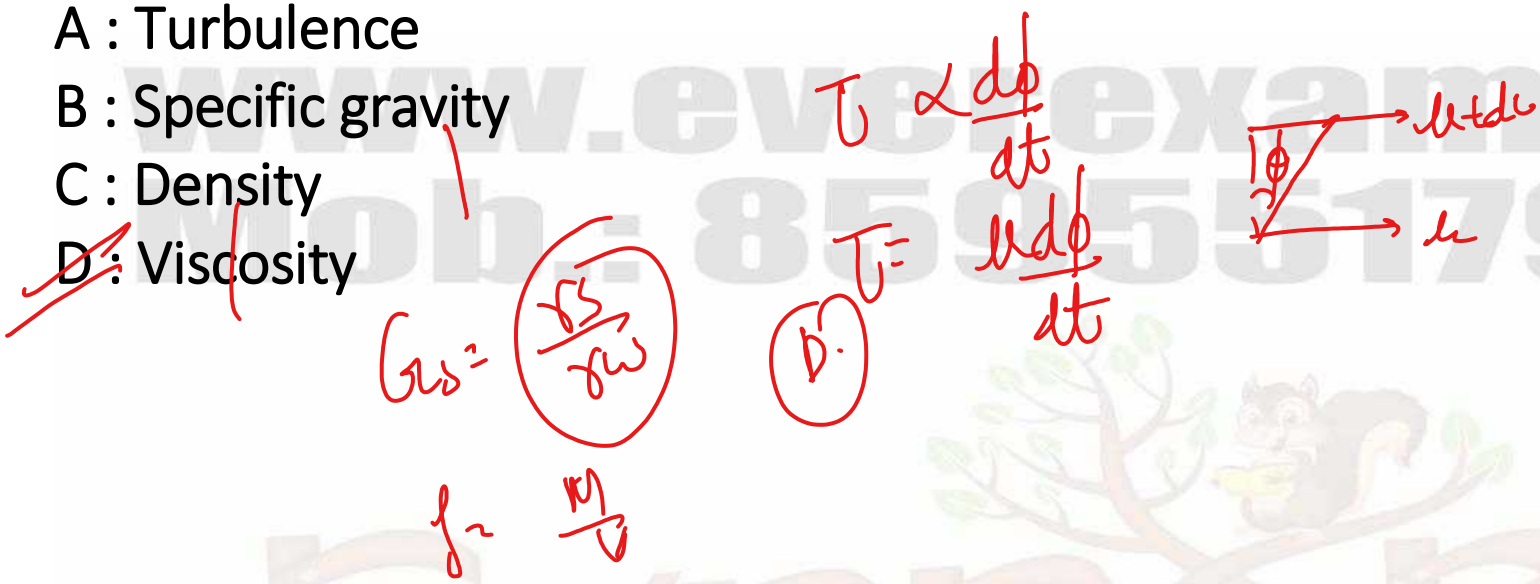
Q : 11) The shear stress required to produce unit rate of shear strain is

A : Turbulence
B : Specific gravity
C : Density
D : Viscosity



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Q : 12) If there is a pressure of black cotton soil upto 3m depth followed by medium dense sand, then which one of the following type of foundation will be suitable?

A : Spread footing

B : Under reamed piles

C : Raft foundation

D : Deep foundation

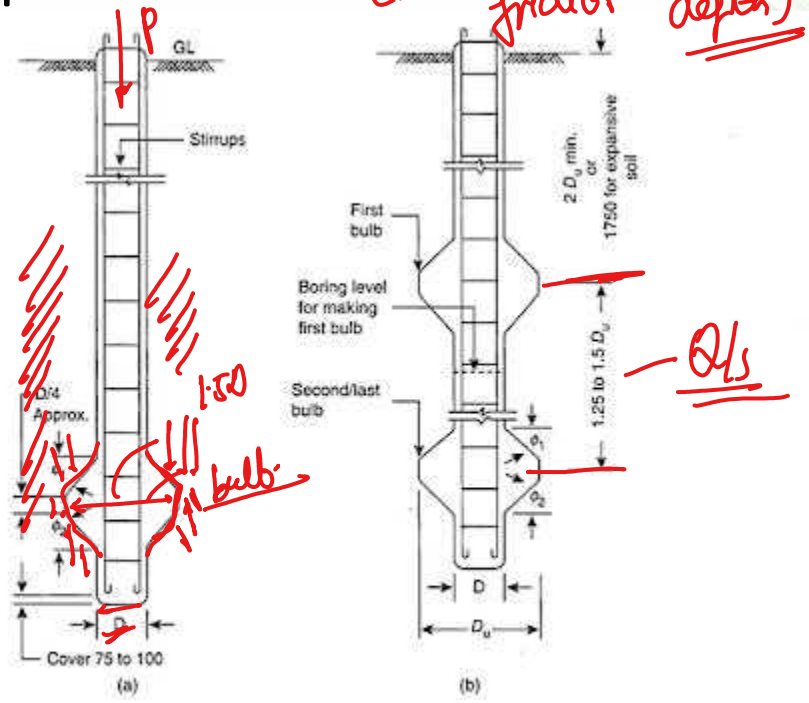


Figure 20.30 Bored cast *in-situ* under-reamed piles (longitudinal section): (a) Single under-ream pile and (b) multi under-ream pile. $\phi_1 = 45°$ (approximate) $\phi_2 = 30°$ to $45°$; all dimensions are in mm.

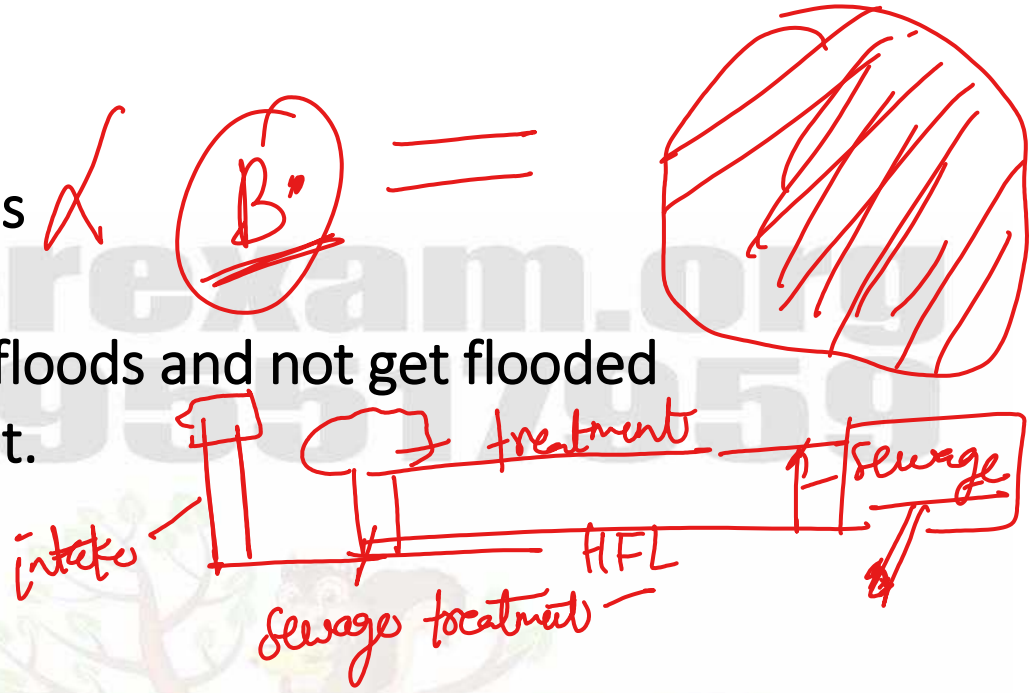
Q : 13) The intake site should

A : Remain inaccessible during floods

B : Not get flooded

C : Both remain inaccessible during floods and not get flooded

D : Be far away from treatment plant.



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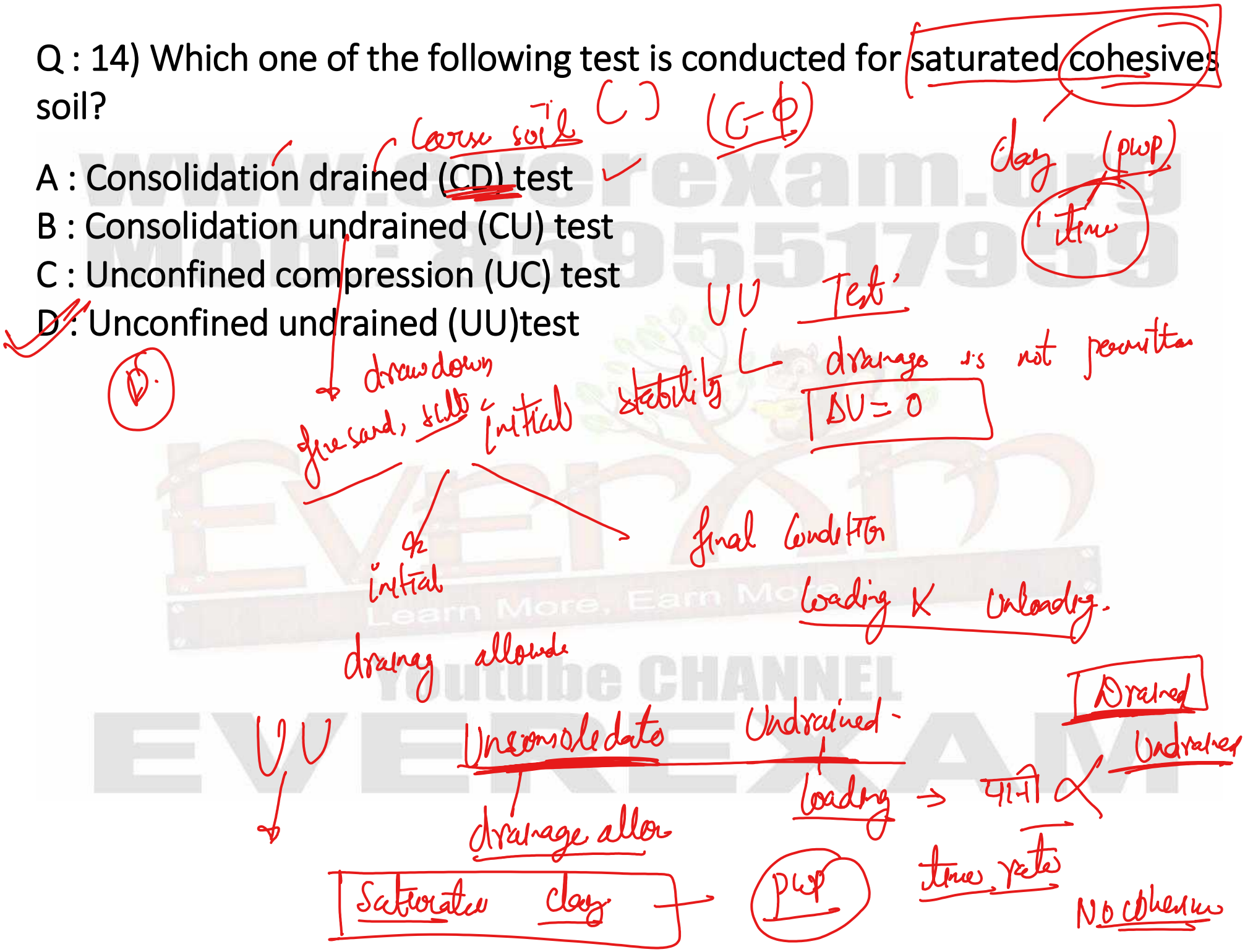
Q : 14) Which one of the following test is conducted for saturated cohesives soil?

A : Consolidation drained (CD) test
B : Consolidation undrained (CU) test
C : Unconfined compression (UC) test
D : Unconfined undrained (UU)test



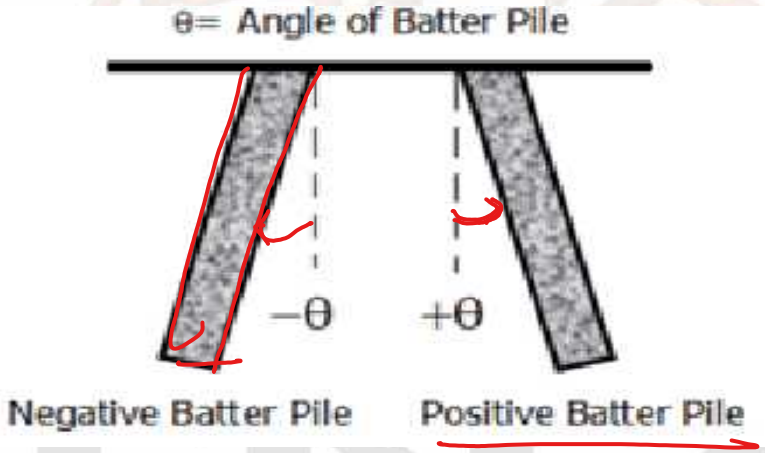
Q : 15) Which one of the following piles are used for retaining of soil filling?

A : Point bearing piles

B : Sheet piles

C : Compaction

D : Batter piles



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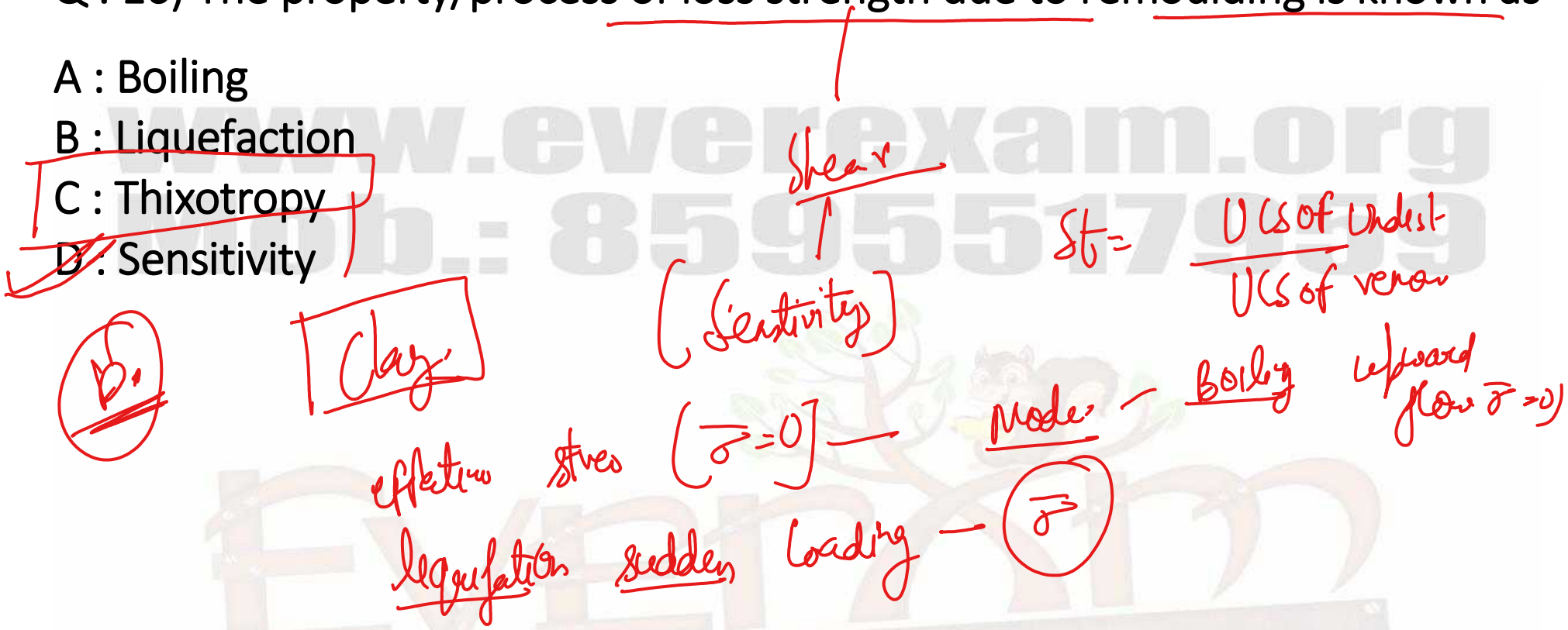
Q : 16) The property/process of loss strength due to remoulding is known as

A : Boiling
B : Liquefaction
C : Thixotropy
D : Sensitivity



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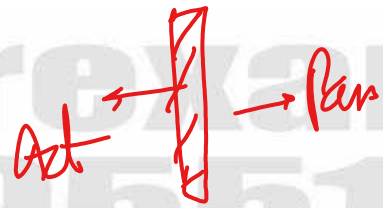
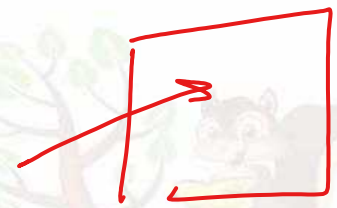
Q : 17) Which one of the following earth pressure acts behind a bridge abutment?

A : Active earth pressure
B : Passive earth pressure
C : Earth pressure at rest
D : None of the above



Seismic pressure



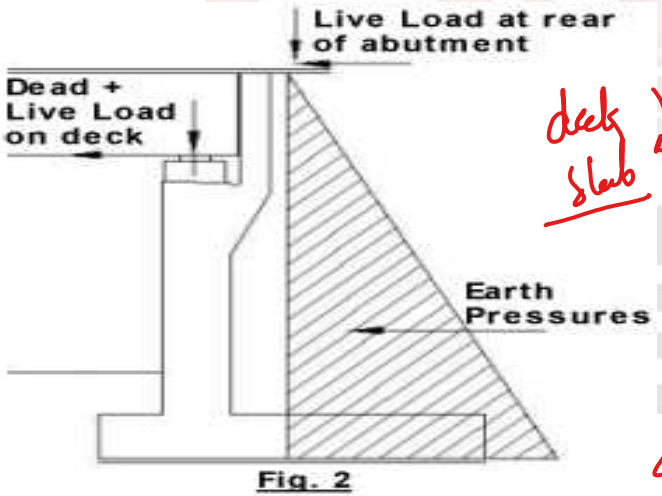
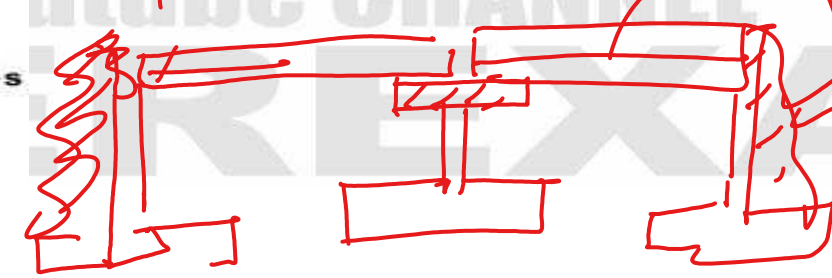


Fig. 2

"pier and abutment"



Bridge =
Cover = M-30
415N/mm²
Span c/c
Bearing = 10.4m

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Q : 18) As per IRC recommendation, what should be the value of camber for concrete/bituminous surface in case of light rainfall?

A : 2Percentage
B : 1.7Percentage
C : 3Percentage
D : 2.5Percentage

B

IRC recommendations

	Light Rainfall	Heavy Rainfall
Cement Concrete thin Bituminous	1.7%	2%
thin Bituminous	2%	2.5%
WBM (gravel pavement)	2.5	3%
Earthen road	3%	4%

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Q : 19) Consider the following statements regarding zero air void line:

X: In case of pure sandy soils, the effect of water content on the dry density is well defined when the water content is below the optimum value.

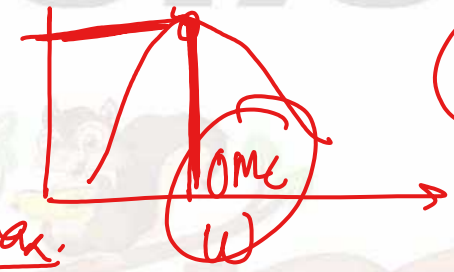
Y: The line of optimum is roughly perpendicular to zero air void line. Which of the above statement/is/are CORRECT?

A : X only

B : Y only

C : Neither X nor Y

D : Neither X or Y



OMC rd

parallel

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Q : 20) As per Buston's formula for a city of population of 100000, fire demand will be

A : 31820 litre/minute undefined

B : 11360 litre/minute undefined

C : 46370 litre/minute undefined

D : 56630 litre/minute undefined

Buston formula

$Q = 5663\sqrt{P}$ — population thousand

(D) litre/minute $5663\sqrt{100}$

$= 56630$

Free man formula =

$Q = 1136\left(\frac{P}{5} + 10\right)$

National Board $Q = 4637\sqrt{P}\left(1 - 0.01\sqrt{P}\right)$

Kuichling formula = $Q = 3182\sqrt{P}$

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