



CIVIL ENGINEERING

QUESTION PRACTICE PROGRAM

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E

7pm

→ (Next Sunday) [30-40 min]

Q : 1) The aeration time in the aeration tank of activated sludge process is

A : 6-10 hours

B : 0.5-1 hours

C : 15-20 hours

~~D : 2-4 hours~~

Aeration tank

4 to 8 hrs

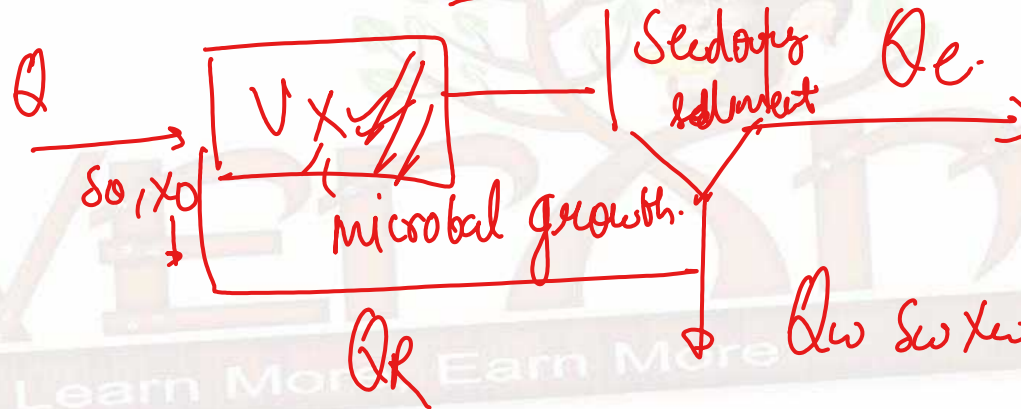
Hydraulic Retention time

(ASP)

Suspended growth system

(ASP)

3-15 days



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Q : 2) For roads the permeability criteria for subsurface drainage shall be

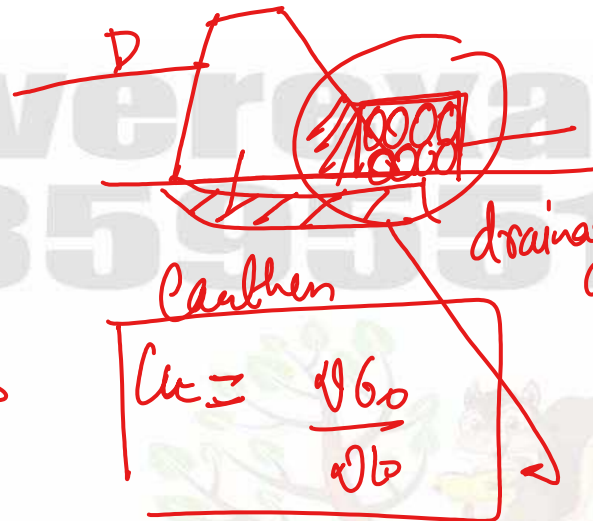
A: $\frac{D_{15} \text{ of filter}}{D_{10} \text{ of foundation}} > 5$

B: $\frac{D_{15} \text{ of filter}}{D_{10} \text{ of foundation}} < 5$

~~C: $\frac{D_{15} \text{ of filter}}{D_{15} \text{ of foundation}} > 5$~~

D: $\frac{D_{15} \text{ of filter}}{D_{15} \text{ of foundation}} < 5$

(C)



French drain

drainage felt

water

Carbun

$$C_u = \frac{0.60}{0.10}$$



silt

$$\left[\begin{array}{l} \text{Piping criteria} = \frac{D_{15} \text{ felt}}{D_{85} \text{ felt}} \leq 5 \\ \text{Permeability criteria} = \frac{D_{15} \text{ felt}}{D_{15} \text{ foundation}} \geq 5 \end{array} \right]$$

$$U_{15} = \frac{\text{Uniformity}}{15\% \text{ of particles are finer than the size}} = \frac{D_{50} \text{ felt}}{D_{50} \text{ foundation}} \leq 2.5$$

(Sunday)

Q : 3) Seal coat for roads are provided in order to have

A : Camber

B : Required grade

C : Even surface

☒ D : Impervious layer

↳ no penetration

Seal Coat
Tack Coat
prime coat



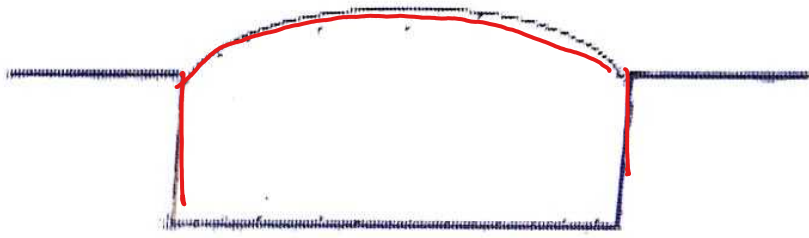
Seal Coat:- thin surface-water proofing.

Tack Coat:- asphalt emulsion
Bonding b/w two layer

Prime Coat:- low viscous cutback Bitume.

Base Course - absorbent layer

Q : 4) The gravel road section shown in figure below is called as



Trench type

A : Macadam type ✓

~~B : Trench type~~ ✓

C : Rigid type ✓

D : Feather type



Trench Type



Feather Edge Type

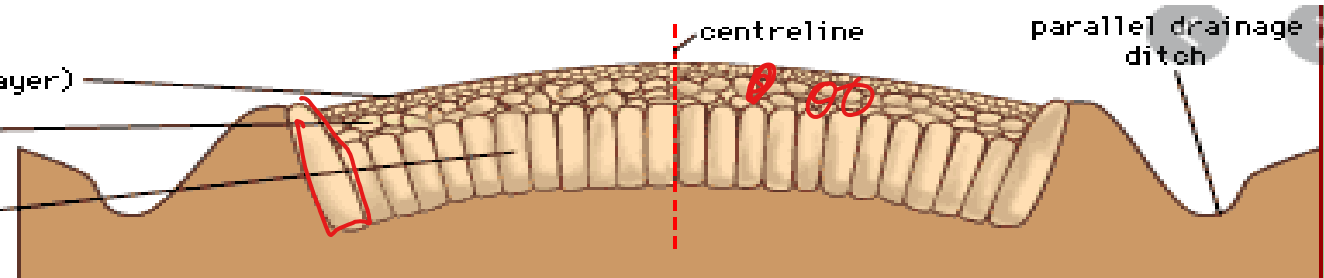
Feather edge type

Trésaguet

gravel or broken stone (1-inch layer)

broken stone (2-inch layer)

foundation layer (8 inches)

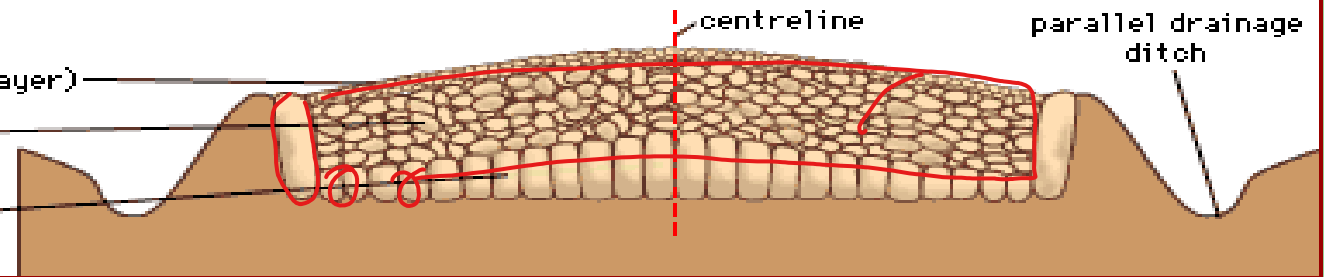


Telford

gravel or broken stone (1-inch layer)

broken stone (7-inch layer)

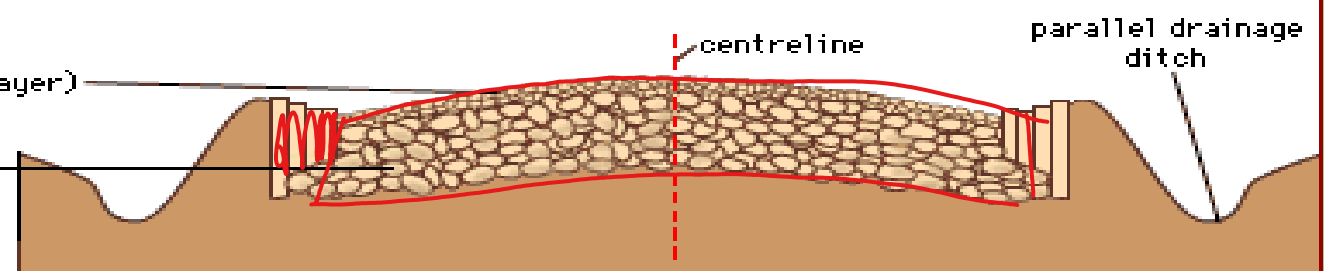
foundation layer (7 inches)



McAdam

gravel or broken stone (1-inch layer)

broken stone (8-inch layer)



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Q : 5) Length of a vehicle affected

A : Clearance under the bridge

B : Length of the road ✓

C : Width of the road ✓

D : Minimum turning radius

(PCU)



← 2.44m →

D_o



C.F

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Q : 6) 'Bleeding' in a road can controlled by using:

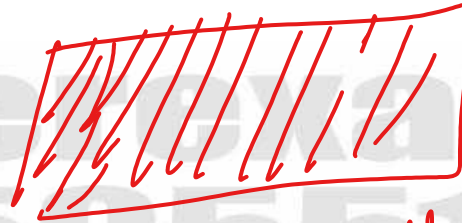
A : Hard rolling

B : Stone dust

C : Heated stone-chips

D : Metal

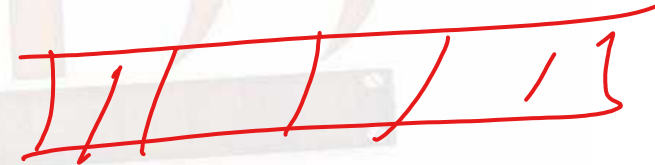
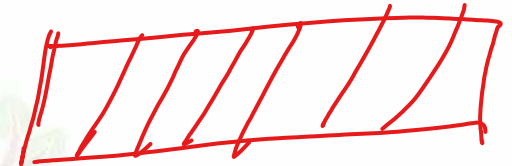
C-



Small aggregate (Bulking/Binding)

Stone dust

Concrete →



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Q : 7) Longitudinal rut in roads are formed due to

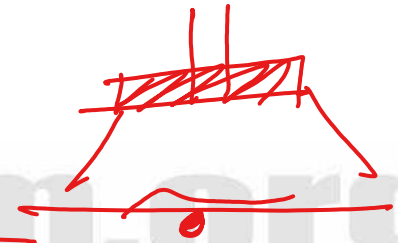
A : Heavy rainfall

B : Pneumatic traffic

☒ C : Combined action of iron wheeled & pneumatic traffic

D : Heavy axle loads

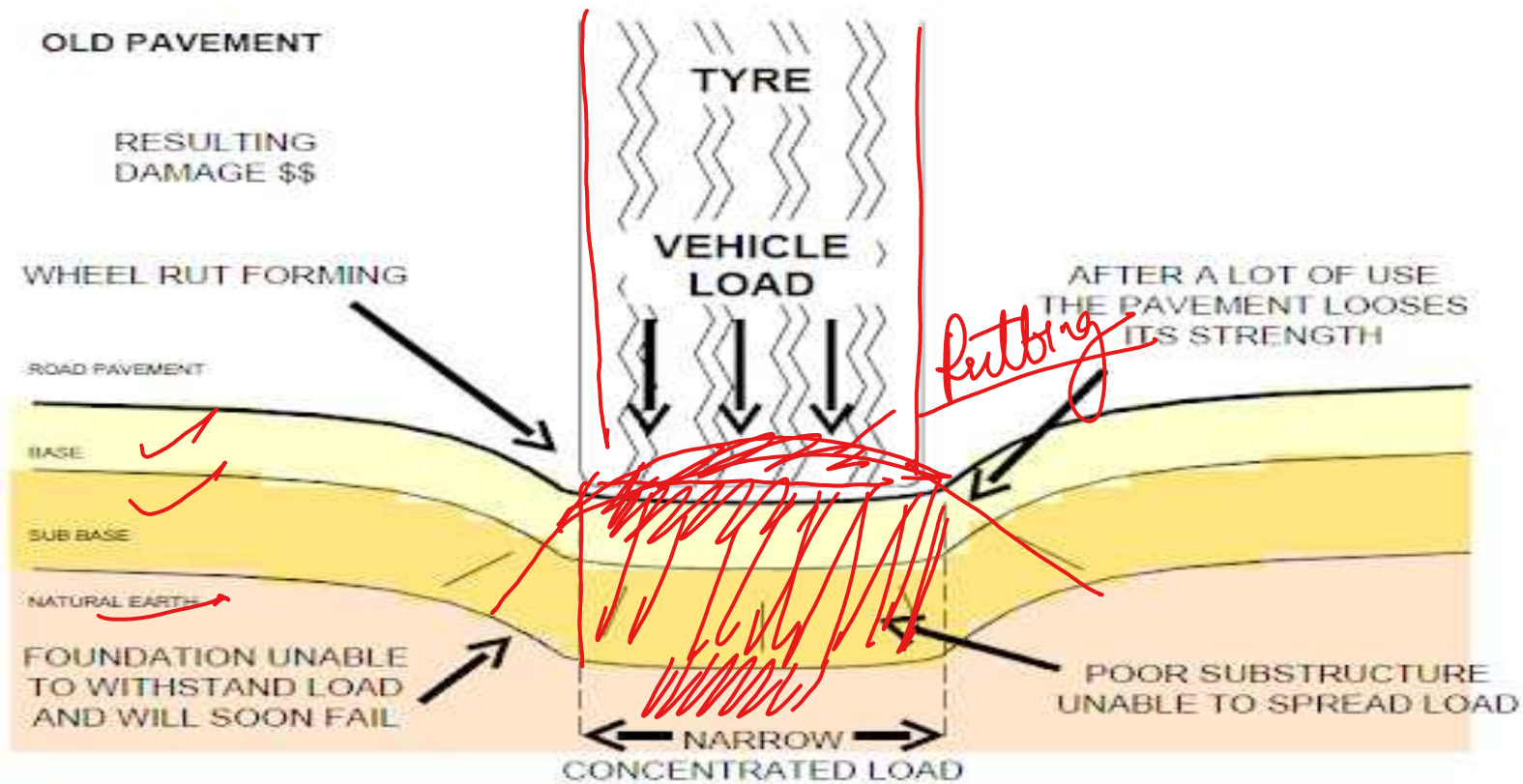
Rutting



longitudinal depression

consolidation





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Q : 8) Surcharge weights in CBR test is used to

⑧

used to evaluate

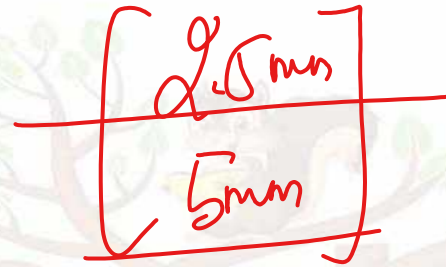
A : Simulate the effect of overlaying pavement

B : Increase the density of sample

C : Make the piston to penetrate the soil vertical

D : Simulate natural moisture condition.

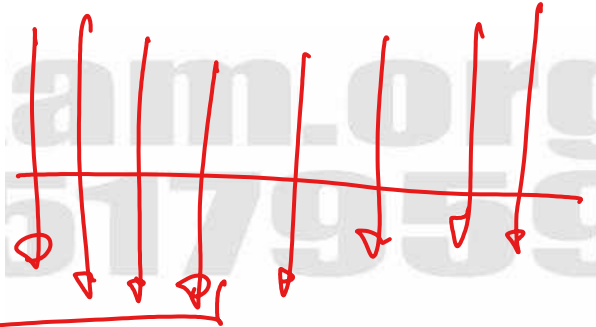
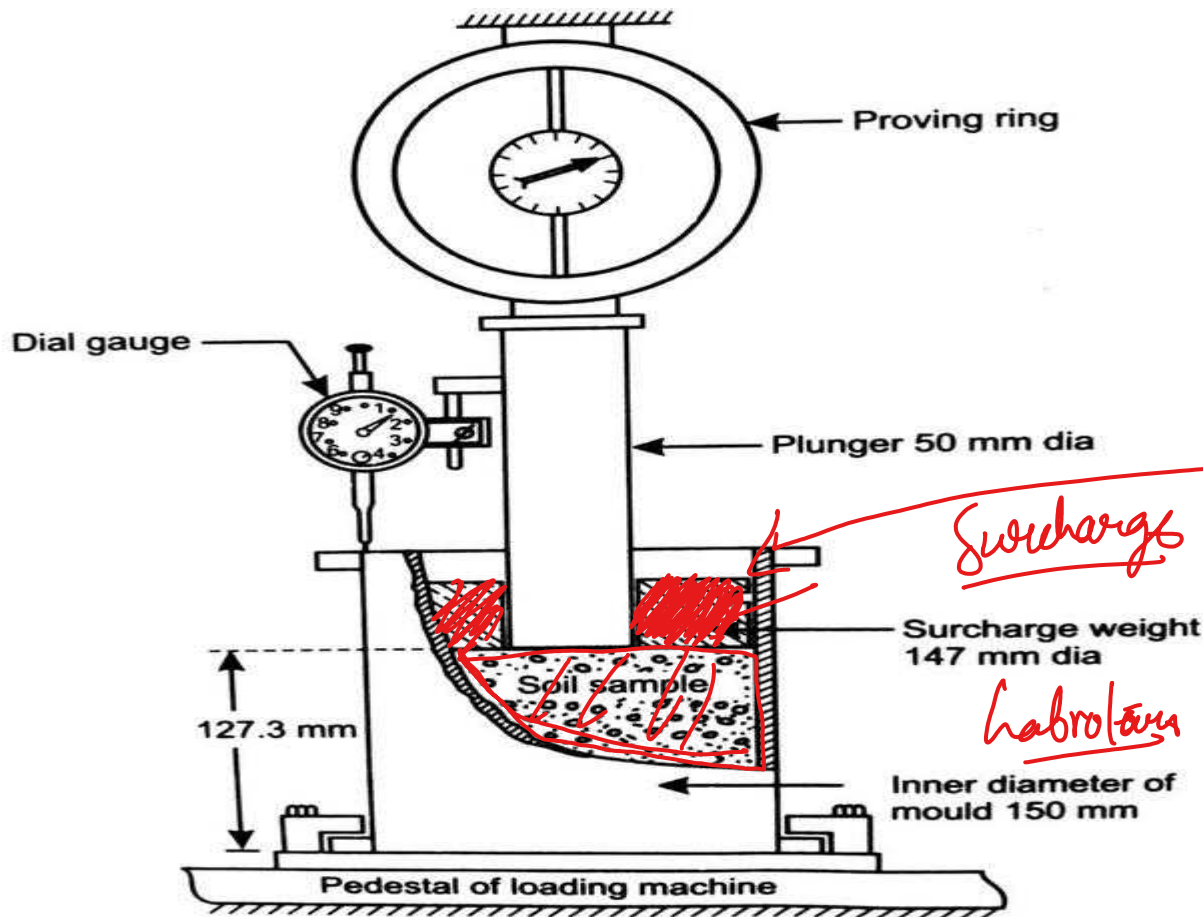
the subgrade st.
pavement thickness



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Actual

2.5 mm 1370 kg
5 mm 2050 kg

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Q : 9) The lag distance is the distance travelled for a vehicle during

A : Perception time

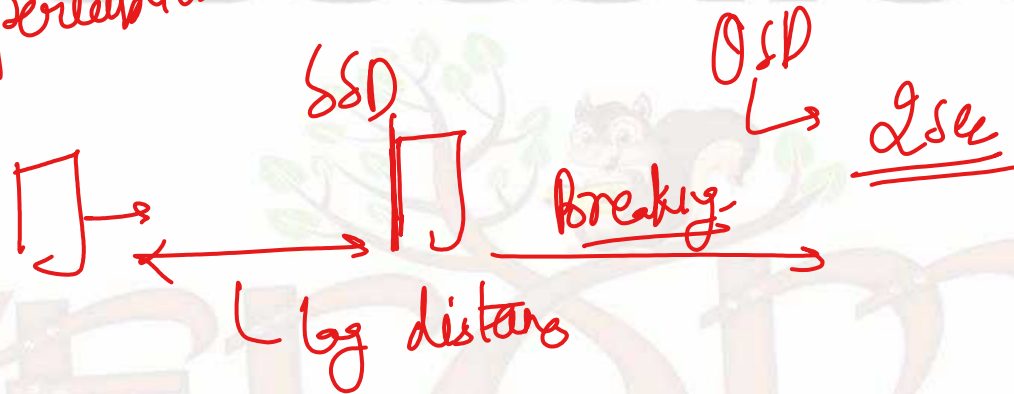
~~B : Total reaction time~~

C : Emotion time

D : volition time

(B) ~~PIEV -~~ volition
Emotion
perception
intellatual

7:00 pm



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Q : 10) As per IRC the maximum Axle load shall not exceed

A : 8000 kg

B : 7500 kg

C : 7000 kg

~~D : 8160 kg~~

(D)

As per IRC
Cumulative no of standard Axle = 8160 kg

$$N = \frac{365 (1+r)^n - 1}{r} A \times D \times F$$

MSA

initial traffic in year of
completion of traffic.
D = lane distribution factor
F = vehicle damage factor

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Q : 11) Effective system of sub-surface drainage depends on:

B

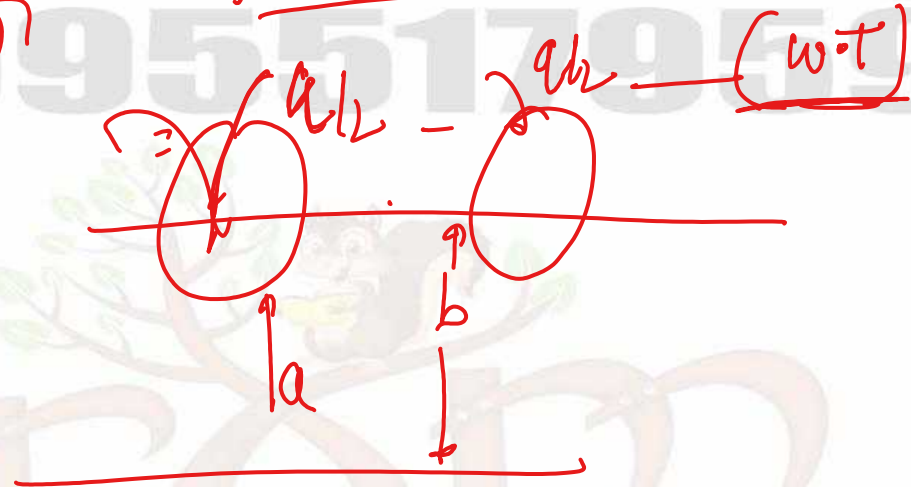
A : Road elevation only

B : Soil profile and position of water table

C : Soil profile only

D : Soil profile and road elevation

file drains



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Q : 12) Limiting gradient for road in plain terrain shall be

- ~~A : 1 in 20~~
- B : 1 in 15
- C : 1 in 30
- D : 1 in 25

A

Perling gradient = $3.3\% = \frac{1}{30}$

limiting gradient = $5\% = \frac{1}{20}$

Exceptional gradient : $6.7\% = \frac{1}{15}$



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Q : 13) As per IRC, $OSD = 300$ m is safe if the speed of the vehicle is

- ~~A : 60 kmph~~
- B : 45 kmph
- C : 90 kmph
- D : 30 kmph

(A) \downarrow LRe- 73

V (kmph)	40	50	<u>60</u>	65	80	100
OSD (m)	165	235	<u>300</u>	340	470	640

60 kmph.



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Q : 14) Scaffolding has to be provided for a building on the side of busy street. Which of the following is more suitable?

A : Mason's (Frame Scaffolding)

B : Gantries

C : None of these

D : Needle

(b)

Can'tilever Scaffolding

(Rock Pad.)

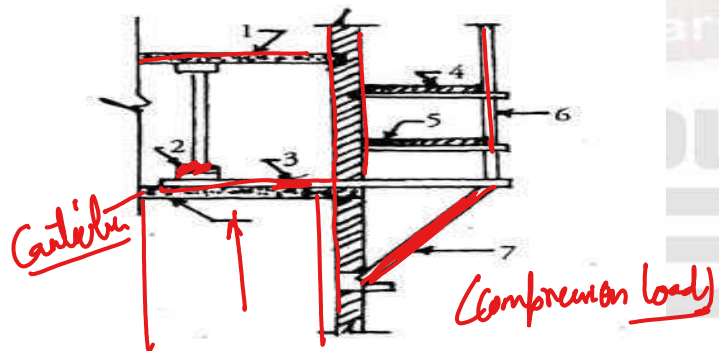
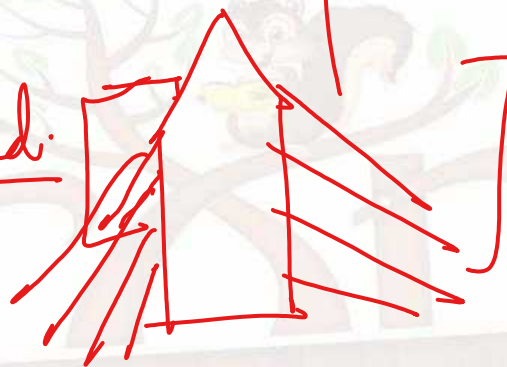


Fig. 14.8d Needle scaffolding
1. Floor 2. Folding wedge 3. Needle
4. Platform 5. Putlog 6. Standard 7. Strut

Q : 15) In the construction industry IDLERS are

A : Excavation equipments

~~B~~ : Used to provide supports for belt conveyor system  (Very common)

C : Used in hoes

D : Dumping equipments

(B)



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Q : 16) In railways track modulus is defined as

A : Load/unit length of rail to produce depression/in sleeper

B : Load/unit length of sleeper

~~C~~ : Load/unit length of rail to produce unit depression/deflection in track

D : Load/unit length of sleeper to produce depression in rail

C.

R.T.M = $\frac{\text{Load}}{\text{length of rail to produce unit depression}}$

vertical stiffness

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Q : 17) IRC loading is given in code book

- ~~A : IRC 6~~
- B : IRC 5
- C : IS 456
- D : IRC 21

(A)

IRC- 6 section (II)
(Bridges)

given specification for
various axial load.

IRC- 5 =

Design features of Road Bridge

IRC- 21 =

standard specification and

Simple 50-60%.

Code of practice

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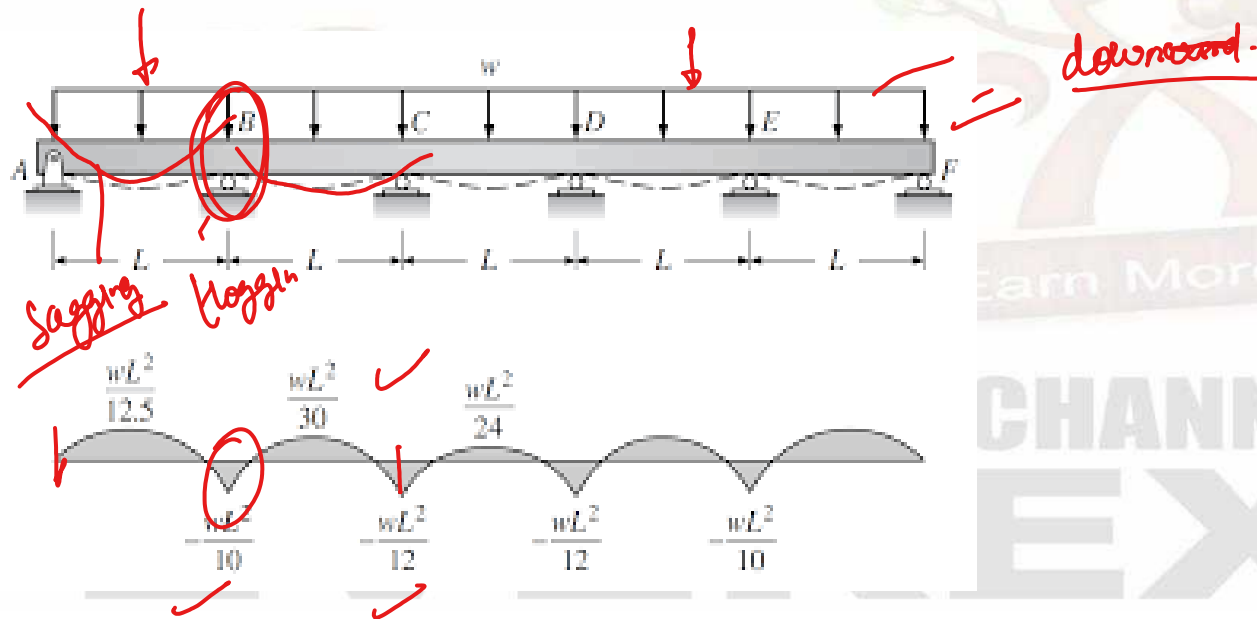
Q : 18) In continuous beam, the moment over the support are

A : Zero

B : sagging

☒ C : Hogging

D : None of these



Q : 19) Weight of the vehicle affects the design of

A : Permissible speed

B : Camber & gradient

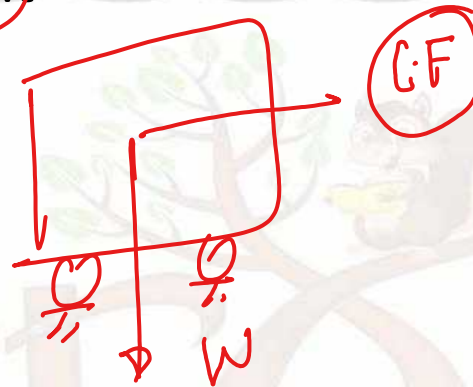
C : Cross drainage works

D : Pavement thickness & gradient

drainout
subgrade

~~D.~~

thickness



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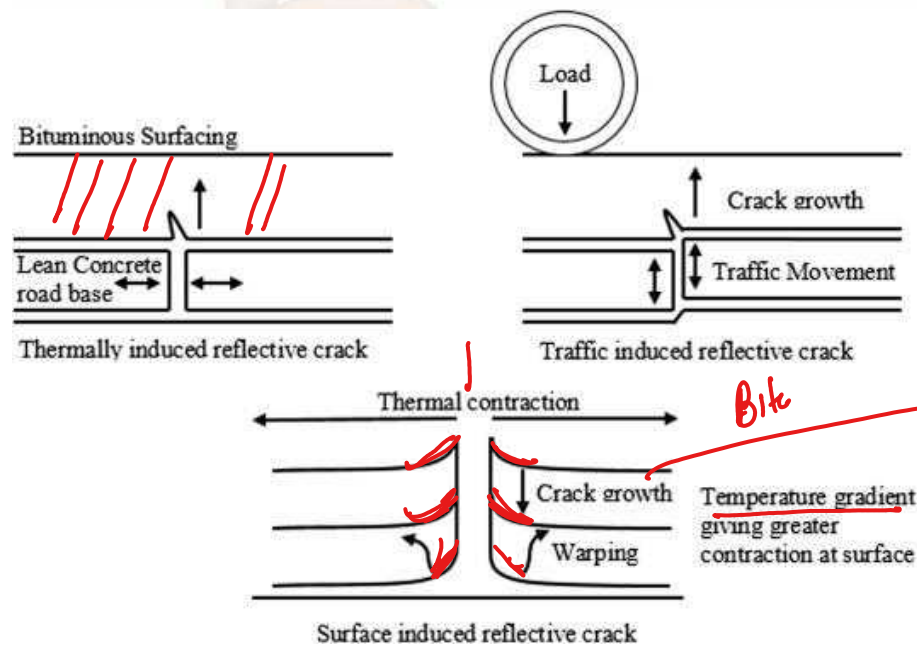
Q : 20) Reflection cracking generally occurs in

A : Rigid pavements

B : Flexible pavements

C : Bituminous overlying over C.C pavement

D : WBM road



- Alligator
 - Rutting
 - frost heaving
 - Bleeding
- Joint spalling
faulting
shrinkage crack
piping
corner break.

thermal crack

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"Comment"

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↳ Exam

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[Syllabus]