

Test date → 27 May 2025

10 May 2025

Revision of Building Materials for test (C & W)

Lecture # 1

Types of Rocks

code	<u>Igneous</u>	Code	<u>Sedimentary</u>	Code	<u>Metamorphic</u>
Gabbro	Gabbro	Sodia	Sandstone	Mr	Marble
Bhai	Basalt	late	laterite	Gneiss	Gneiss
Ghr	Granite	Gy	Gypsum	Schist	Schist
Sy	Synite	Do	Dolomite	Q	Quartzite
Trip	Trap	Chadder	Chalk	late	slaterite
Pag	Pumic	Shall	Shale		
Right Doll	Dobrite	li	limestone		
Laey					

Calcareous



Limestone

Marble

Siliceous

S

Sandstone

S

Synite

T

Trap

← G

Gabbro

B

Basalt

Q

Quartzite

Argillaceous

Slate

Kaoline

laterite

Gneiss

Weather Resistant ← fine grained granite.



Feldspar + Quartz + Mica

← Granite

→ Igneous Rock

Use ↓

columns, piers + Abutment

② Alumina of Sand or carbonate of lime
↓

Slate
↓ (tiles)

Roofing or Roof covering materials

③ SS
Gneiss → Siliceous Rock
↓ Quartz + felspar
↓ Street paving

④ Sand Stone → Siliceous

↓
Sedimentary Rock

Compact

Sandstone → fire Resistant

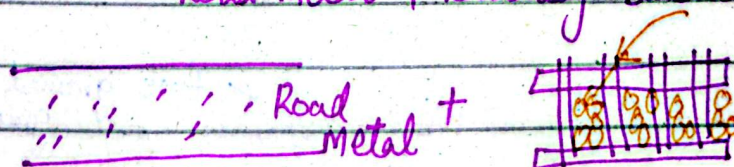
↓
Ashlar masonry + Moulding and Carving

⑤ Sand Stone ← Metamorphic Action

↓
Quartzite → R → Road Metal + Railway Ballast

⑥ Quartzite → ??

↓
Road Metal + Railway ballast



Calcareous

⑦

Sedimentary
Rock



← Limestone →

blast furnaces



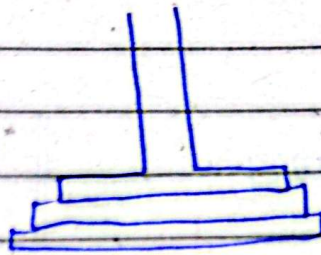
Stone masonry for walls

⑧

Impure lime → Kanker
Stone



used for foundation
for building



foundation for building
kanker

↑ Carving + decoration

⑨

Marble → Metamorphic Rock



Calcareous

⑩

Laterite → Metamorphic Rock



Clayey Stone (Iron oxide)
Road metal

⑪

Decomposed laterite → Moorum →

fence path + ↓ Garden walks



→ Garden walks or
fence path

- ① Felspar → Silicate of Alumina (Soda, potash & lime)
② Granite → Igneous

③ Slate → Argillaceous Rock

↓
metamorphic → Alumina of Sand or
↓ Carbonate of lime
Shale

④ Gneiss → Metamorphic

↓
Siliceous

kanker →

Impure lime
stone

⑤ Sand Stone → Siliceous

↓
Metamorphic

Morrum →

laterite

Quartzite

↓

Siliceous

↓

Metamorphic

↑

Sandstone

⑥ limestone → Calcareous

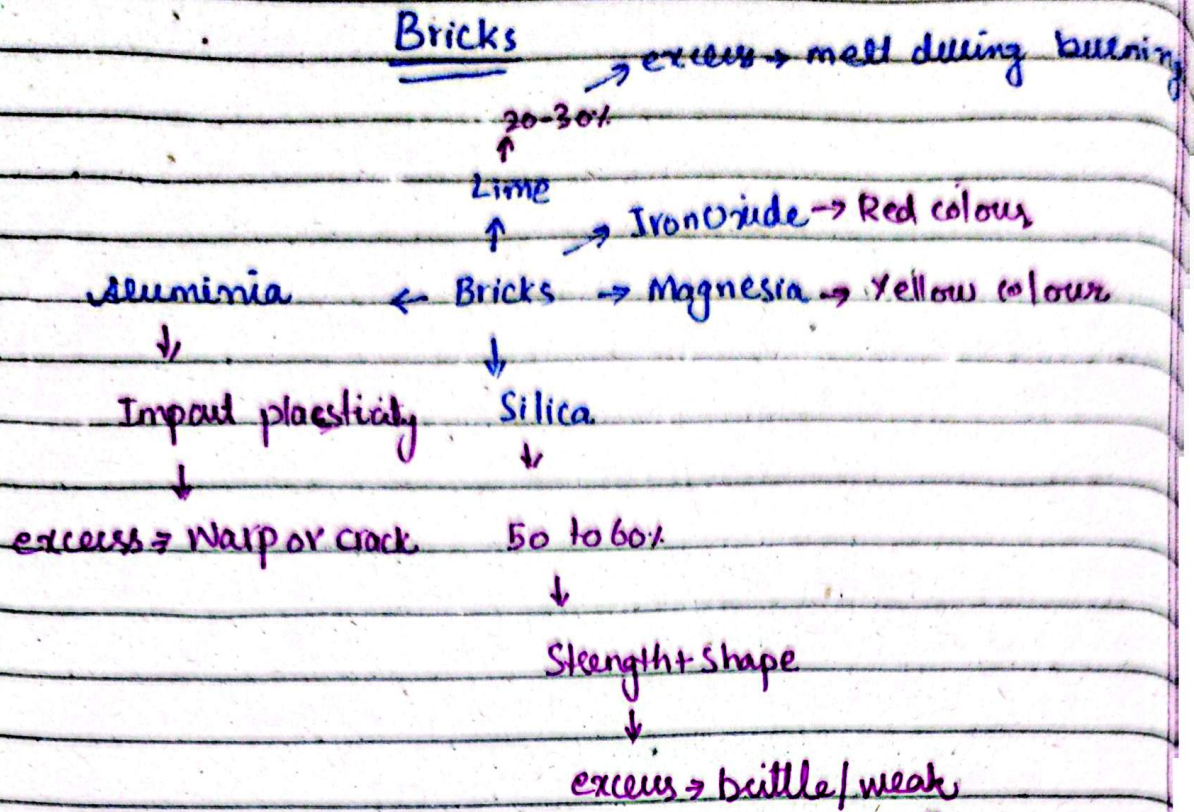
↓
Sedimentary

⑦ Marble → Metamorphic

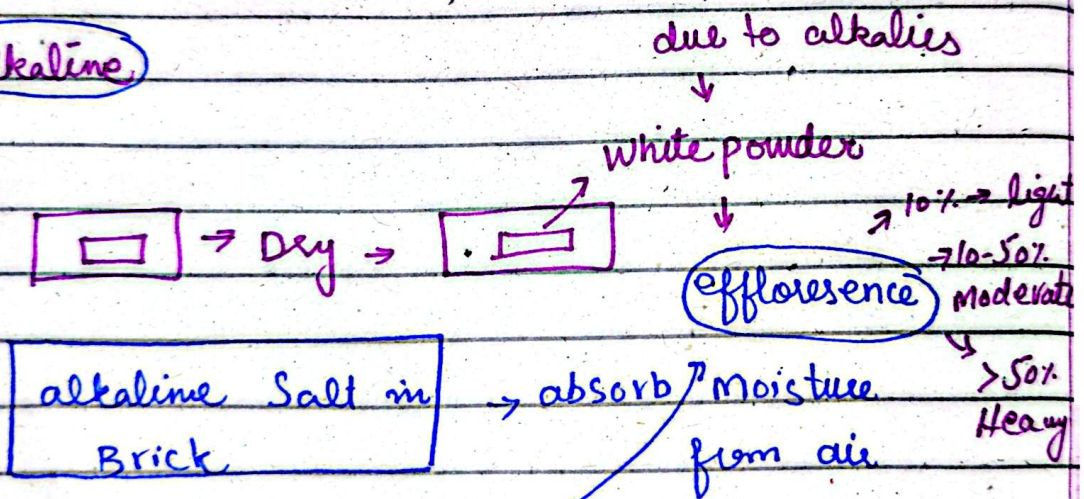
↓
Calcareous

Lecture # 2

Bricks



Alkaline



OR

Brick clay → contain → pyrite
Water → Gypsum

Heavy Bricks
↓
zero efflorescence

(Preparation of Bricks)

③

↓
Unsoiling 20 cm

↓
digging → 6.0 to 120 cm

④

1000 Bricks → 1.5 to 2.5 cum earth
Required

⑤

kneading → process of mixing clay water and
↓
pugmill other ingredients.

⑥

Mould Size → 8 to 12 % kept higher than
standard size of brick.

⑦

Drying → 1-2 % Moisture Reduced

↓
Strength : 15 to 25 Kg/cm²

⑧

Hacks → Bricks are laid / arranged
in rows on their edge on a
slightly raised ground. Called hacks.

⑨

← clamp

↓
outturn

↓ 60%

After burning Requires
12 days to cool down
for unloading

← Burning of Brick

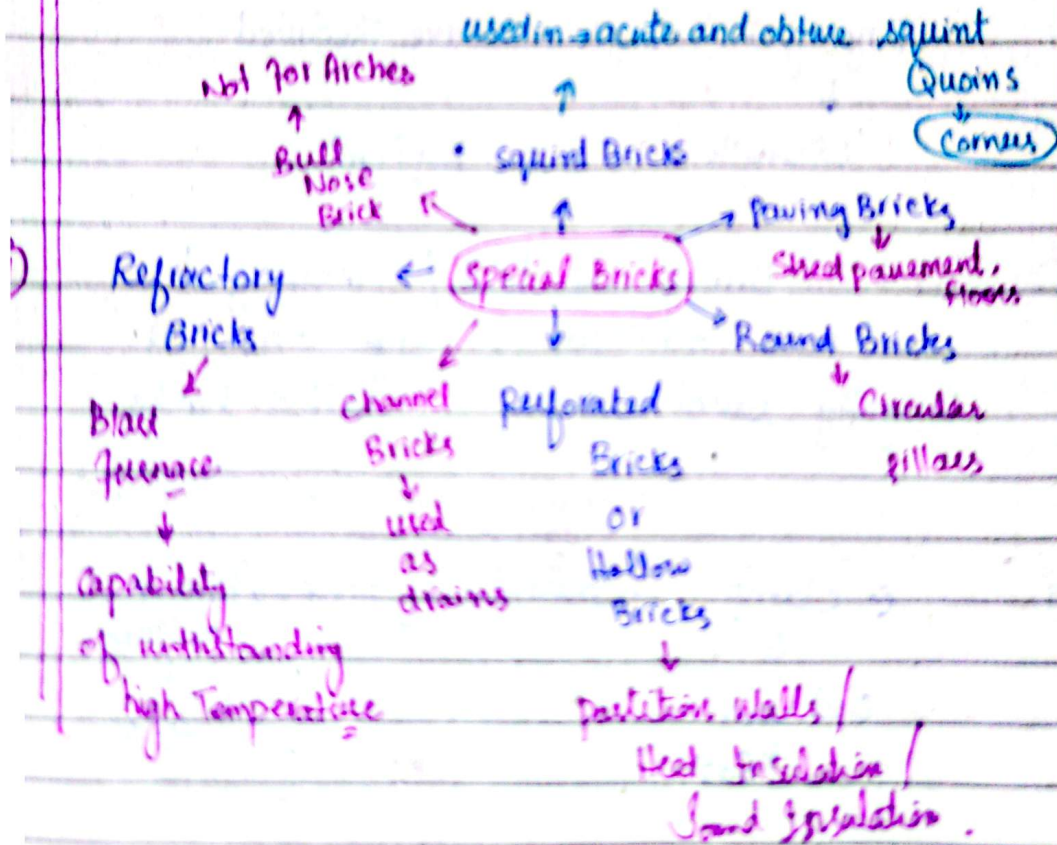
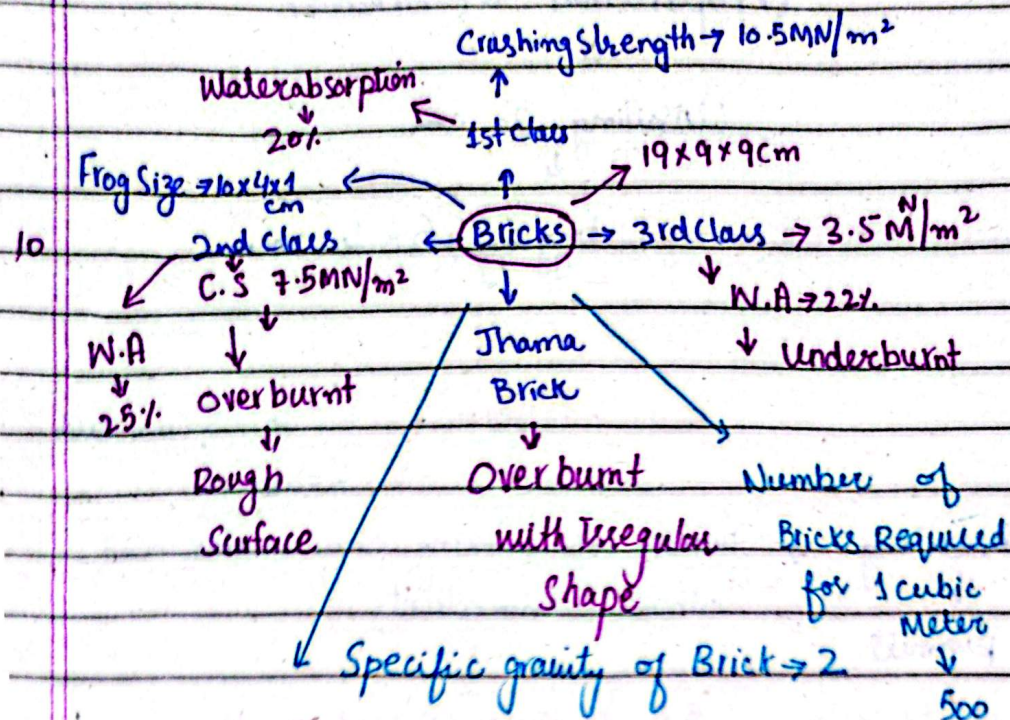
burning → 24 hours

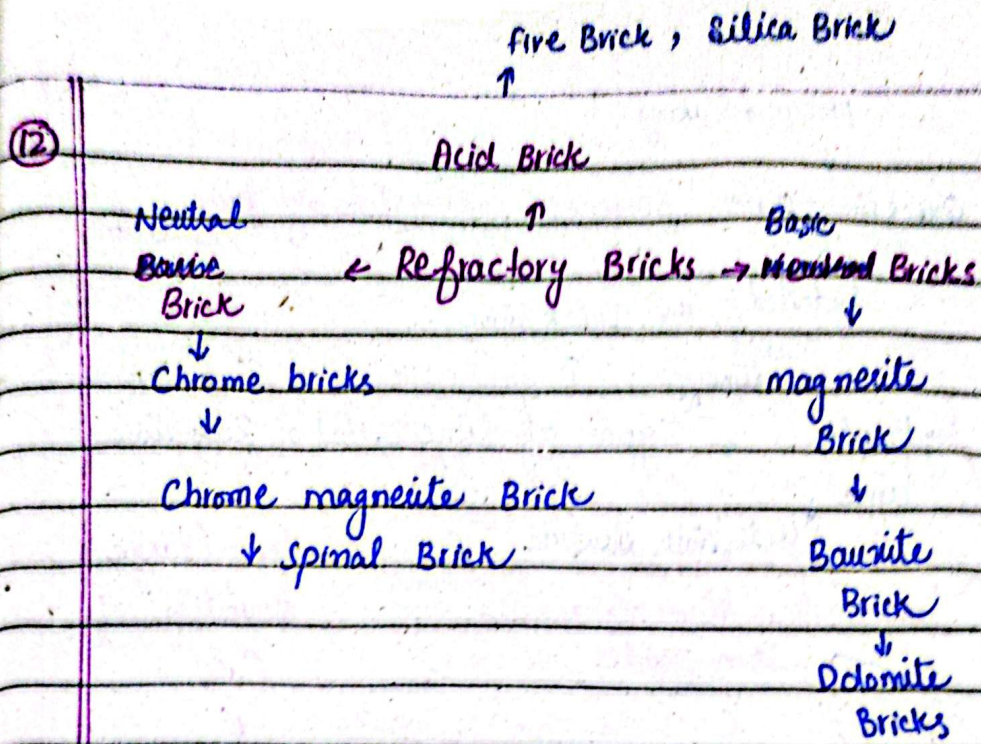
→ kiln

↓
outturn

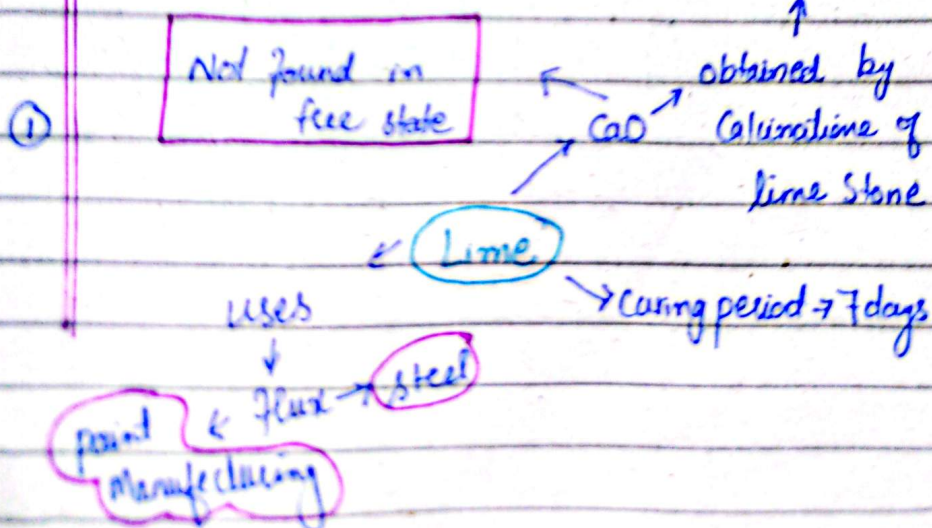
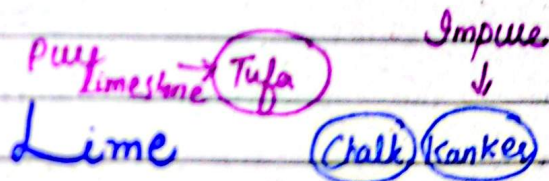
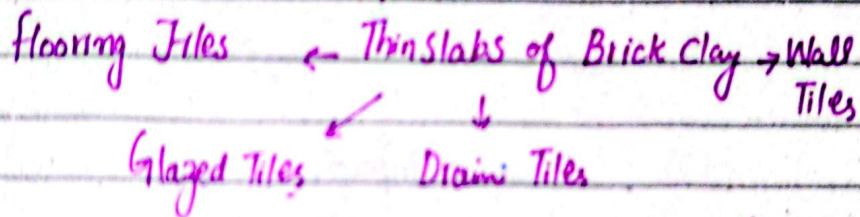
90%

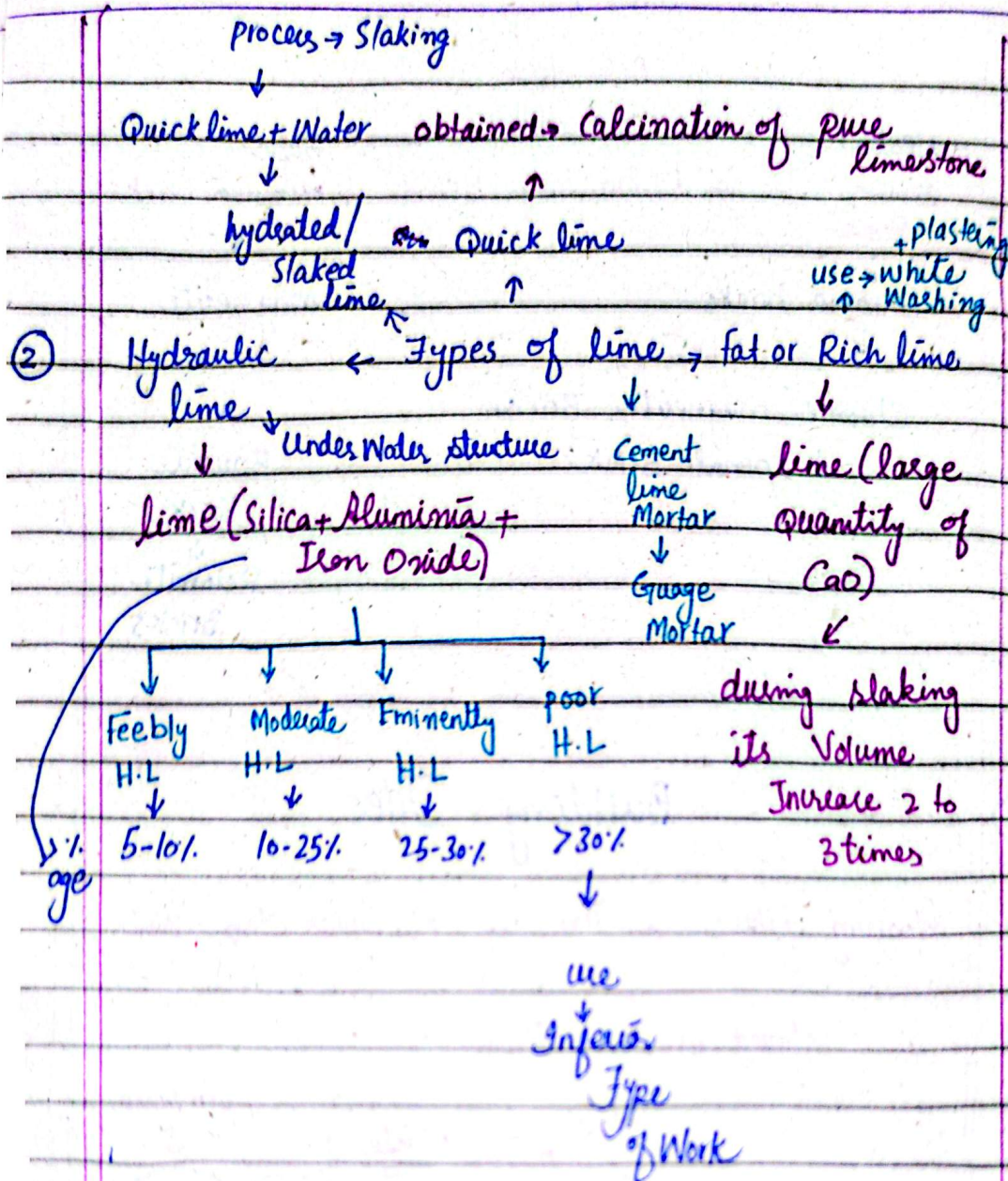
Temperature
↓
1000-1200°C





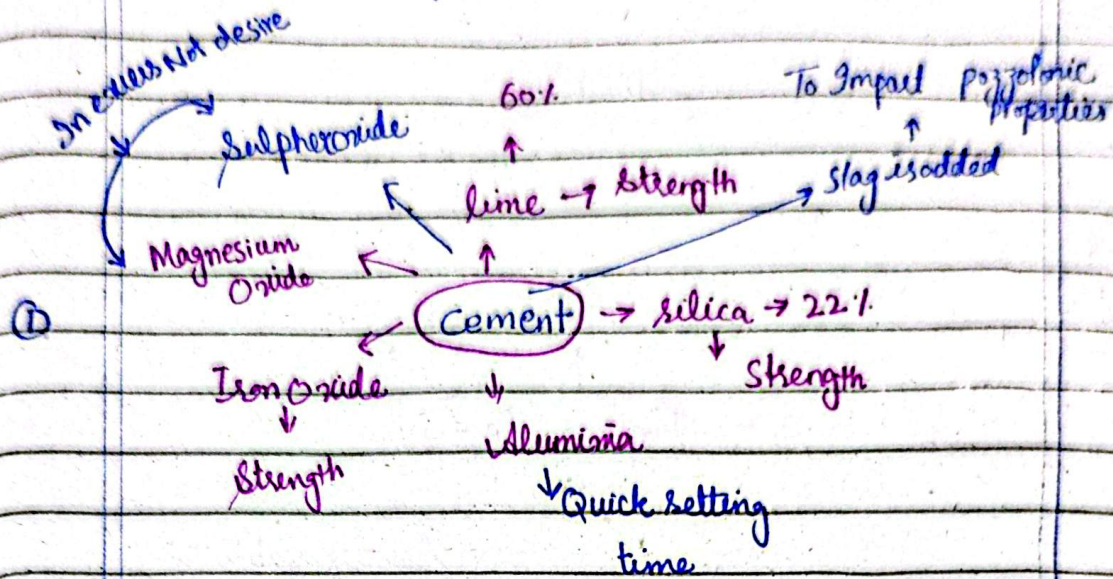
(1) Lecture 13 Building Tiles





Note $\rightarrow$ Cement is Similar in Many Respect to Good Quality hydraulic lime

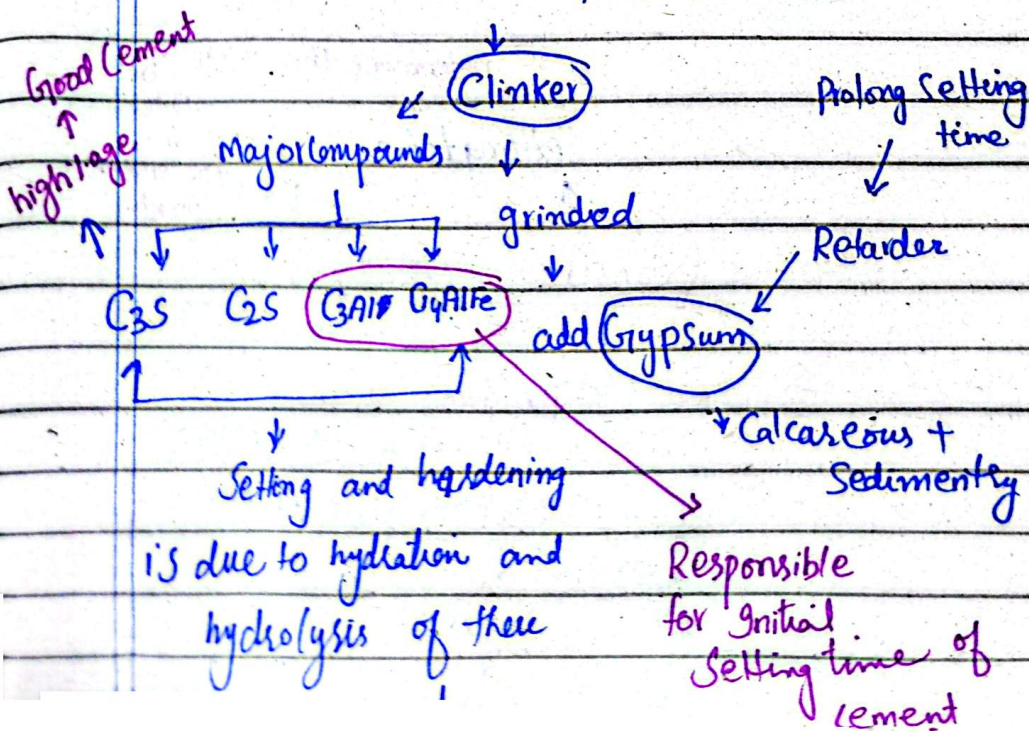
Lecture #4



② Manufacturing of Cement → Grinding → Calcareous + Argillaceous stones

③ Bredt → Temperature → 1500°C
↓ In Rotary Kilns

④ Material sinters
↓
fuses into balls



3

Soundness Test

detect expansion of cement

due to (lime) and (magnesia)

Lechatellier Apparatus

Autoclave method

(B.21)

4

Tensile Strength Test

Sand Mortar $\rightarrow 1:3$

$2N/mm^2$ $\leftarrow$ 3 days

$2.5N/mm^2$ $\leftarrow$ 7 days

Apparatus

Cube Size

$150 \times 150 \times 150$ mm

Standard Briquette

5

Compressive Strength Test

Sand + Mortar $\rightarrow 1:3$

3 days $\leftarrow$

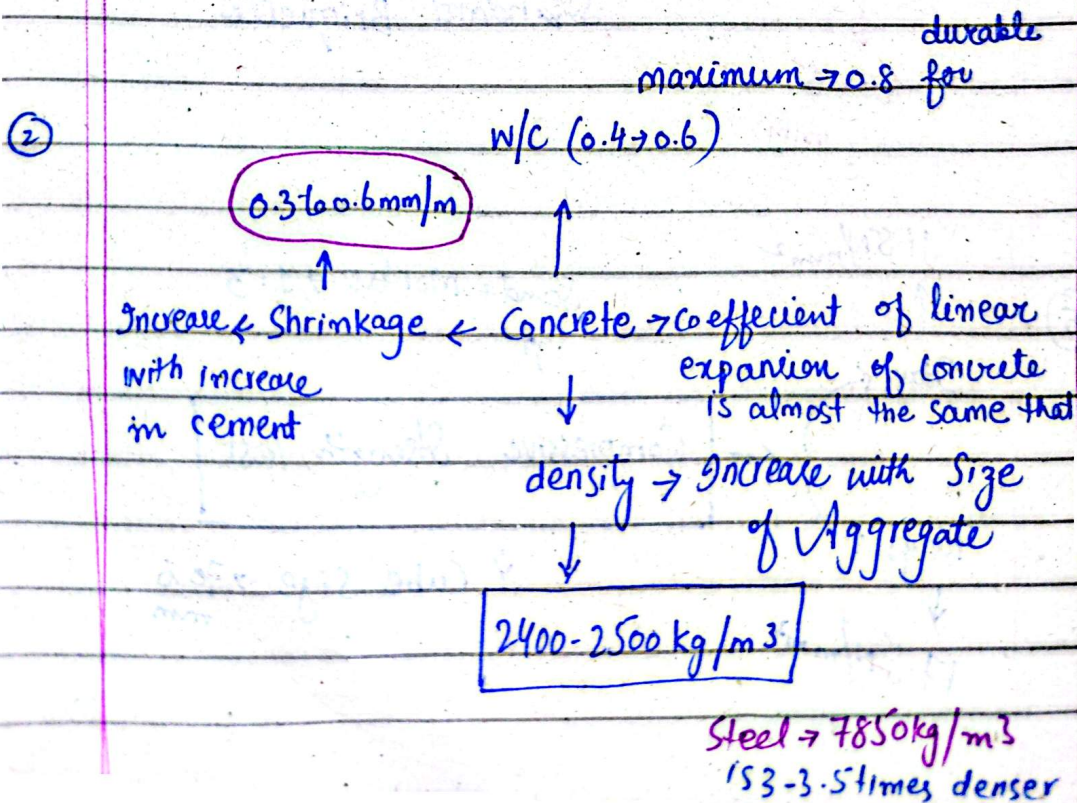
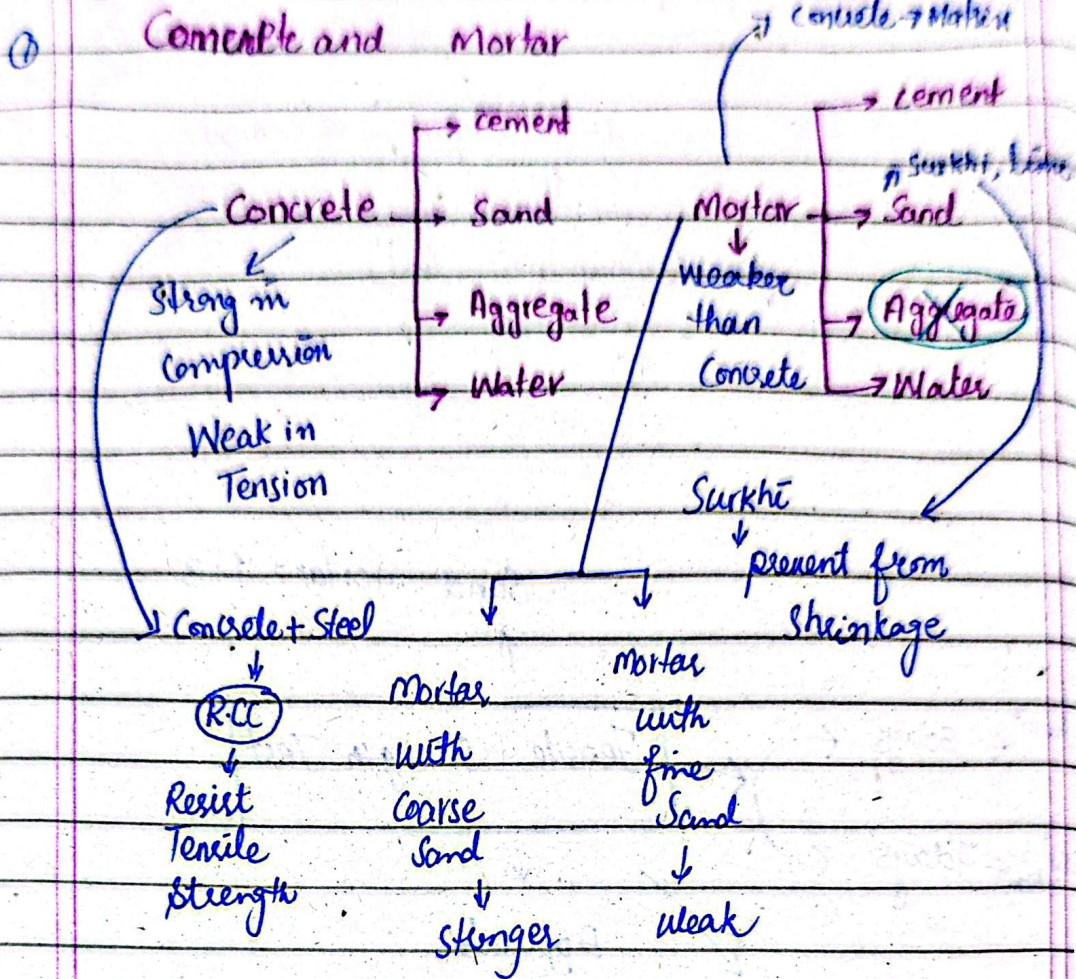
7 days $\leftarrow$

$17.5N/mm^2$

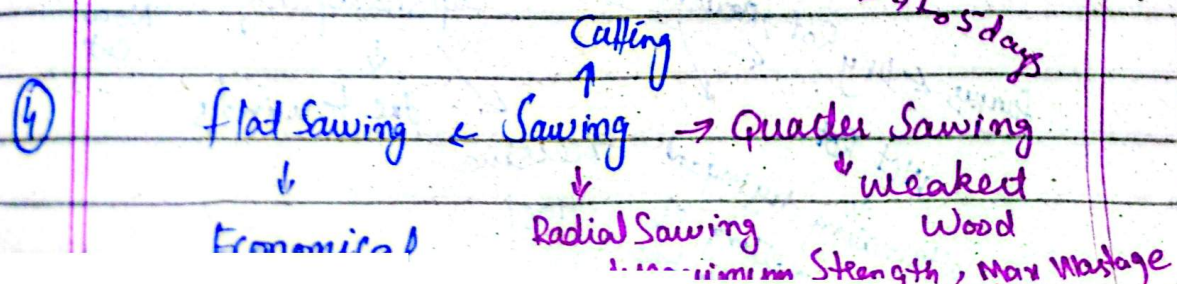
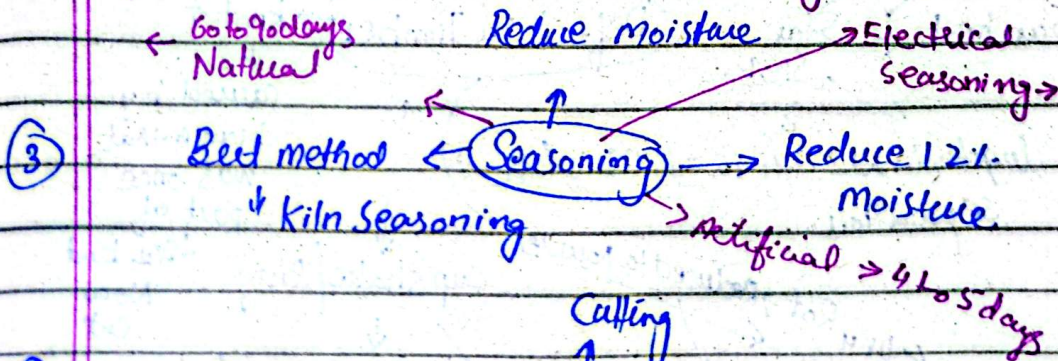
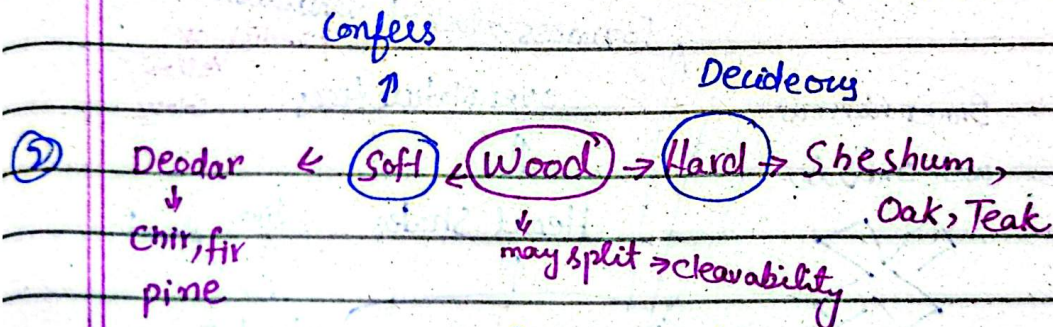
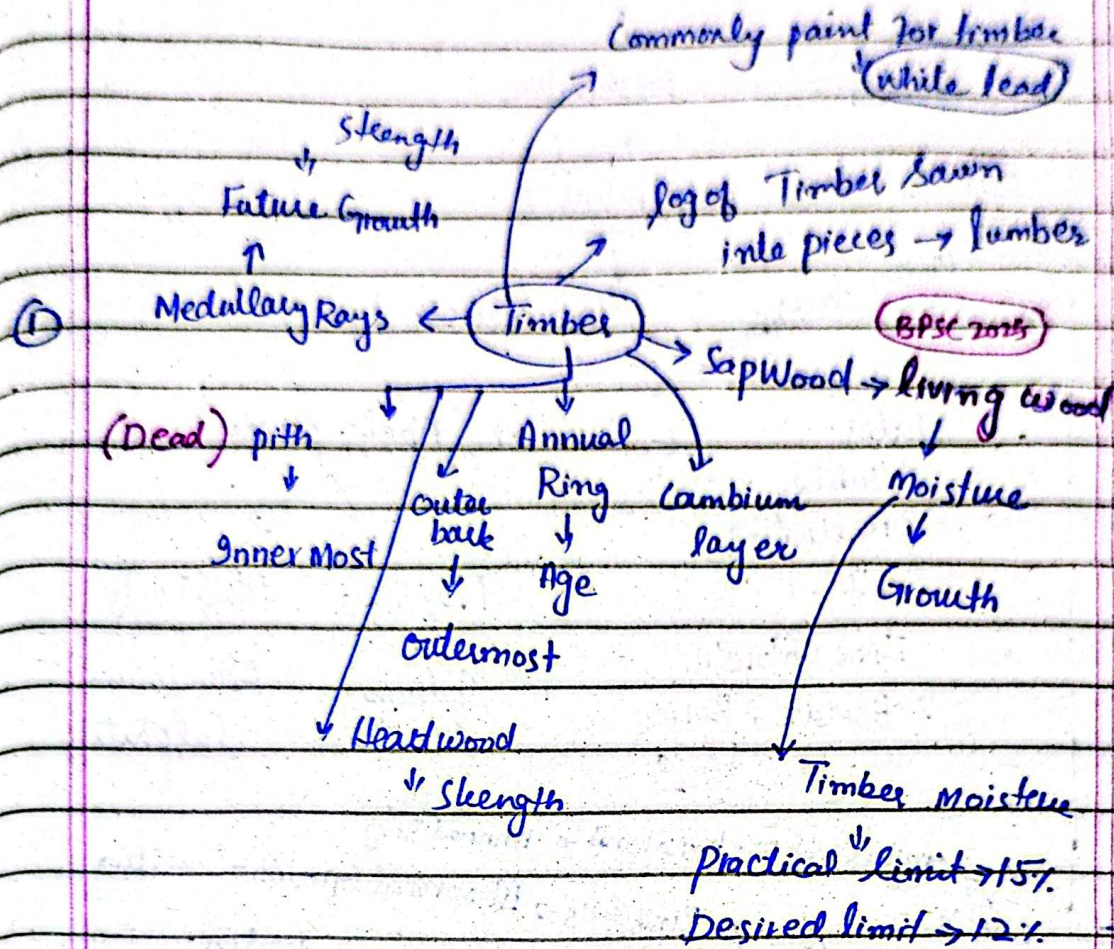
$\downarrow$ Cube size $\rightarrow 70.6$ mm

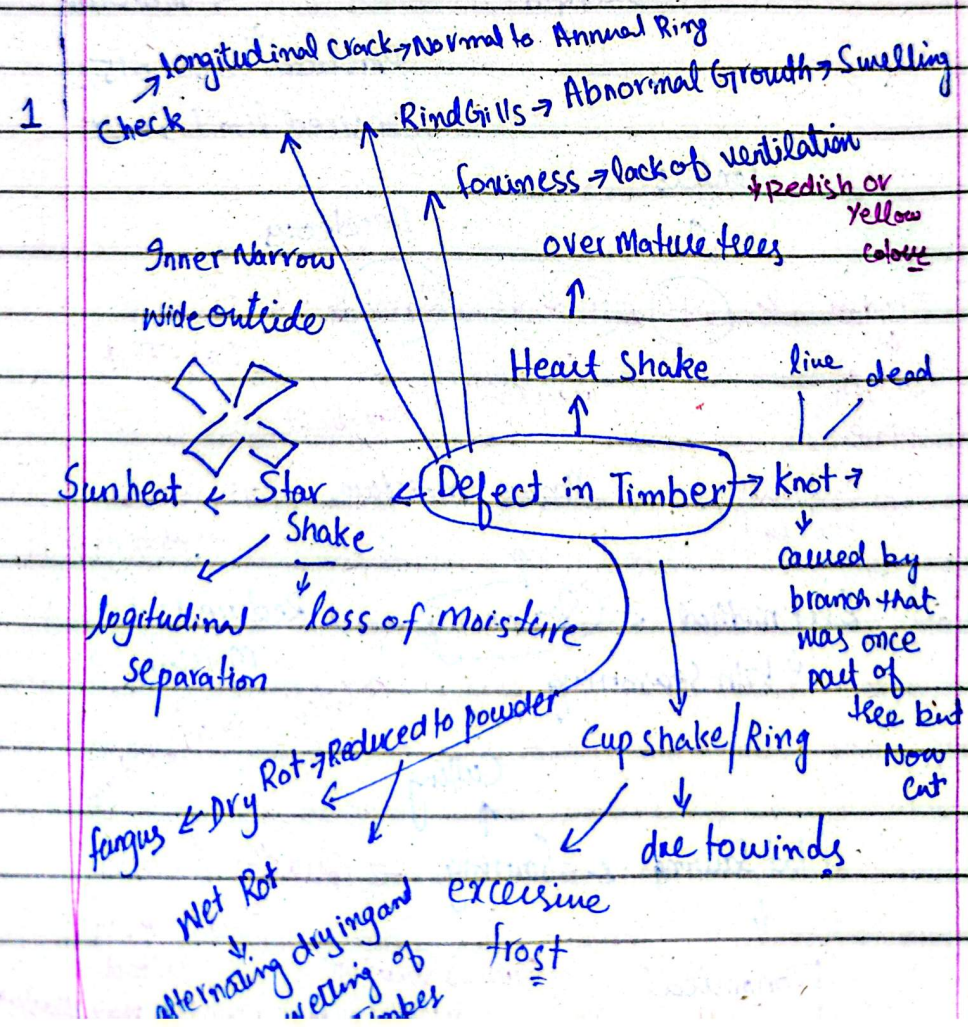
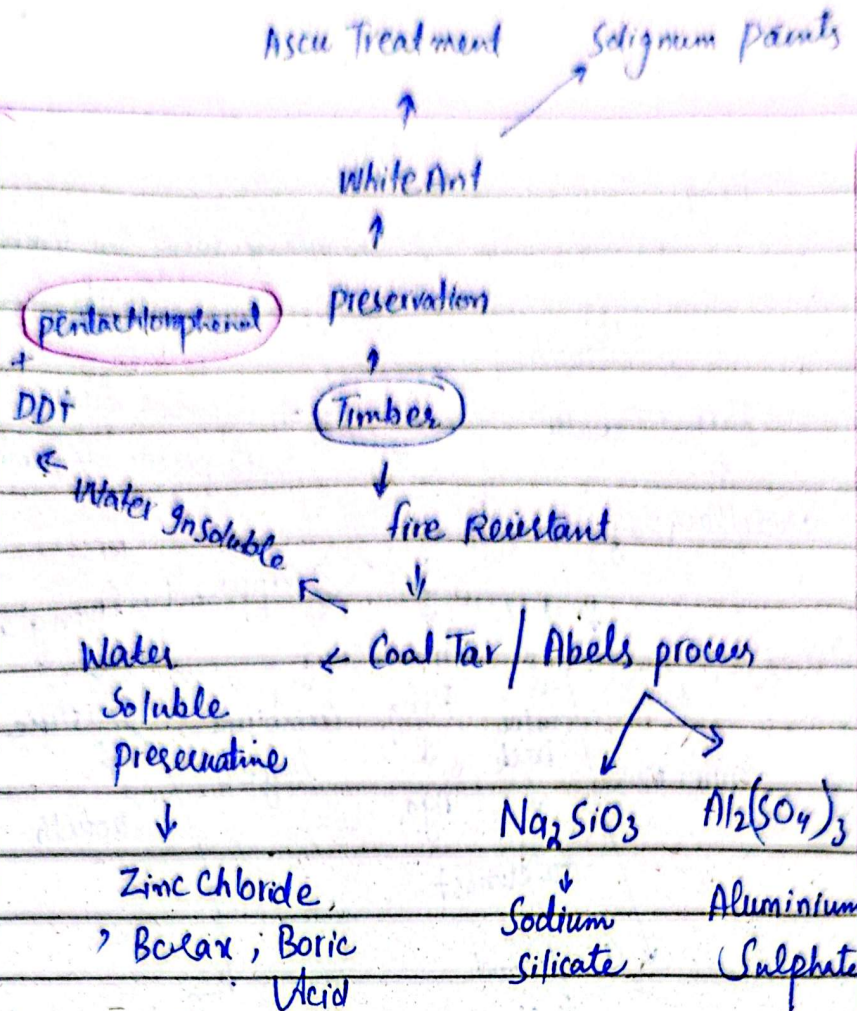
Lecture # 5

11 May 2025



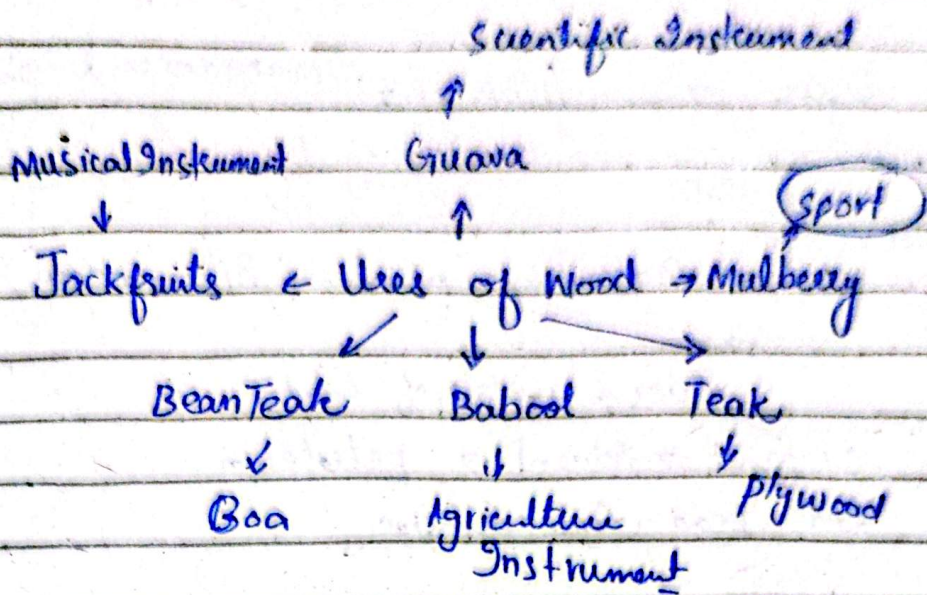
Timber





②

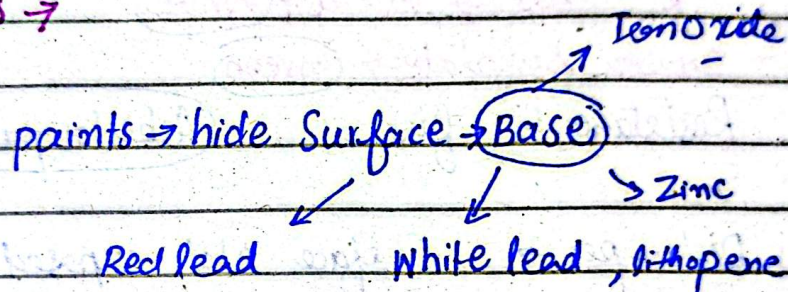
Uses of Wood



Most durable $\rightarrow$ Oil paint

Paints $\rightarrow$

①



②

liquid part of paint

Vehicle $\rightarrow$ keep constituent in suspension

↓
Poppy oil,
Tung oil,
linseed oil,
Nut Oil

③

zinc Oxide, copper Sulphate $\rightarrow$ colour

(4) Solvent/Thinner → Spreading in the
↓ Turpentine Oil, Benzene, Naphtha
part paper

(5) Drier → litharge → Manganese sulphate
↓ lead Acetate
Cobalt, Zinc
↓ quantity of drier → 10%
⇒ Protective paint (Biluminous)

⇒ drier → acetate of lead
⇒ Oil paint → Solvent → petroleum
⇒ Red lead Anticorrosive

- (MCQ2)
- ① ⇒ Base Material for distemper → Chalk + water
 - ② ⇒ Durable Varnish → Oil
 - ③ ⇒ Zinc Oxide → Colour → White
 - ④ ⇒ Copper sulphate → Green
 - ⑤ ⇒ Resistance to fire → Asbestos paint

(6) Distemper → Surface Not exposed to weather

(7) Detachment of the paint film from surface → flaking

(8) Vehicle used in enamel paint → Varnish
→ Copal, amber, lac, shellac

(9) Varnish = Resin + drier + Solvent

used in varnish
Not Soluble in Water, Soluble in Spirit

(10) Snowcrete $\rightarrow$ water proof cement paint

(11) In plastic paint thinner used $\rightarrow$ (Methanol)

(12) Blistering (swelling of paint film)

(13) Timber $\rightarrow$ paint $\rightarrow$ White lead

(Past paper)