Rivets

Q1) Draw 1:1 scale, the top and front views of a single riveted lap joint. The thickness of the plates is 9 mm. Show atleast 3 rivets. Indicate all the dimensions. Use snap head rivets.

$t = 9$ mm

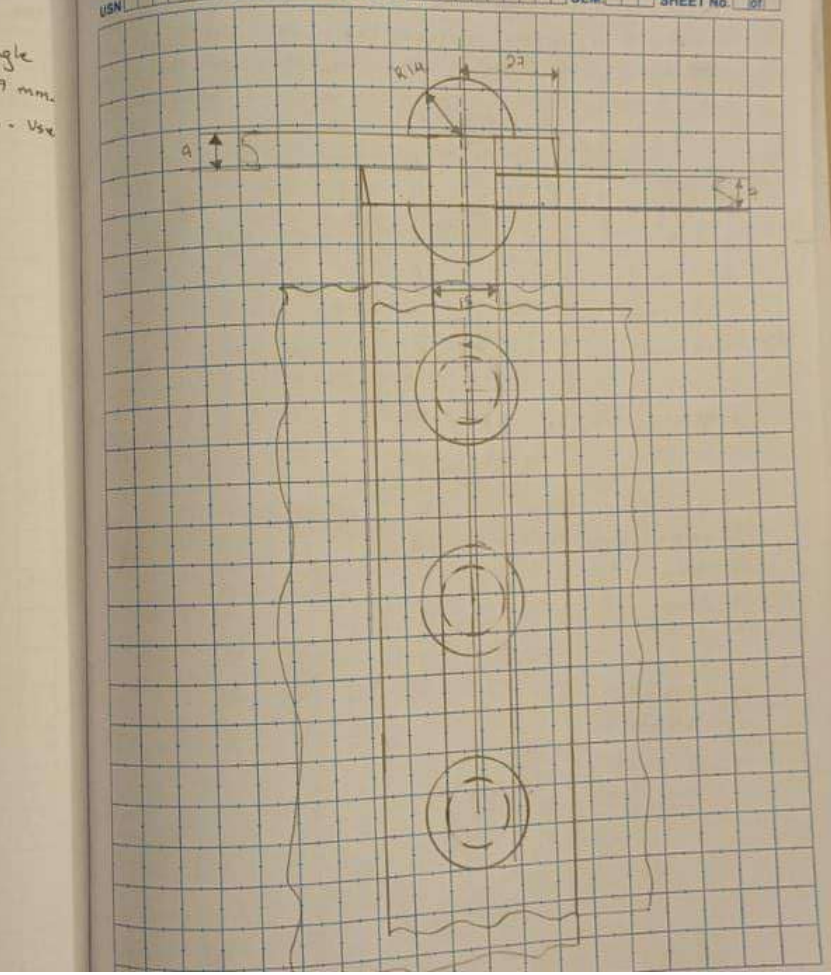
$d = 6\sqrt{t} = 6\sqrt{9} = 6 \times 3 = 15$ mm

pitch: $3d = 3 \times 15 = 54$ mm

margin(m): $1.5 * d = 1.5 * 15$

$= 27$ mm

USN | COURSE CODE | SEM | SHEET No. | of



Q2) Draw to 1:2 scale the top and sectional front views of a double riveted lap joint with (i) chain and (ii) zig-zag riveting. The thickness of the plates is 9 mm. Show at least 3 rivets in each row. Use snap head rivets.

$t = 9\,mm$

$d = 6\sqrt{t} = 6\sqrt{9} = 6 \times 3 = 18\,mm$

$p = 3d = 3 \times 18 = 54\,mm$

$m = 1.5 * d = 1.5 \times 18$
$= 27\,mm$

transverse pitch, $t_p = 0.8 * p$
$= 0.8 \times 54 = 43.2\,mm$

diagonal pitch, $d_p = 0.6 * p$
$= 0.6 \times 54$
$= 32.4\,mm$

Scaled down to 1:2

$t = 4.5\,mm$

$d = 9\,mm$

$p = 27\,mm$

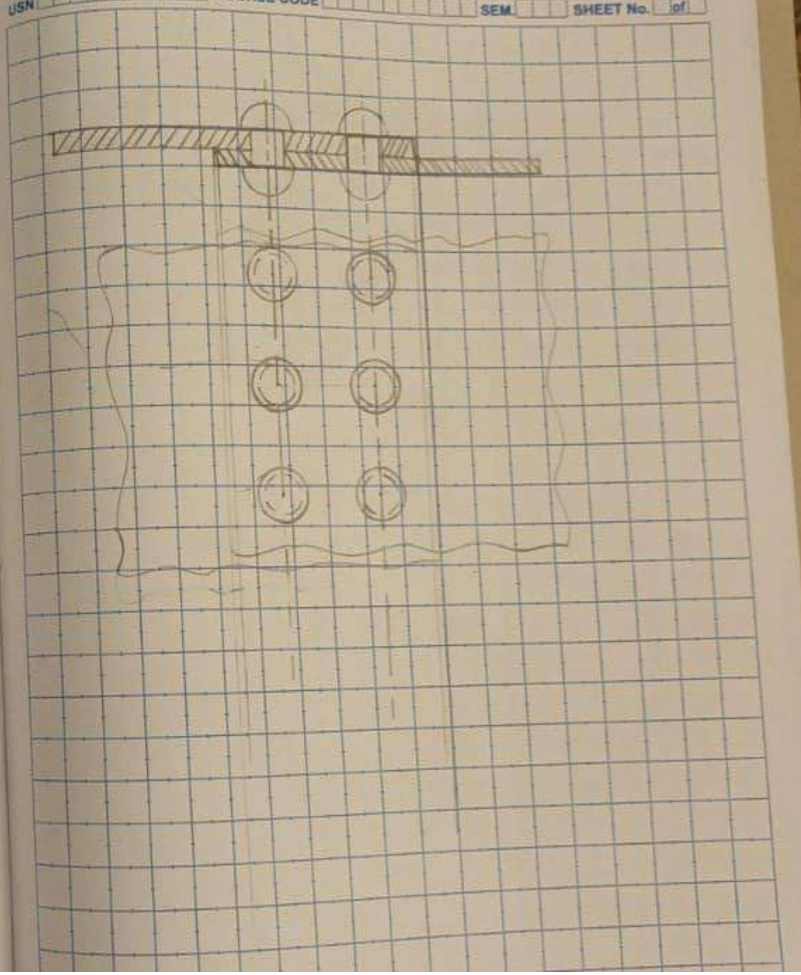
$m = 13.5\,mm$

$t_p = 21.6\,mm$

$d_p = 16.2\,mm$

Rivet Head $= 0.8 * d$
$= 0.8 \times 9$
$= 7.2\,mm$

USN | COURSE CODE | SEM. | SHEET No. | of

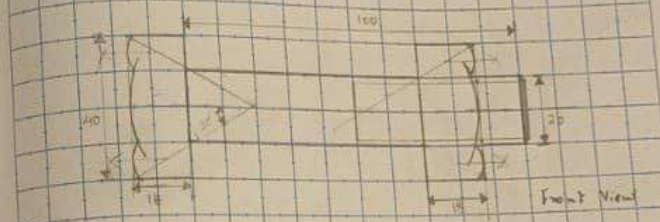


Single Cover Plate
SEM
SHEET No.
of

9.8 Draw the 3 views of ISO Threaded hexagonal bolt 100 mm long, 20 mm dia and a thread length of 50 mm and hexagonal nut assembly in the axis horizontal position. Indicate all the proportions and the actual dimensions.

Bolt head dia = $2d = 2 \times 20 = 40$ mm
Thickness of bolt head = $0.8d = 0.8 \times 20 = 16$ mm
Thickness of nut = $0.9d = 0.9 \times 20 = 18$ mm

USN | COURSE CODE | SEM | SHEET No. of

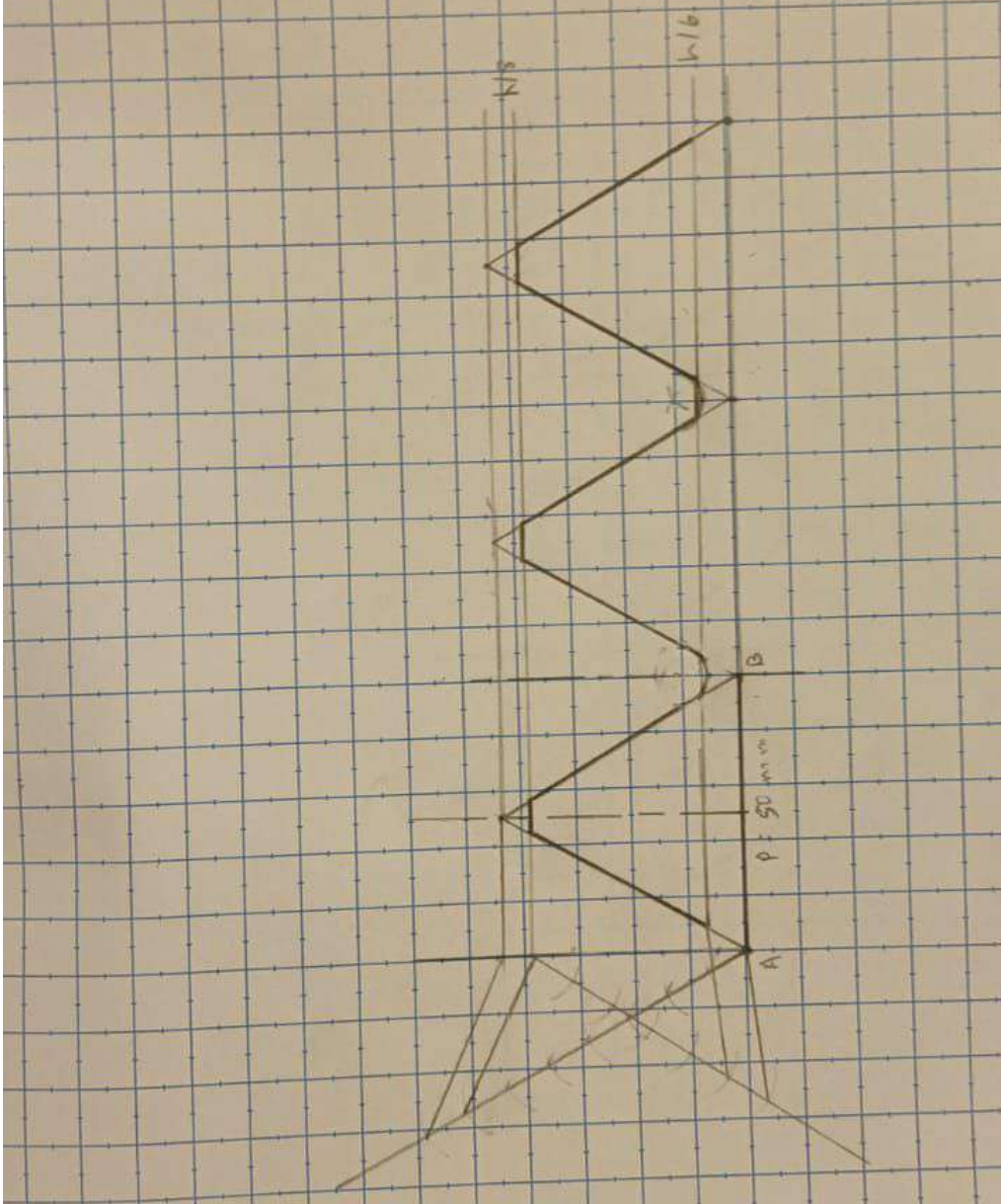


Front View

Side View

COURSE CODE SEM. SHEET No. of

I. S. O (External)



Scale : 1 Unit = 10 mm

STAFF SIGNATURE

Q2) Draw a square and acme thread for a pitch of 50 mm.

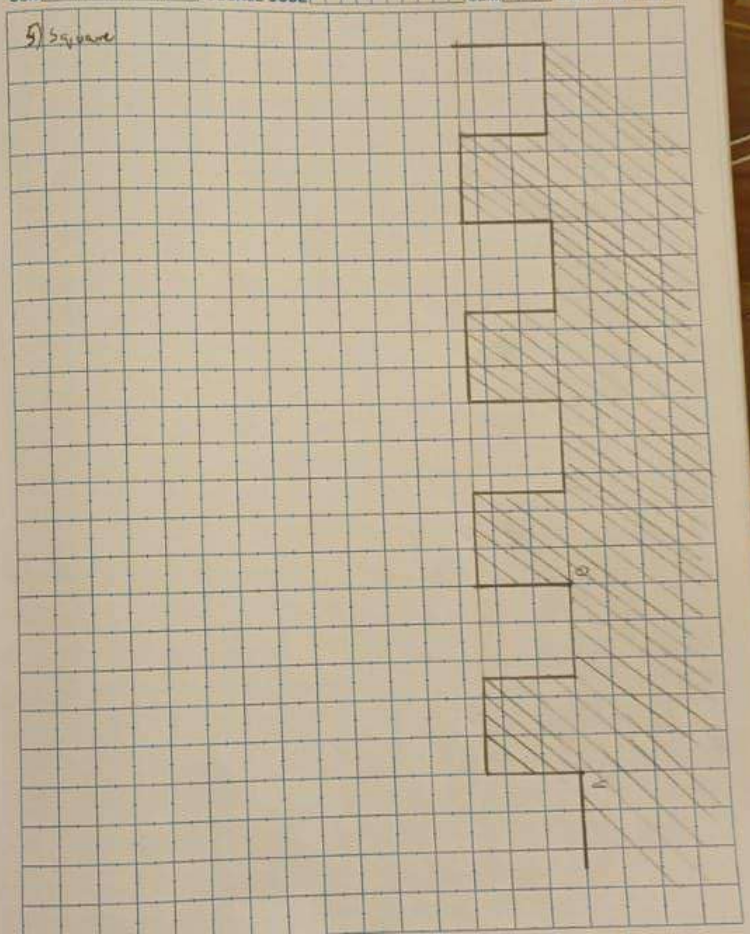
Square

h = 0.5 x P

w = 0.5 x P

USN | COURSE CODE | SEM | SHEET No. | of

5) Square



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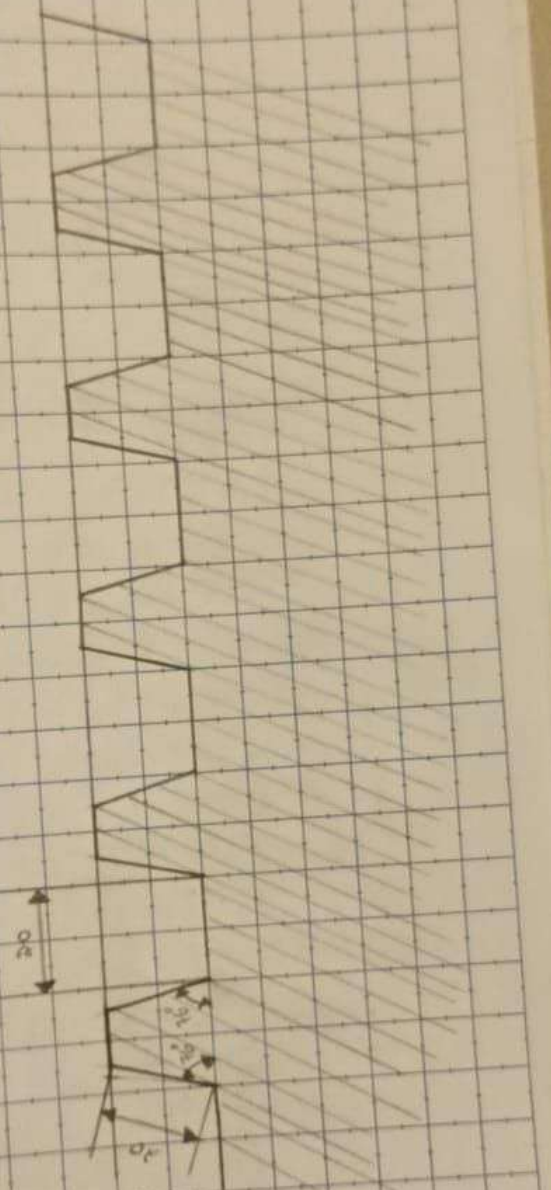

Scale : 1 Unit = 10 mm

STAFF SIGNATURE

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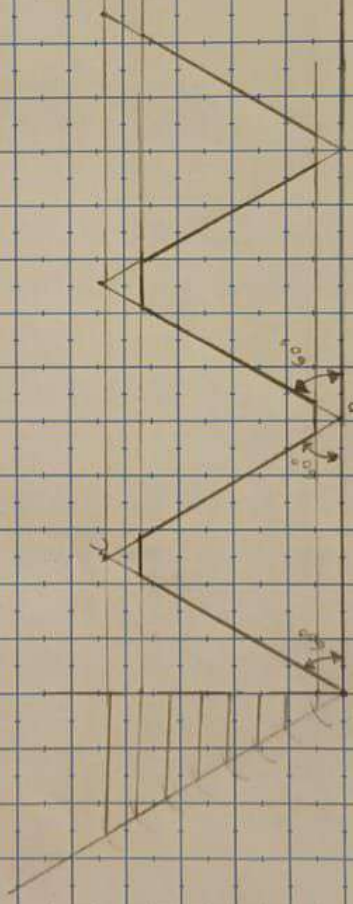
SN [ ][ ][ ][ ][ ][ ][ ][ ] COURSE CODE [ ][ ][ ][ ][ ][ ][ ][ ] SEM. [ ][ ] SHEET No. [ ] of [ ]

2) American Standard



Date : _____ Scale : 1 Unit = 10 mm STAFF SIGNATURE _____

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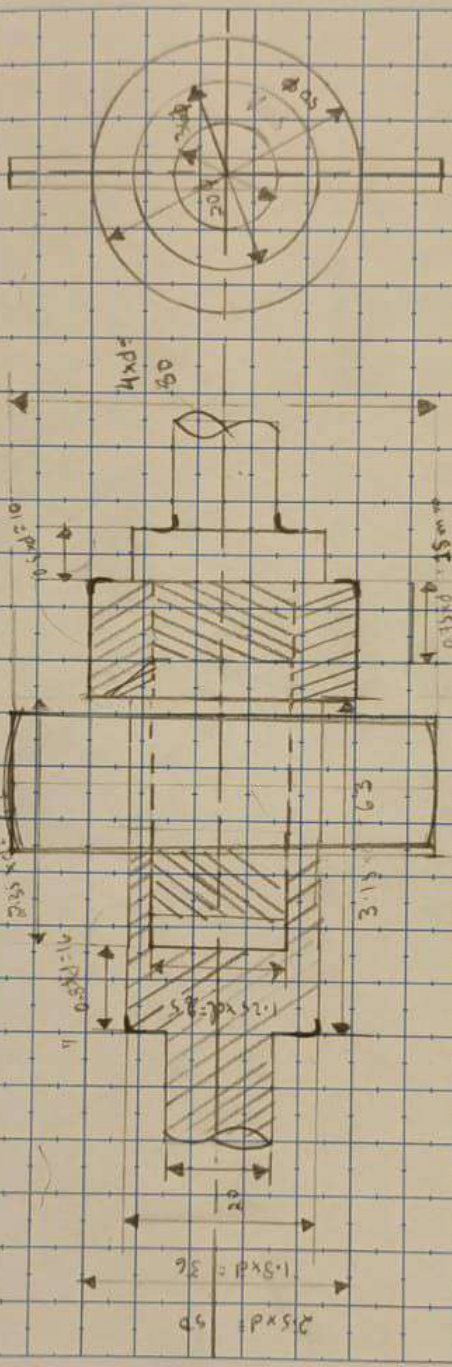
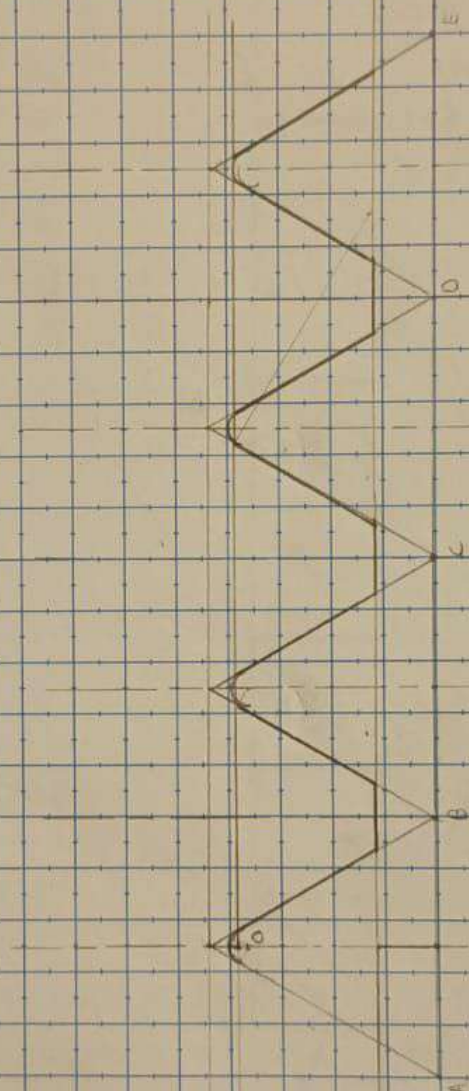


Scale : 1 Unit = 10 mm

STAFF SIGNATURE

SN [ ] COURSE CODE [ ] SEM. [ ] SHEET No. [ ] of [ ]

4) J.S.O (Internal)



Scale : 1 Unit = 10 mm

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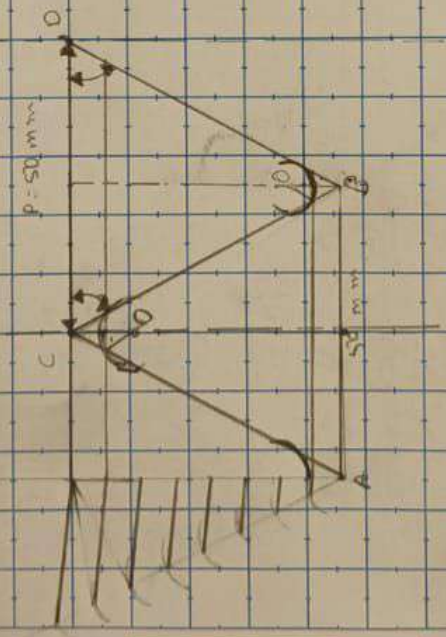
1) Whitworth



Date :

Scale : 1 Unit = 10 mm

STAFF SIGNATURE

Butt Joint Rivets

Q.) Draw to 1:1 scale the top and sectional front views of a ~~single~~ double riveted butt joint with i) single cover plate and ii) double cover plate. The thickness of the plates is 9 mm. Show at least 3 rivets in each row, indicate all the dimensions. Use snap head rivets.

$t = 9$ mm

$d = 6\sqrt{t} = 6\sqrt{9} = 6 \times 3 = 18$ mm

$p = 3d = 3 \times 18 = 54$ mm

$m = 1.5 * d = 1.5 \times 18 = 27$ mm

$tp = 0.8 * p = 43.2$ mm

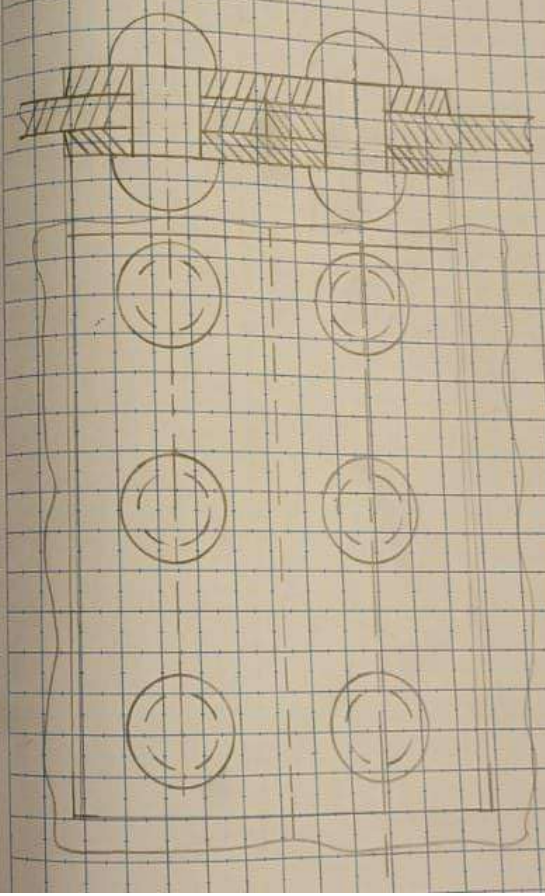
t of cover plate $= 0.8 * t$

$= 0.8 \times 9$

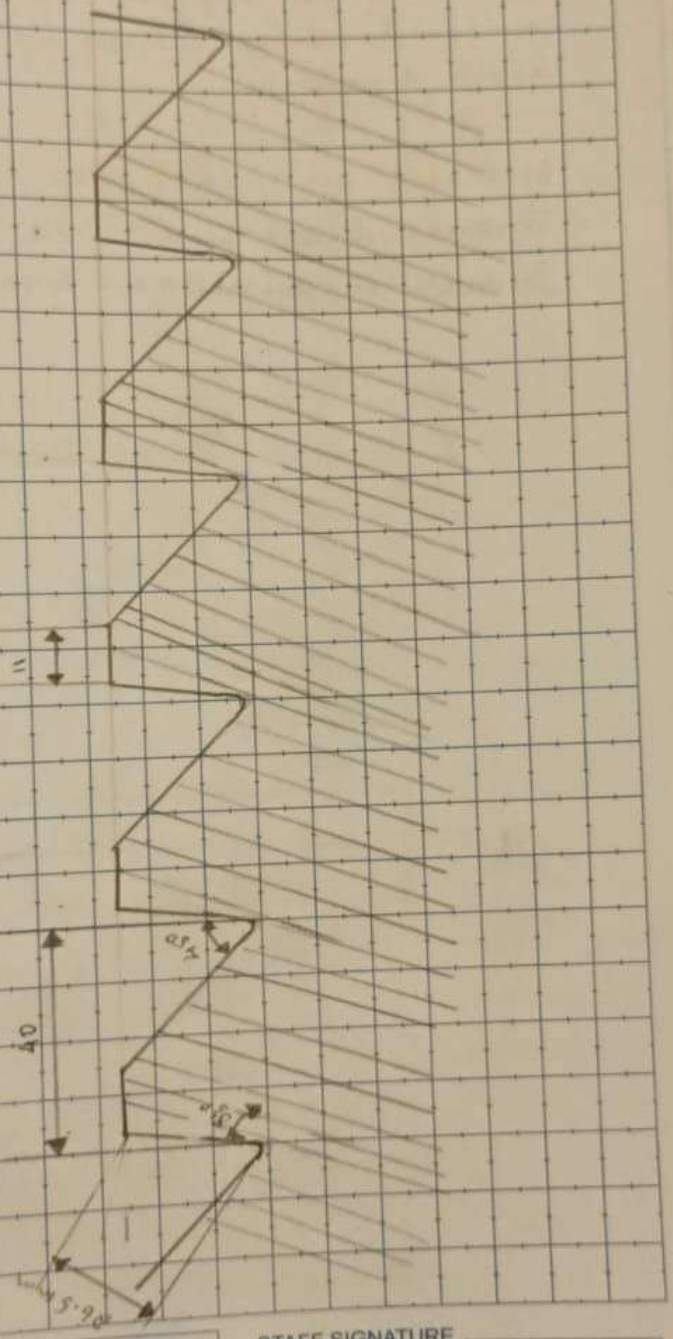
$= 7.2$ mm

USN COURSE CODE SEM SHEET No. of

Double Cover Plate



COURSE CODE SEM SHEET No. of



Scale : 1 Unit = 10 mm

STAFF SIGNATURE

Q2) Draw a square, acme, buttress thread for a pitch of 40 mm

Buttress
$h = 0.66171 \times P$

Acme
$W = 0.3707\,P$
$h = 0.5\,P$

USN | COURSE CODE | SEM. | SHEET No. | of

1) Square

3) Indian Standard Thread (I.S.O Thread) (External)

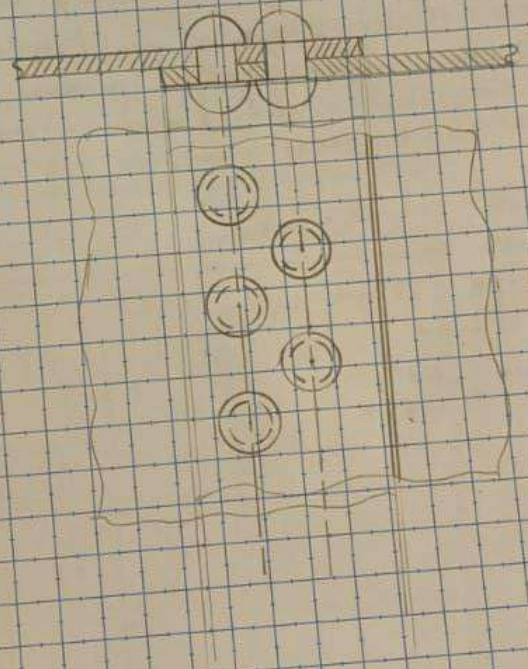
Angle - 60°

I.S.O Thread (Internal

USN COURSE CODE

2) American Standard

USN COURSE CODE



STANDARD FORMS of V THREADS

1) WHITWORTH THREAD - BRITISH STANDARD WHITWORTH THREAD [BSW]

Discovered by Sir Joseph Whitworth

Angle - 55°

2a) Draw the profile of 3 types of V Thread of pitch 50 mm. Indicate the angle & depth of the thread. Name the thread profile.

$H = 0.93 \times P$

$= 0.93 \times 50$

$= 46.5$

2) SELLER'S THREAD - AMERICAN STANDARD THREAD

Angle - 60°

Root and Crest are flat

$h = 0.86 \times P$