

CLASS XII
ENGINEERING GRAPHICS
MARKING SCHEME - SQP (046)
(2019-20)

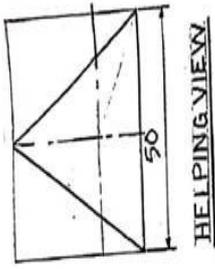
Maximum Marks: 70

Time: 3hrs

Q.1	M.C.Q. (i) c or 15° (ii) a or Ellipse (iii) b or Stud (iv) a or Rim (v) d or 1:30	5×1=5 Marks
Q 2.(i)	ISOMETRIC SCALE	4
(a)	Marking of divisions of 10mm, including divisions of first part of 1mm on true length	1
(b)	Projections from scale 1:1 to get points on isometric scale, construction of isometric scale	2
(c)	Printing True Length / Scale 1:1, Isometric length/Isometric Scale and marking angles of 30° & 45°	1
(ii)	ISOMETRIC PROJECTION OF THE FRUSTUM OF A CONE	7
(a)	Drawing upper & lower isometric ellipses	3
(b)	Drawing both generators	1½
(c)	Marking vertical axis, central lines, direction of viewing	1½
(d)	Dimensions	1
(iii)	ISOMETRIC PROJECTION OF A SQUARE PYRAMID, PLACED CENTRALLY, ON A TRIANGULAR PRISM	13
	<u>TRIANGULAR PRISM</u>	
(a)	Drawing helping figure	1
(b)	Drawing both isometric triangles	2½
(c)	Drawing vertical edges	1½
(d)	Marking axis & direction of viewing	1
(e)	Dimensions	1
	<u>SQUARE PYRAMID</u>	
(a)	Drawing isometric square base	2½
(b)	Drawing slant edges	1½
(c)	Marking vertical axis & central lines at base	1
(d)	Dimensions	1
Q 3.(i)	<u>SINGLE RIVETED LAP JOINT</u>	8
(a)	Drawing plates of thickness 't' with 10° angle at end of plates	2½

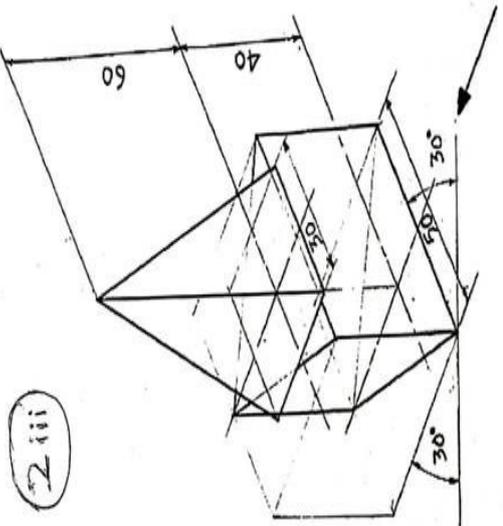
(b)	Drawing rivet heads	2
(c)	Drawing hatching lines	1½
(d)	Standard Dimensions	2
Or		
	T- HEADED BOLT FRONT VIEW	8
(a)	Threaded and unthreaded portions of cylindrical shank	2
(b)	Head of bolt with square neck	2
	SIDE VIEW	
(a)	Rectangle with two horizontal lines	1
(b)	Two circles as per convention	1
(c)	Standard dimensions	2
(ii)	WOODRUFF KE	5
(a)	Front view	2
(b)	Top view	1
(c)	Side view	1
(d)	Standard dimensions	1
Or		
	ROUND HEAD MACHINE SCREW	5
(a)	Drawing the front view	2½
(b)	Drawing the top view	1½
(c)	Standard dimensions	1
Q4.	UNPROTECTED FLANGE COUPLING (Assembly)	
(i)	FRONT VIEW (Lower half in section)	14
(a)	Flanges in lower half with extension 5mm & gap 2mm and hatching lines	5
(b)	Hexagonal nut & bolt in lower half	3
(c)	Rectangular keys & shafts with broken ends	3
(d)	Flanges in upper half	3
(ii)	SIDE VIEW (from left side)	8
(a)	Five circles including pitch circle diagram of $\phi 104$	2½
(b)	Hexagonal nut & bolt corresponding to front view	2
(c)	Keys	2
(d)	Hatching as per convention & cutting plane	1½
	Printing title(1), scale used (1), projection symbol (1) and six dimensions(3)	6
Or		
	TURN BUCKLE (Disassembly)	
(a)	Turn Buckle	15

	Front view (full in section)	
(i)	Outline of body with conical ends and hatching lines	6
(ii)	space for rods with internal threads	3
	Top View	
(i)	Outline of body with conical ends and correct vertical and horizontal lines.	4
(ii)	Hidden lines for internal threads and space for rods	2
(b)	Rod B	7
	Front View	
(i)	Rod with conventional broken end and threads as per convention	5
	Side View	
(i)	two circles as per conventions	2
	Printing titles of both (1), scale used (1), drawing projection symbol (1) and six dimensions (3)	6

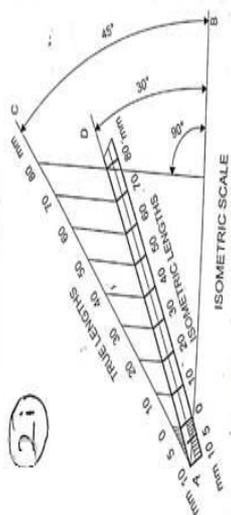


HELPING VIEW

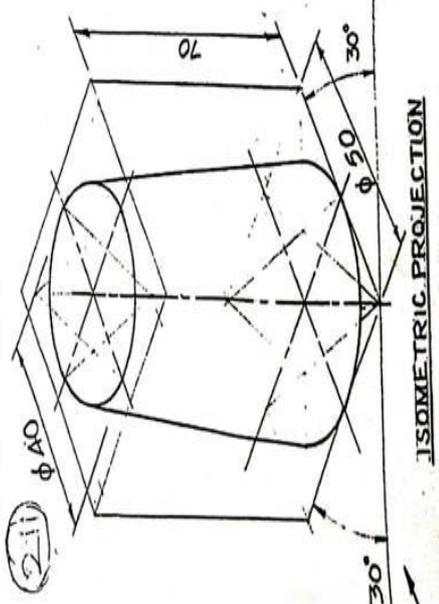
ISOMETRIC PROJECTION COMBINATION



2 iii



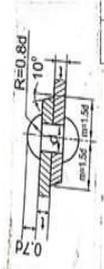
2 i



2 ii

ISOMETRIC PROJECTION

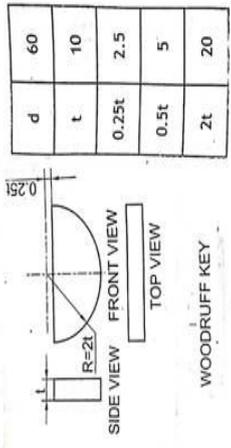
3 ii



FRONT VIEW IN SECTION
SINGLE RIVETED
LAP JOINT

l	$d = 6\sqrt{t}$	$0.7d$	$0.8d$	$p = 8d$	$m = 1.5d$
16.0	24.0	16.8	19.2	72.0	36.0

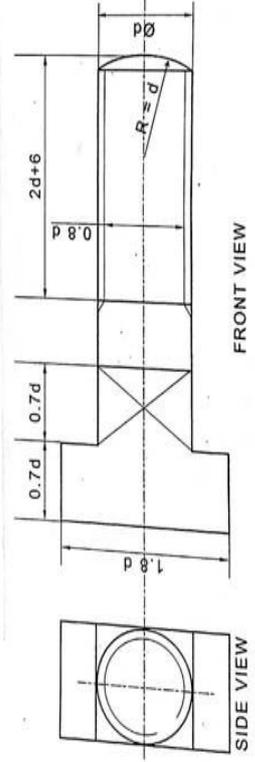
3 i



d	60
t	10
$0.25t$	2.5
$0.5t$	5
$2t$	20

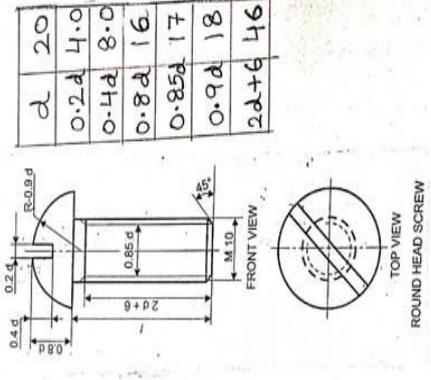
WOODRUFF KEY

OR



T-HEADED BOLT

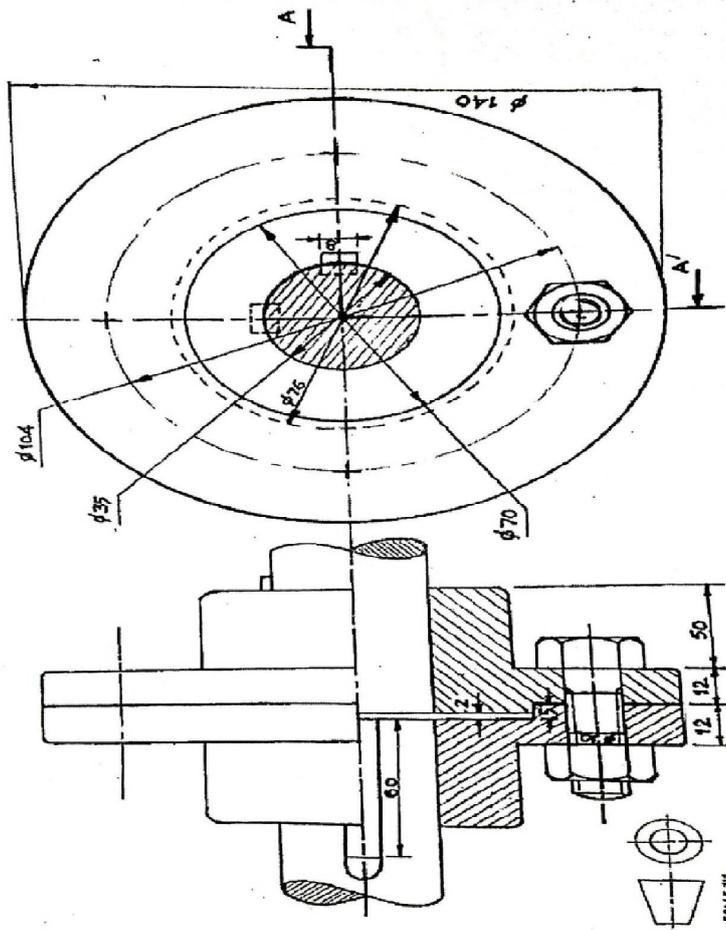
d	$0.7d$	$0.85d$	$1.8d$
20	14	17	36



d	20
$0.2d$ <td>4.0</td>	4.0
$0.4d$ <td>8.0</td>	8.0
$0.8d$ <td>16</td>	16
$0.85d$ <td>17</td>	17
$0.9d$ <td>18</td>	18
$2d+6$ <td>46</td>	46

ROUND HEAD SCREW

(4)



SIDE VIEW (L)

HALF SECTIONAL FRONT VIEW AT A-A

UNPROTECTED FLANGE COUPLING

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OR

