MARKING SCHEME

Senior School Certificate Examination – 2013

Subject : ENGINEERING GRAPHICS
Sub Code : 046
Paper Code : 68

ALL QUESTIONS ARE TO BE ANSWERED CORRECTLY AND ACCURATELY.

General Note:

(i) Marks are to be awarded in proportion to the work done.
(ii) Mistakes in dimensioning up to ± 1.0 mm may be ignored.
(iii) In dimensioning, arrow-heads of various types, as per SP: 46-2003 codes are usable. However, where space is too small for an arrowhead, oblique stroke or dot may be employed.
(iv) In no view of question 1 and in no sectioned view of question 3, are hidden edges / lines required.
(v) Other standard methods of drawing / proportions for features like nuts, heads of bolts, screws etc. employed by examinees, may also be accepted.

VALUE POINTS

S. No.		Distribution of Marks
Q 1.	**ISOMETRIC SCALE**	**3**
	(i) Marking of divisions of 10 mm, 1 mm on true length and marking angles of 30 ^{o} & 45^{o}.	1
	(ii) Projections from scale 1:1 to get points on isometric scale, Construction of isometric scale.	1
	(iii) Division of the first part of isometric scale into 10 subdivisions. Printing 'True Length/Scale 1:1' and 'Isometric Length/Isometric Scale'.	1
(a):	**ISOMETRIC PROJECTION OF A HEXAGONAL PYRAMID**	**7**
	(i) Drawing a helping figure of a hexagon, base edge = 30 mm, with two of its base edges parallel to V.P.	1
	(ii) Drawing isometric hexagon.	2
	(iii) Drawing slant edges.	2
	(iv) Marking the vertical axis, direction of viewing.	1
	(v) Dimensions.	1

NOTE: *For incorrect position of the hexagonal pyramid i.e. drawn in inverted position or if axis is kept in horizontal, $1^1/_2$ marks should be deducted*.

(b): ISOMETRIC PROJECTION OF SPHERE PLACED, CENTRALLY, ON A PENTAGONAL PRISM **14**

PENTAGONAL PRISM **8**

(i) Drawing a helping figure of a pentagon, base edge = 30 mm, with one of its base edge perpendicular to V.P. 1

(ii) Drawing isometric pentagons. $3^1/_2$

(iii) Drawing face edges, parallel to vertical axis. $2^1/_2$

(iv) Dimensions. 1

SPHERE **6**

(i) Marking the centre ($^1/_2$), centre lines (1) and sphere (2). $3^1/_2$

(ii) Marking the common vertical axis (1) and direction of viewing ($^1/_2$). $1^1/_2$

(iii) Dimensions. 1

NOTE: *For incorrectly placed solids, deductions as proposed in (a) above, may be used.*

Q 2. (a): KNUCKLE THREAD PROFILE **8**

(i) Distance, equal to pitch, marked correctly. 2

(ii) Semicircular profile for threads (minimum two), drawn correctly. 4

(iii) Dimensions and hatching lines. 2

[OR]

SQUARE NUT **8**

FRONT VIEW :

(i) Boundary lines with hidden lines showing threads with axis vertical and two opposite edges parallel to V.P. 2

(ii) Drawing arc with radius R. 1

TOP VIEW :

(i) Drawing three circles as per convention. 2

(ii) Square, circumscribing chamfer circle. 1

DETAILS :
Dimensions. 2

NOTE: *Knuckle thread profile may be drawn either internal or external. 3 marks may be deducted, in all, if sketched freehand, instead of drawing to scale 1:1.*

Q 2 (b): **ROUND HEAD SCREW** **5**

(i) Front view with its axis vertical. 2
(ii) Top view. 2
(iii) Dimensions. 1

[OR]

PAN HEAD RIVET **5**

(i) Front view with its axis vertical. $2^1/_2$
(ii) Top view. $1^1/_2$
(iii) Dimensions. 1

NOTE: *2 marks may be deducted, if these components are drawn with instruments, instead of being sketched freehand.*

Q 3 : **UNPROTECTED FLANGE COUPLING (Assembly)** **28**

(a) FRONT VIEW (Lower Half in Section) : **14**
(i) Drawing lower half portion of socket and spigot arrangement, clearance of 2 mm and hatching lines. 5
(ii) Drawing upper half portion of flanges. 3
(iii) Drawing nut bolt assembly (at least at one location). 2
(iv) Shafts with conventional ends. 2
(v) Keys and keyways. 2

(b) SIDE VIEW (viewed from left): **8**
(i) Drawing five circles including pitch circle. $2^1/_2$
(ii) Drawing nut bolt assembly (at least at one location). 2
(iii) Drawing both keys. 2
(iv) Drawing hatching lines to show the convention of rod end. 1
(v) Cutting plane. $^1/_2$

DETAILS : **6**

Printing title (1), scale used (1), drawing projection symbol (1) and six dimensions (3).

[OR]

OPEN BEARING (Dis-assembly) **28**

(1) BASE

(a) FRONT VIEW (Right Half in Section) : **8**

(i) Drawing right half with mounting hole and recess of 5 mm at bottom. 5

(ii) Drawing left half. 2

(iii) Hatching lines. 1

(b) TOP VIEW : **7**

(i) Drawing boundary with six vertical lines. 3

(ii) Hidden lines 2

(iii) Drawing both mounting holes. $1^1/_2$

(iv) Drawing cutting plane. $^1/_2$

(2) BUSH

(a) FRONT VIEW (Full Sectional) : **4**

(i) Drawing the complete view. 3

(ii) Hatching lines. 1

(b) TOP VIEW: **3**

(i) Drawing the complete view. $2^1/_2$

(ii) Drawing cutting plane. $^1/_2$

DETAILS : **6**

Printing titles of both (1), scale used (1), drawing projection symbol (1) and six dimensions (3).

Q 4 : MULTIPLE CHOICE QUESTIONS **5**

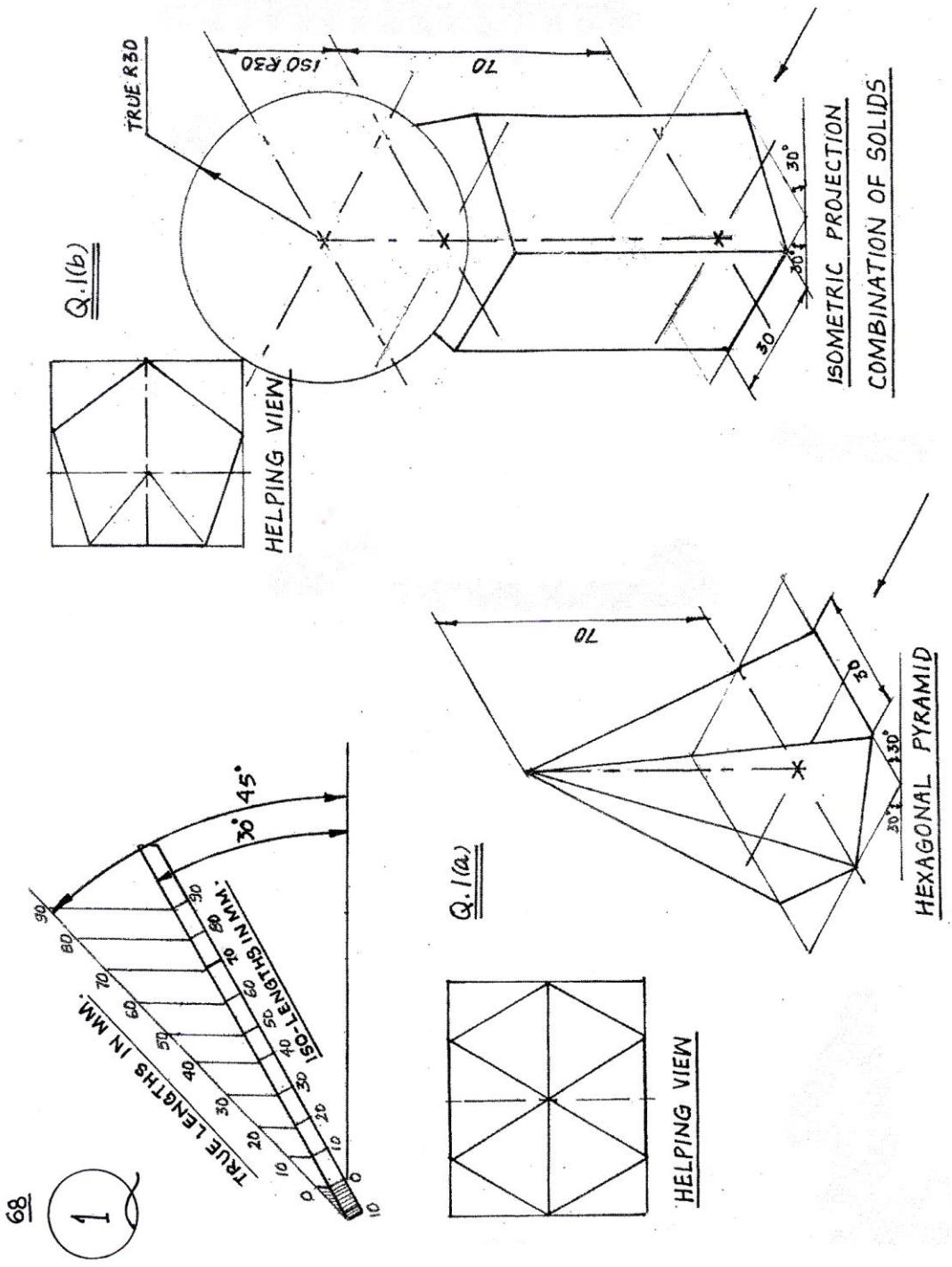
(i) (c) or 15^0. 1

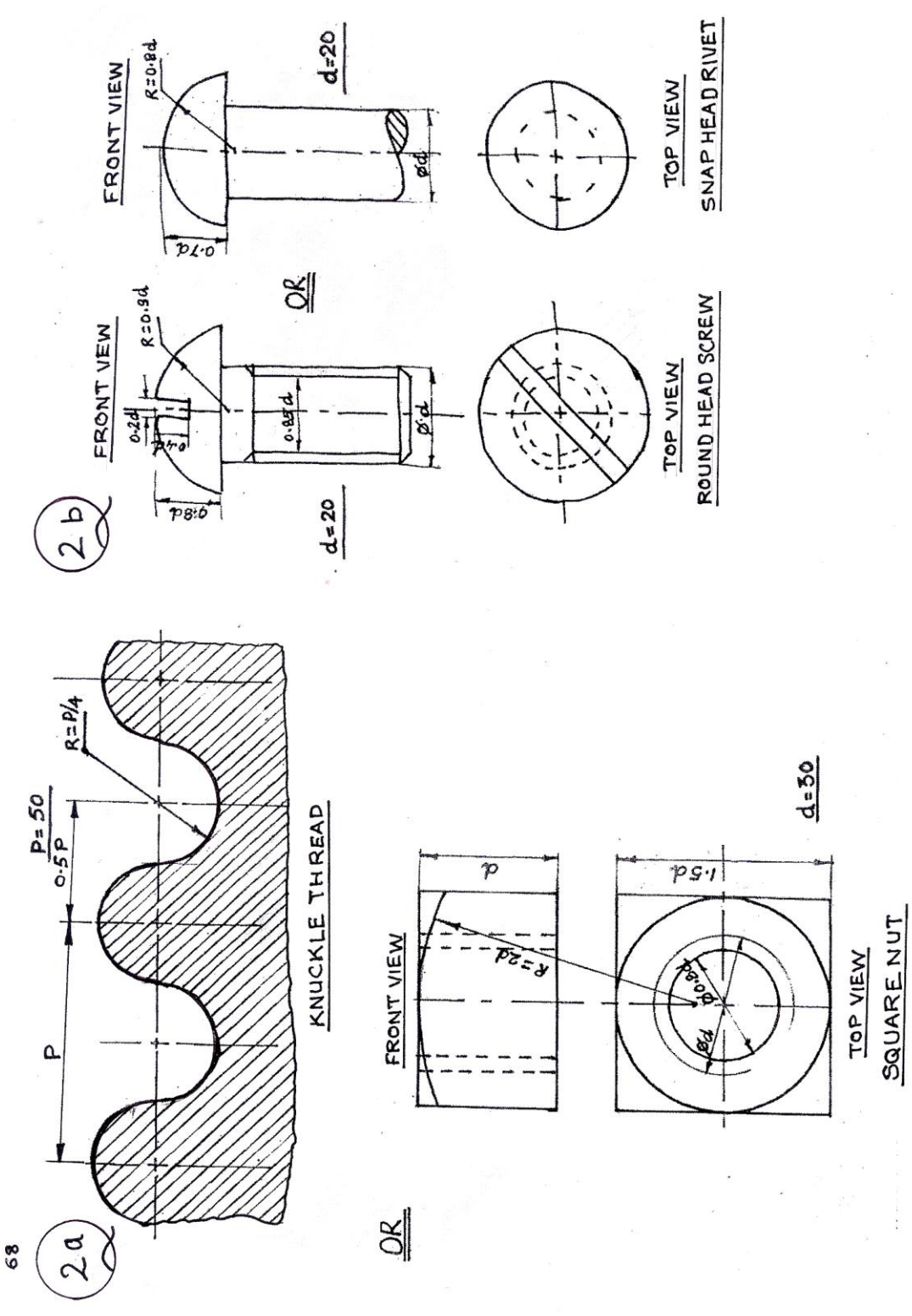
(ii) (b) or Stud. 1

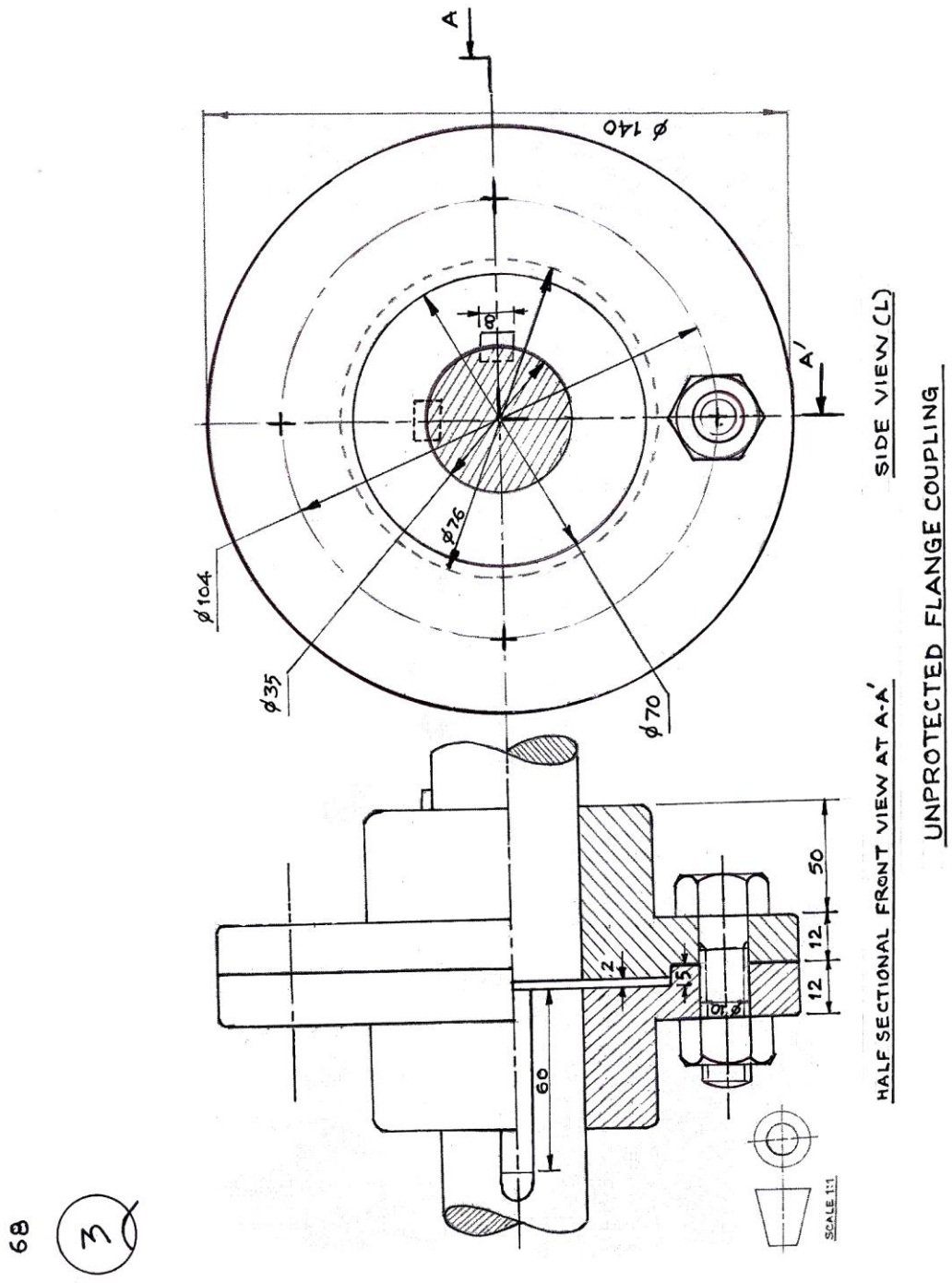
(iii) (c) or Woodruff key. 1

(iv) (a) or Pin joint. 1

(v) (a) or Rim. 1







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