MARKING SCHEME

Senior School Certificate Examination – 2017

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

ALL QUESTIONS ARE TO BE ANSWERED CORRECTLY AND ACCURATELY.

General Note:

a) Marks are to be awarded in proportion to the work done.
b) Mistakes in dimensioning up to ± 1.0 mm may be ignored.
c) In dimensioning, arrow-heads of various types, as per SP: 46-2003 codes are acceptable. However, where space is too small for an arrowhead, oblique stroke or dot may be employed.
d) In question no. 2 and in sectioned view of question no. 4, if hidden edges / lines are drawn, no marks should be deducted.
e) Other standard methods of drawing / proportions for features like nuts, heads of bolts, screws etc. employed by examinees, may also be accepted.

VALUE POINTS

		Distribution of Marks
Q 1.	**MULTIPLE CHOICE QUESTIONS**	**5**
	(i) (b) *or* Orthographic Projection.	*1*
	(ii) (b) *or* J.	*1*
	(iii) (d) *or* 3d.	*1*
	(iv) (c) *or* To hold the jaws of the fork from opening wide when the cotter is inserted.	*1*
	(v) (d) *or* A combination of pulleys and belt.	*1*
Q 2. (i)	**ISOMETRIC SCALE**	**4**
	(i) Marking of divisions of 10 mm, including division of first part of 1 mm on true length.	*1*
	(ii) Projections from scale 1:1 to get points on isometric scale, construction of isometric scale.	*2*
	(iii) Printing 'True Length/Scale 1:1', 'Isometric Length/Isometric Scale' and marking angles of 30^{o} & 45^{o}.	*1*

(ii) ISOMETRIC PROJECTION OF A FRUSTUM OF A INVERTED TRIANGULAR PYRAMID **7**

(i) Drawing helping figure of both triangles. $1^1/_2$

(ii) Drawing isometric triangle, on top and at the base. *2*

(iii) Drawing three slant edges. $1^1/_2$

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

(v) Dimensions. *1*

NOTE: *For incorrect position, 1 mark should be deducted*.

(iii) ISOMETRIC PROJECTION OF A PENTAGONAL PRISM PLACED, CENTRALLY, ON A HEMISPHERE **13**

HEMISPHERE **6**

(i) Drawing isometric ellipse ($2^1/_2$) along with centre lines ($^1/_2$). *3*

(ii) Drawing semicircular portion of hemisphere. $1^1/_2$

(iii) Marking the vertical axis. $^1/_2$

(iv) Dimensions. *1*

PENTAGONAL PRISM **7**

(i) Drawing helping figure. *1*

(ii) Drawing both isometric pentagons. *2*

(iii) Drawing vertical edges. *2*

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

(v) Dimensions. *1*

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

Q 3. (i) KNUCKLE THREAD PROFILE **8**

(i) Horizontal distances (equal to half of pitch), vertical distance (0.5P) marked correctly. *2*

(ii) Semicircular profile for crests and roots of threads (minimum two), drawn correctly. *3*

(iii) Drawing hatching lines. *1*

(iv) Standard dimensions. *2*

[OR]

HEXAGONAL NUT (with axis perpendicular to H.P.) **8**

FRONT VIEW (A/C or A/F):

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

(ii) Drawing arcs with radius method or 60^0 angle method. *1*

TOP VIEW :

(i) Hexagon, circumscribing chamfer circle. *2*

(ii) Drawing three circles as per convention. *1*

Standard dimensions. 2

NOTE: 2 *marks should be deducted, in all, if sketched freehand, instead of drawing to scale 1:1.*

(ii) PAN HEAD RIVET **5**

(i) Front view with its axis vertical. *$2^1/_2$*

(ii) Top view. *$1^1/_2$*

(iii) Standard dimensions. *1*

[OR]

WOODRUFF KEY **5**

(i) Front view. *2*

(ii) Top view. *1*

(iii) Side View. *1*

(iv) Standard dimensions. *1*

NOTE: 1 *mark should be deducted, if these components are drawn with instruments, instead of being sketched freehand.*

Q 4. TURNBUCKLE (Assembly)

(i) FRONT VIEW (Upper Half in Section) : **14**

(a) Drawing upper half portion of the body, with hatching lines. *5*

(b) Drawing lower half portion of the body. *4*

(c) Drawing both rods with 56 mm threaded portion inserted of each, showing threads and hatching lines at the rod ends. *5*

(ii) SIDE VIEW (looking from left): **8**

(a) Drawing three circles along with conventional hatching lines. $4^1/_2$

(b) Drawing hidden lines. *3*

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

DETAILS : **6**

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

[OR]

UNPROTECTED FLANGE COUPLING (Dis-assembly)

(A) FLANGE – B

(i) FRONT VIEW (Upper Half in Section) : **8**

(a) Drawing the upper, sectioned half of flange (2), with keyway (1). *3*

(b) Drawing the lower half portion of flange. *2*

(c) Drawing hole of ø12 mm and 3 mm extended portion of ø40 mm. *2*

(d) Hatching lines. *1*

(ii) SIDE VIEW (looking from right) : **8**

(a) Drawing four circles (4) and pitch circle for bolts ($^1/_2$). $4^1/_2$

(b) Drawing four circles of bolt hole of ø12 mm. *2*

(c) Drawing keyway. *1*

(d) Cutting plane. $^1/_2$

(B) SQUARE BOLT

(i) FRONT VIEW: **3**

(a) Head. $1^1/_2$

(b) Threaded and unthreaded portion of shank. $1^1/_2$

(ii) LEFT SIDE VIEW : **3**

(a) Square, hidden chamfer circle. $1^1/_2$

(b) Drawing two circles as per convention. $1^1/_2$

DETAILS : **6**

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