

PREBOARD EXAMINATION, FEB-2018

Subject - Engineering Graphics

SET-A

Class: XII

M. Marks: 70

Date: \_\_\_\_\_

Time: 3 Hrs

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General Instructions: -

- i) Attempt all the questions.
  - ii) Use both sides of drawing sheets, if necessary.
  - iii) All dimensions are in millimeters.
  - iv) Missing and mismatching dimensions, if any, may be suitably assumed.
  - v) Follow the SP: 46-2003 revised codes (with first angle method of projection)
  - vi) Accuracy, quality of construction and neatness will be duly rewarded.
  - vii) Number your answers according to your questions.
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**Q.1** Answer the following multiple-choice questions. Print the correct choice on your drawing sheet (5)

1 – What is the angle in degree between the main scale and Isometric scale in the construction of Isometric scale.

- a)  $30^\circ$
- b)  $45^\circ$
- c)  $15^\circ$
- d)  $90^\circ$

2 – How many total components are used in the assembly of a turn buckle.

- a) 4
- b) 3
- c) 2
- d) 1

3 – Which joint is suitable to join a trolley with tractor among these?

- a) Flanged pipe joint
- b) Bushed bearing
- c) Turn buckle
- d) Cotter joint.

4 – What is the purpose of Gib in a Gib and cotter joint?

- a) To make joint leak proof.
- b) To join the rods.
- c) To hold the jaws of the fork from opening wide when the cotter is inserted.
- d) To reduce the cost of manufacturing.

5 – The distance between the edge of a plate and the center of nearest rivet hole in a single riveted joint is

- a) Margin
- b) Angle of overlap
- c) Seam
- d) Pitch.

Q.2 (a) Construct an isometric scale of length 80 mm. (4)

(b) Draw the isometric projection of the frustum of an inverted triangular pyramid (base side 30mm, top edge 40mm and height 60mm) kept with its axis perpendicular to H.P. One of its base sides is nearer to the observer and is parallel to V.P. (7)

(c) A hexagonal prism of base edge=30mm and height=60 mm with two base edges perpendicular to V.P. is placed centrally and vertically on top of a cylinder of diameter=50mm and height=40mm. Draw an isometric projection of the combination. (13)

Give all the dimensions, axis and direction of viewing for both (b) and (c)

Q. 3. (a) Draw to scale 1: 1, the standard profile of a METRIC SCREW THREAD (external), taking an enlarged pitch = 50 mm. Give all the standard dimensions. (8)

OR

a) Draw to scale 1: 1, the Front View of the assembly of a SQUARE HEAD BOLT (Across Flats) of nominal diameter,  $d = 30$  mm, with a Hexagonal Nut (Across Corners) and a Washer, keeping the axis horizontal. Length of the bolt = 120 mm, Threaded portion of bolt = 80 mm and Thickness of washer = 4 mm. Give all the standard dimensions.

b) Sketch freehand the Front View and the Top View of a ROUND HEAD MACHINE SCREW of diameter = 20 mm, keeping its axis vertical. Give all the standard dimensions. (5)

OR

b) Sketch freehand the Front View and the Top View of a DOUBLE HEAD FEATHER KEY WITH GIB HEAD on both ends. Keeping it horizontal, for a shaft of diameter = 48 mm. Give all the standard dimensions.

Q. 4 - Figure 1 shows the details of the parts of a Solid Web Cast Iron Pulley. Assemble these parts correctly and then draw to scale 1:1 its following views: (28)

- (i) Front view, top half in section.
- (ii) Side view as viewed from left.

Print the title and the scale used. Draw the projection symbol. Give 6 important dimensions.

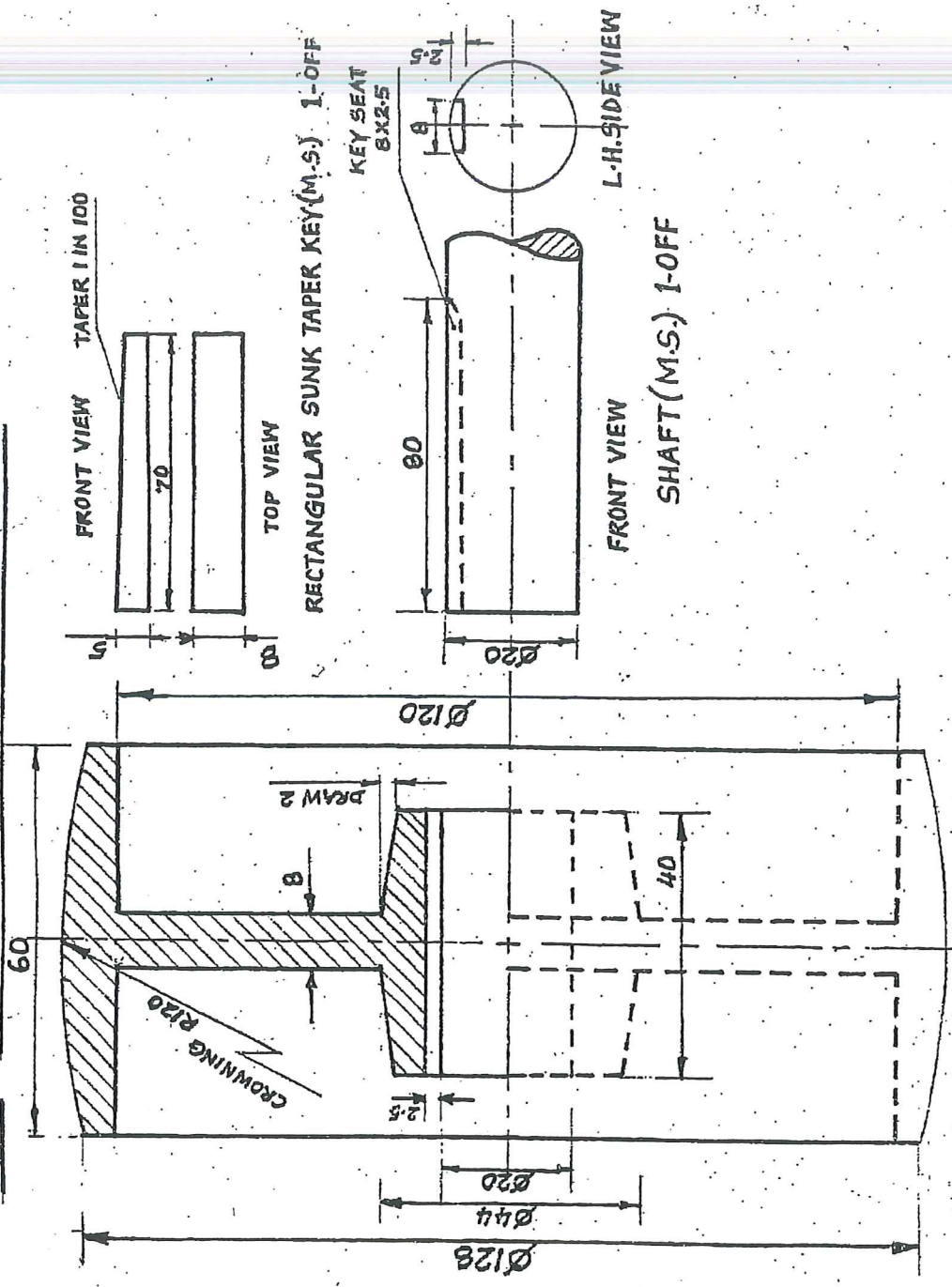
OR

Figure 2 shows the assembly of a Protected Flange Coupling. Disassemble the parts and then draw its views of the following parts to scale 1:1. Keep the same position of both Flange A and rectangular sunk taper key-A with respect to H.P and V.P

- (i) Flange A:
  - (a) Front view, upper half in section.
  - (b) Side view looking from left.
- (ii) Rectangular Sunk Taper Key A:
  - (a) Front view
  - (b) Top view

Print the title and the scale used. Draw the projection symbol. Give 6 important dimensions.

**FIG 1. SOLID WEB CAST IRON PULLEY**



**HALF SECTIONAL FRONT VIEW**

**NOTE: FIGURE NOT TO SCALE. USE THE DIMENSIONS GIVEN.**

**PULLEY (C.I.) 1-OFF**

**SHAFT (M.S.) 1-OFF**

**FRONT VIEW**

**L-H SIDE VIEW**

**RECTANGULAR SUNK TAPER KEY (M.S.) 1-OFF**

**TOP VIEW**

**FRONT VIEW**

**TAPER 1 IN 100**

