SUMMER– 14 EXAMINATION

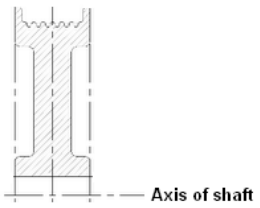
Subject Code:17305 **Model Answer**

Important Instructions to examiners:

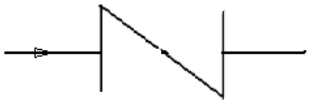
1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills.
4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any
equivalent figure drawn.
5) Credits may be given step wise for numerical problems. In some cases, the assumed constant
values may vary and there may be some difference in the candidate's answers and model answer.
6) In case of some questions credit may be given by judgement on part of examiner of relevant answer based on candidate's understanding.
7) For programming language papers, credit may be given to any other program based on equivalent concept.

Q 1 a) Conventional representations

Pulley in section

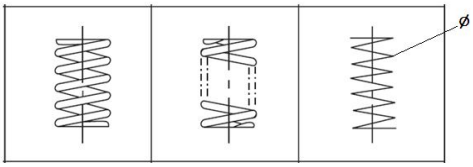


Check valve

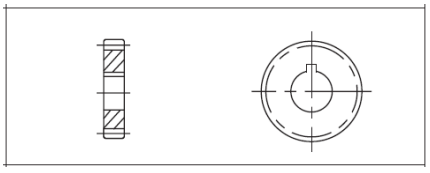


Splined shaft

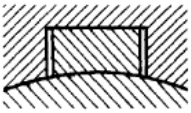
Compression spring with circular section



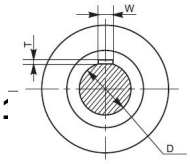
Spur gear



Saddle key



or



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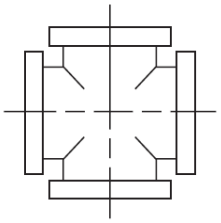
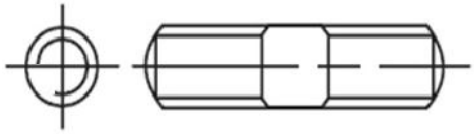
Cross pipe joint



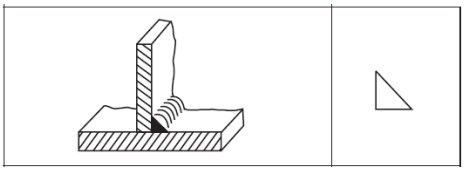
External screw thread



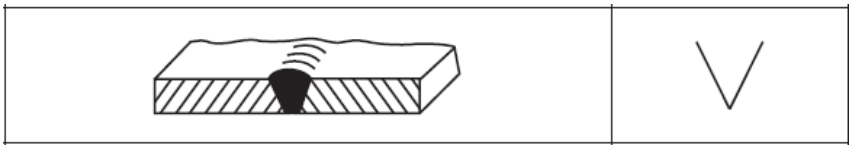
(02 marks each for correct representation, any six)

Q 1 b) a) Symbols (01 mark each)

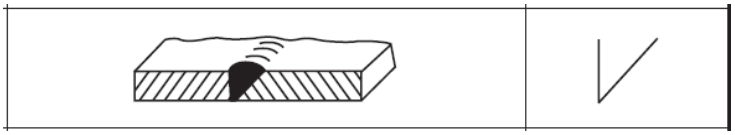
i) Fillet weld



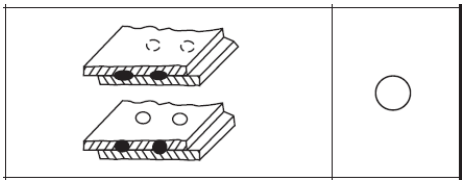
ii) Single V butt



iii) Single bevel butt



iv) Spot weld



Q 1 b) b) Fit type

Marks: Calculation of Hole & Shaft sizes : 02 Marks & Decide type of fit : 02 Marks

Hole size: max dia 35.02 mm & min 35.00 mm

Shaft size: max dia 34.98 mm & min 34.96 mm

Max allowance = max hole size – min shaft size

= 35.02 - 34.96 = + 0.06

Min allowance = min hole size – max shaft size

= 35.00 - 34.98 = + 0.02

Hence, the type of fit is **CLEARANCE FIT**

Q 1 b) c) Meaning of symbols (01 mark for each meaning)

2 indicates machining Allowance as 2 mm

8 indicates Roughness value R_a as 8 microns

0.8 indicates sampling length

Grinding: It is the Manufacturing Process

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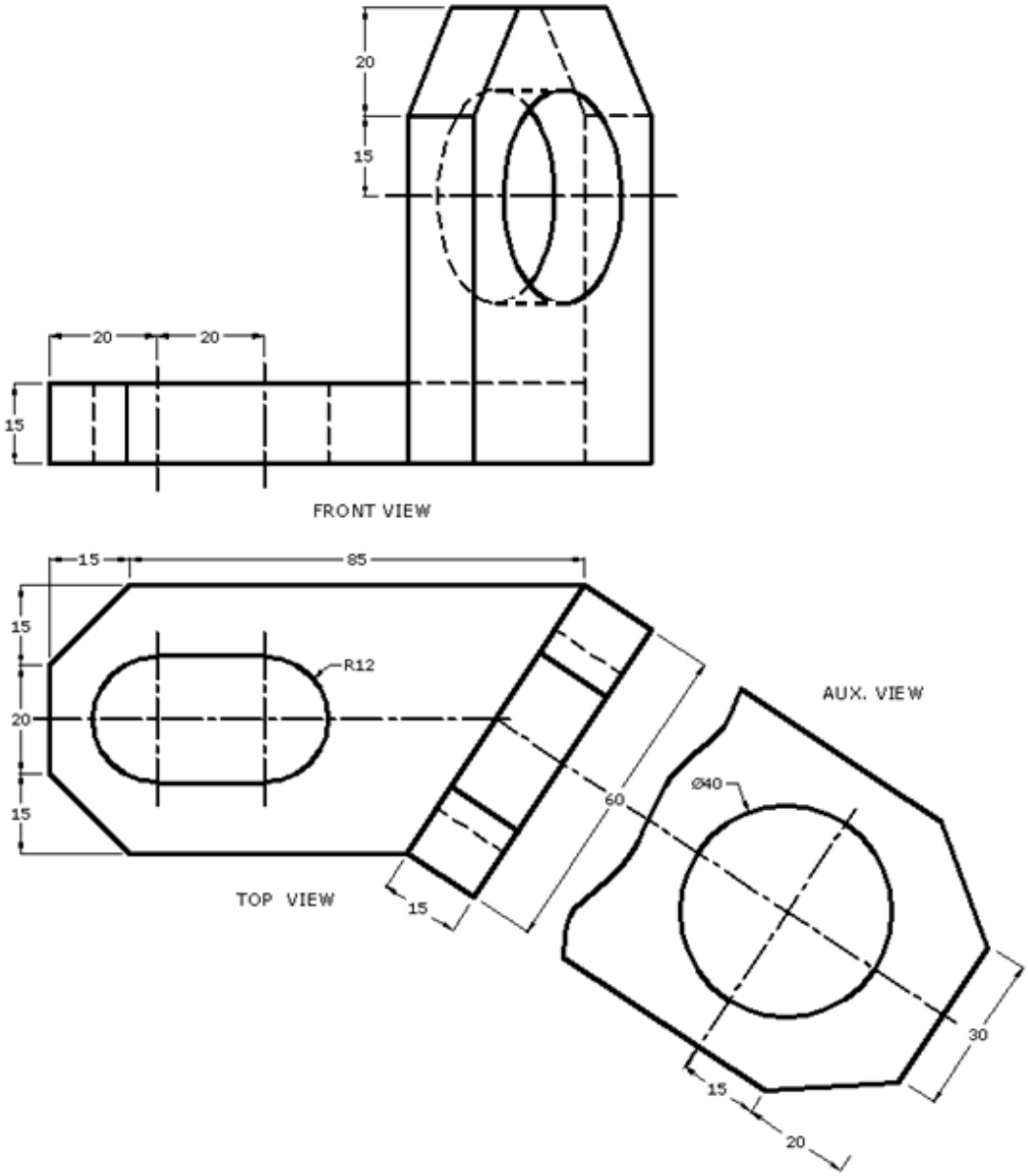
Q 2 a) : Auxiliary view

Front view : 06 Marks Top View : 04 Marks Aux. View: 02 Marks
(Assume suitable dim wherever not given & For clarity in solution projection lines are not shown)



Q 2 b) a) Calculation of tolerance for basic size 50 to 80 mm

For answers of D, i, IT8 and IT12 each 1 marks

The shaft size is in the basic step, *50 to 80 mm* and the geometrical mean

$D = \sqrt{50 \times 80} = 63.2$ *mm*

The tolerance unit, $i = 0.25\sqrt[3]{63.2} + 0.001 \times 63.2 = 1.853$ microns

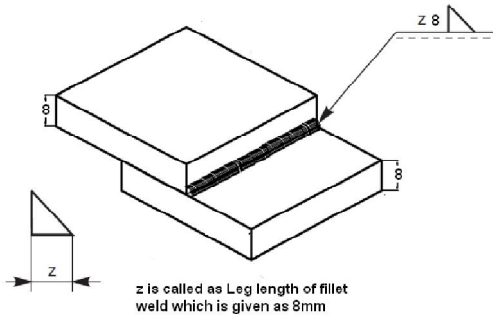
For grade IT8, the formula is IT 8 = 25 i

= 25 x 1.853 = 46.33 microns

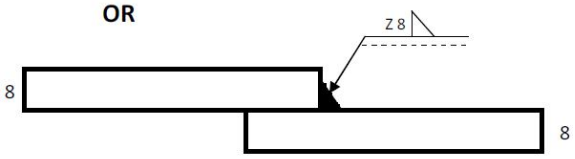
For grade IT 12, the fromula is IT 12 = 160 i

= 160 x 1.853 = 296.48 microns

Q 2 b) b) : Two M.S. Plates of 8mm thickness and weld leg length 8mm (04 marks)
(Any one solution may be given due credit)



OR



(**z** is called as Leg length of fillet weld which is given as 8 mm)

Q 2 c) Symbols : 01 mark for each symbol

i) Flatness

ii) Cylindricity

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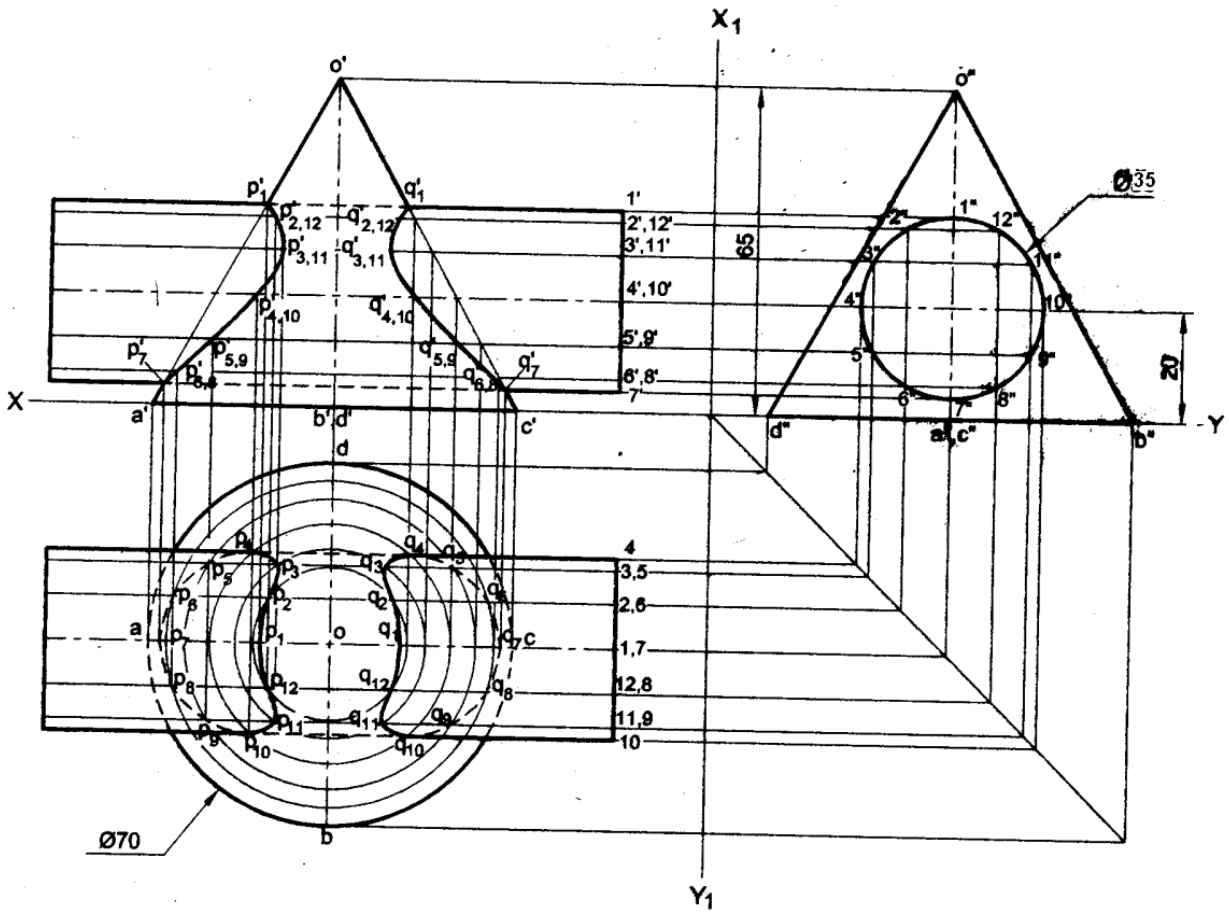
iii) Position

iv) Parallelism

Q3 a) Problem on Cone & cylinder

For Front view: 04, Top view : 04 & Side view : 02 Marks



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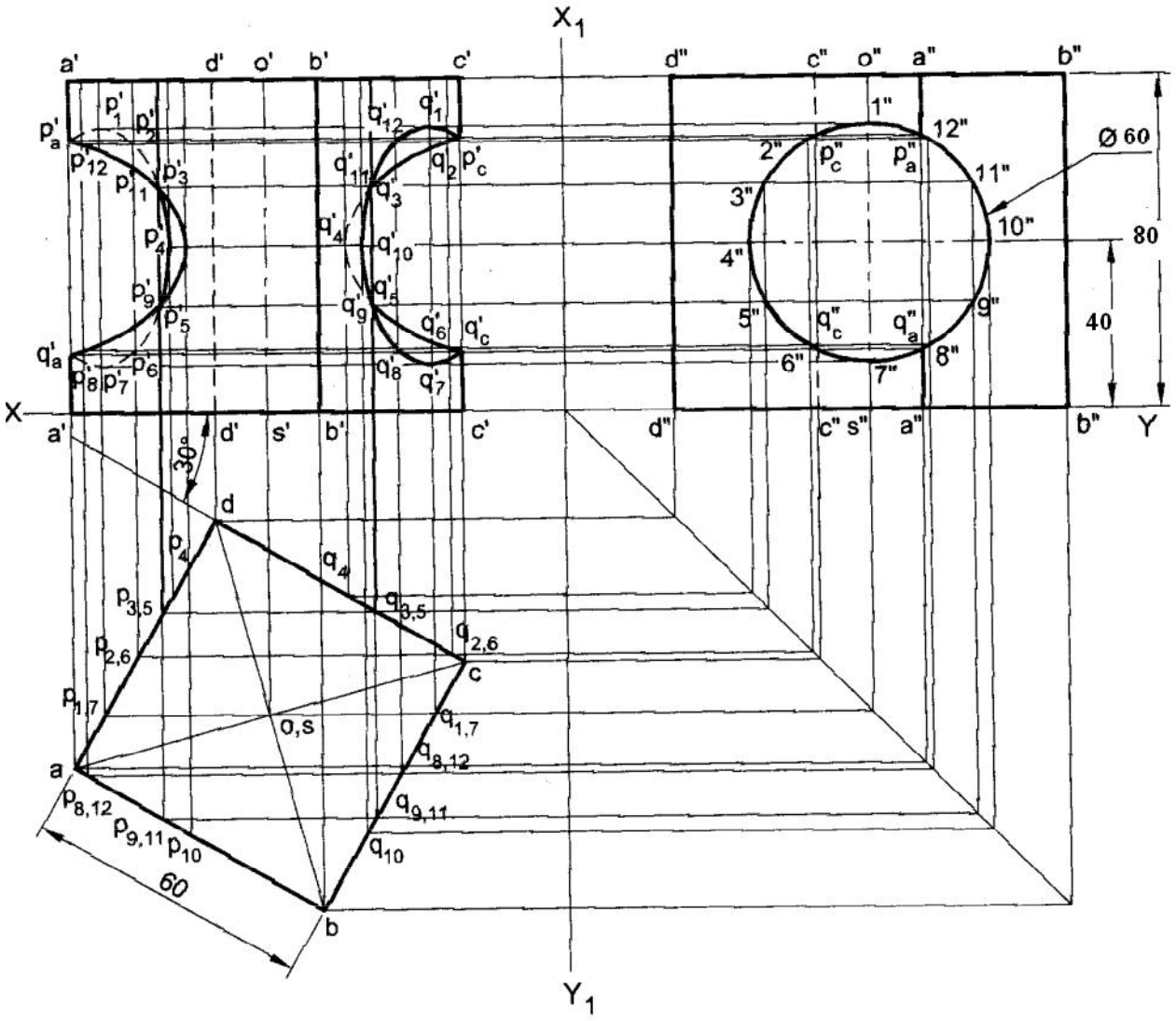
Q3 b) Problem on sq. Prism & cylinder

For Front view: 04, Top view : 04 & Side view : 02 Marks



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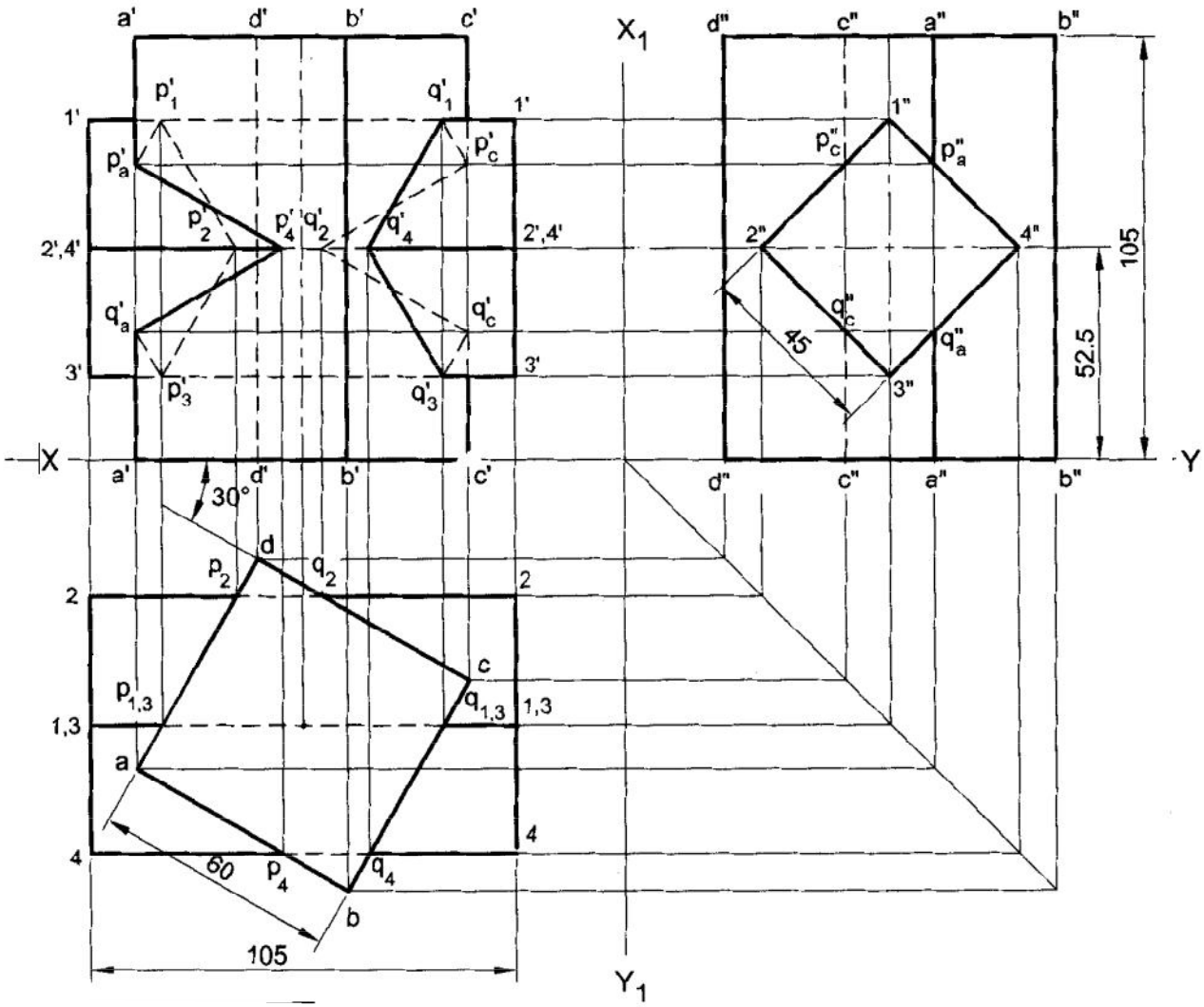
Subject Code:17305 **Model Answer**

Q3 c) Problem on sq. Prism & Sq. Prism

For Front view: 04, Top view : 04 & Side view : 02 Marks



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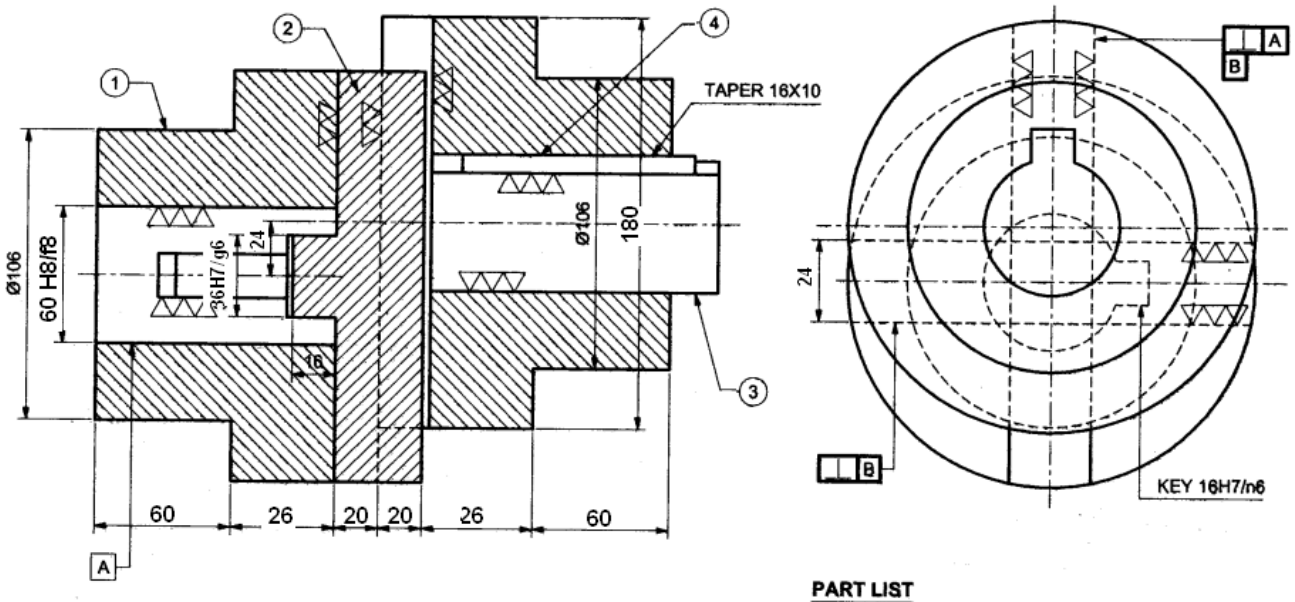
Q 4 a) Assembly of Oldham's Coupling
(Dia 106 not given. Due credit may be given for suitable assumption)
For Sect Front View : 10 Marks , LHSV: 06 Marks BoM: 02 Marks Fits: 02 Marks



FIT CHART

16H7/n6	TRANSITION FIT
30H7/g6	CLEARANCE FIT
50H8/f8	CLEARANCE FIT

PART LIST

PART NO.	PART NAME	METL.	QTY.
1	FLANGE	C.I.	2
2	CENTER BLOCK	C.I.	1
3	SHAFT	M.S.	2
4	KEYS	M.S.	2

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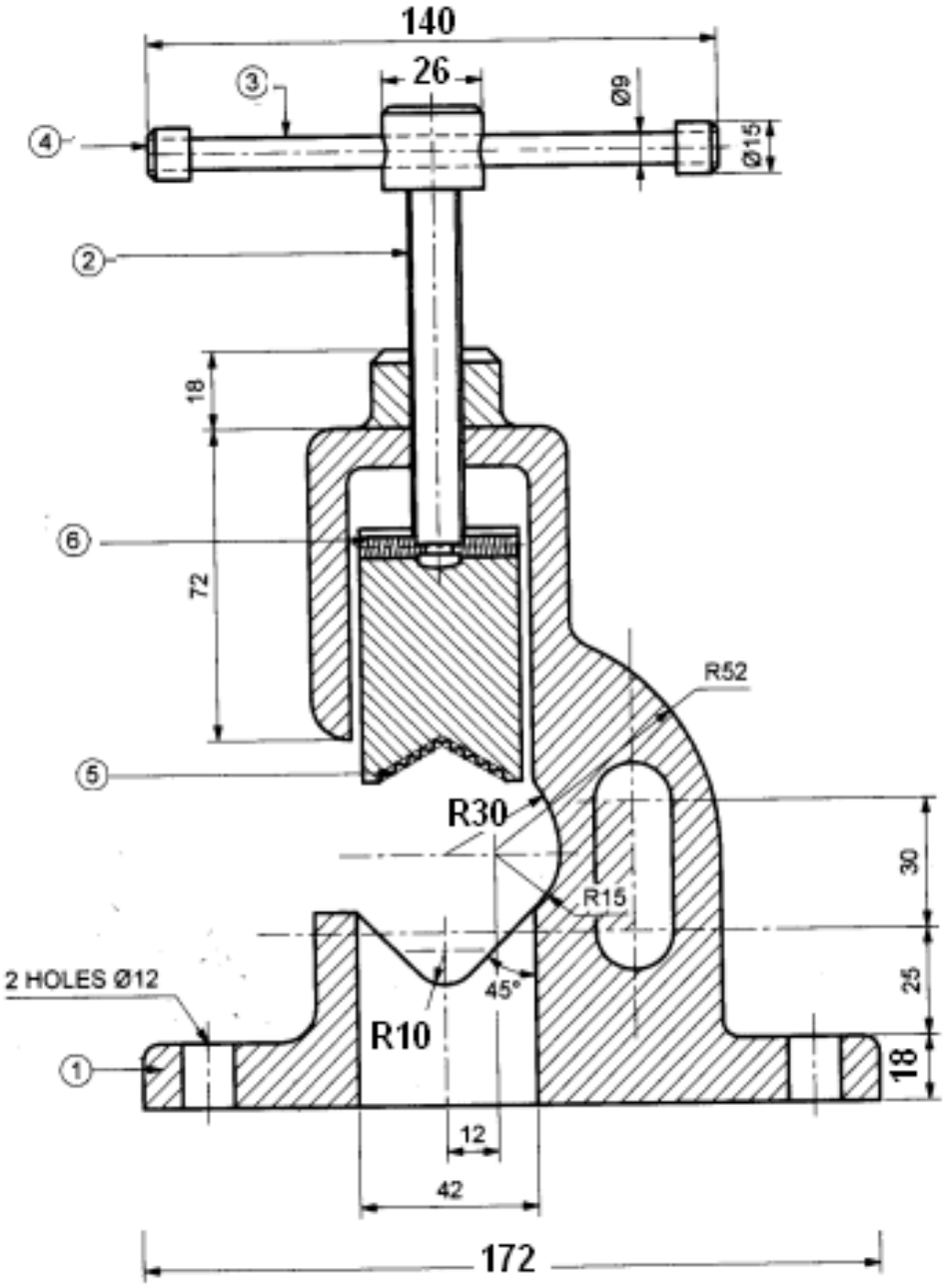
Q 4 b) Assembly of Pipe Vice

For Sect Front View : 16 Marks , Overall Dim: 02 Marks Parts on View: 02 Marks

Part List: 1.Body 2. Handle screw 3.Handle 4. Handle bar bush 5.Jaw 6.Grab screw



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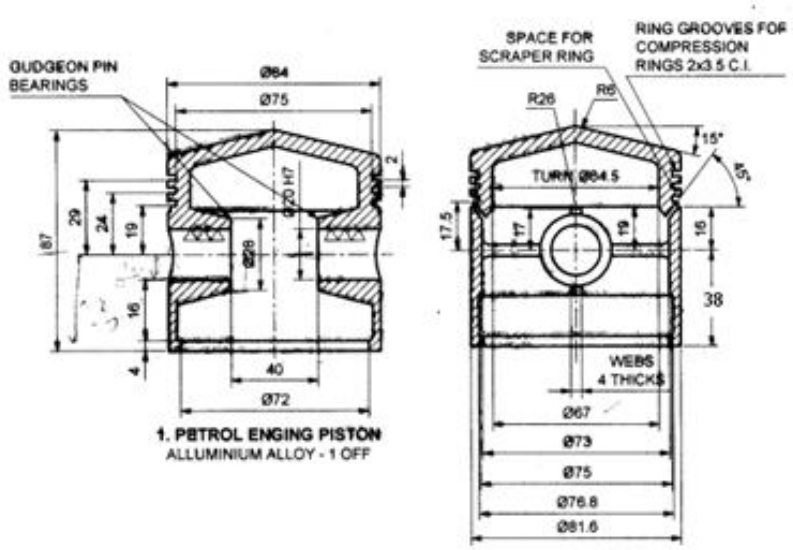
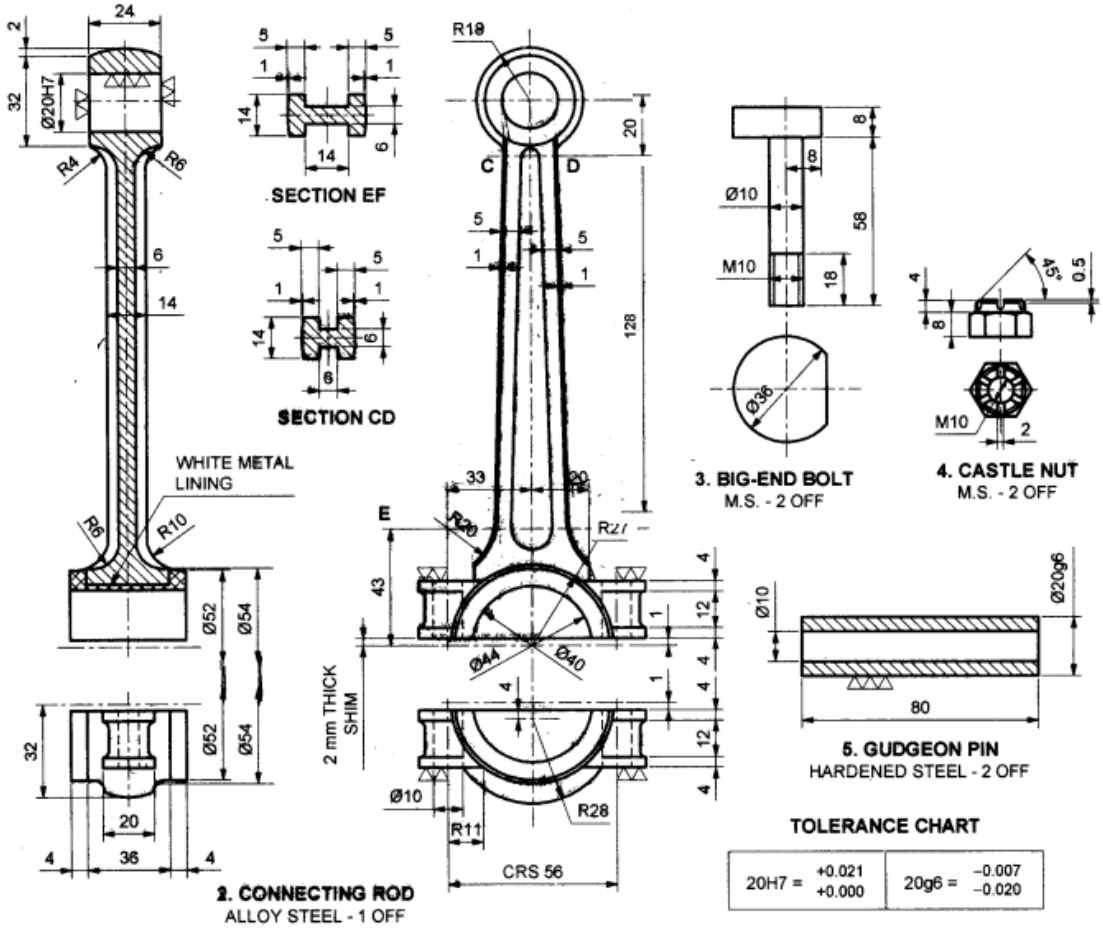
Q 5 a) Details of Piston & Connecting Rod

For Piston : 07 Marks, Con Rod: 07 Marks, Big end bolt: 02 Marks, Castle Nut: 02 Marks , Gudgeon pin: 02 Marks





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Q 5 b) Details of Drill Jig (For details 1 to 3 , 4 marks each, For 4 & 5 , 2 marks each, for 6 to 9, 1 mark each)

(Few dimensions are not given. Due credit may be given for suitable dimensions)