SUBJECT CODE NO:- P-265
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(Mech) Examination May/June 2017
(A) Tool Engineering (OLD)

[Time: Four Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) Attempt any three questions from each section.
ii) Assume suitable data and dimensions if required.
iii) All dimensions are in mm.

SECTION A

Q.1 (a) During Orthogonal cutting with 10° rake the following observations were made F_t = 300N, F_c=1000N, Feed=0.05mm. Determine coefficient of friction, shear stress, work done in overcoming chip tool friction and work done in shearing unit volume of the material. Assume that the depth of cut = 10mm. 08
(b) Draw the neat sketches of different cylindrical locators. 05

Q.2 (a) Describe the nomenclature of tap with neat sketches. 08
(b) What are the machining factors used to evaluate machinability? 05

Q.3 (a) Explain in detail different method of designation of cutting tools. 08
(b) Draw neat sketches of different drill bushes used in drill jig. 05

Q.4 (a) What is tool life? Describe the Taylor tool life relationship in detail. 08
Enlist the criteria used to evaluate tool life.
(b) What is mean by fool-proofing in jig design? Explain with suitable example. 05

Q.5 Design, draw and dimension suitable jig to drill DIA 10 mm 2 holes in component shown in fig.1. Draw minimum two views of assembly drawing of jig and detail drawing of jig plate and drill bush. 14

SECTION B

Q.6 (a) What is the function of stripper? What are the various types of strippers in use in dies? Explain with neat diagram. 08
(b) How does a transfer die differ from a progressive die? Explain and illustrate when it would be used? 05

Q.7 (a) What is a spring back and how is it controlled in bending dies? 08
(b) Prepare minimum two strip layouts for the component shown in fig.2 and estimate the percentage of utilization. 05

Q.8 (a) Explain with neat sketches: 09
Embossing dies, coining dies and V-bending dies
(b)Determine the center of pressure for the component shown in fig.2 04

Q.9 A shell to be drawn to a mean diameter of 75mm and a mean height of 200mm. Determine the developed blank size and number of draw would be necessary to draw shell. Assume corner radius is 3mm and reductions of 50, 40, 30% for each draw. Determine the height of shell in each draw stages. 13

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Q.10 Write short note on any two of following 14

a. Forging die design factors.

b. Two plate injection mould.

c. Press classification and selection.

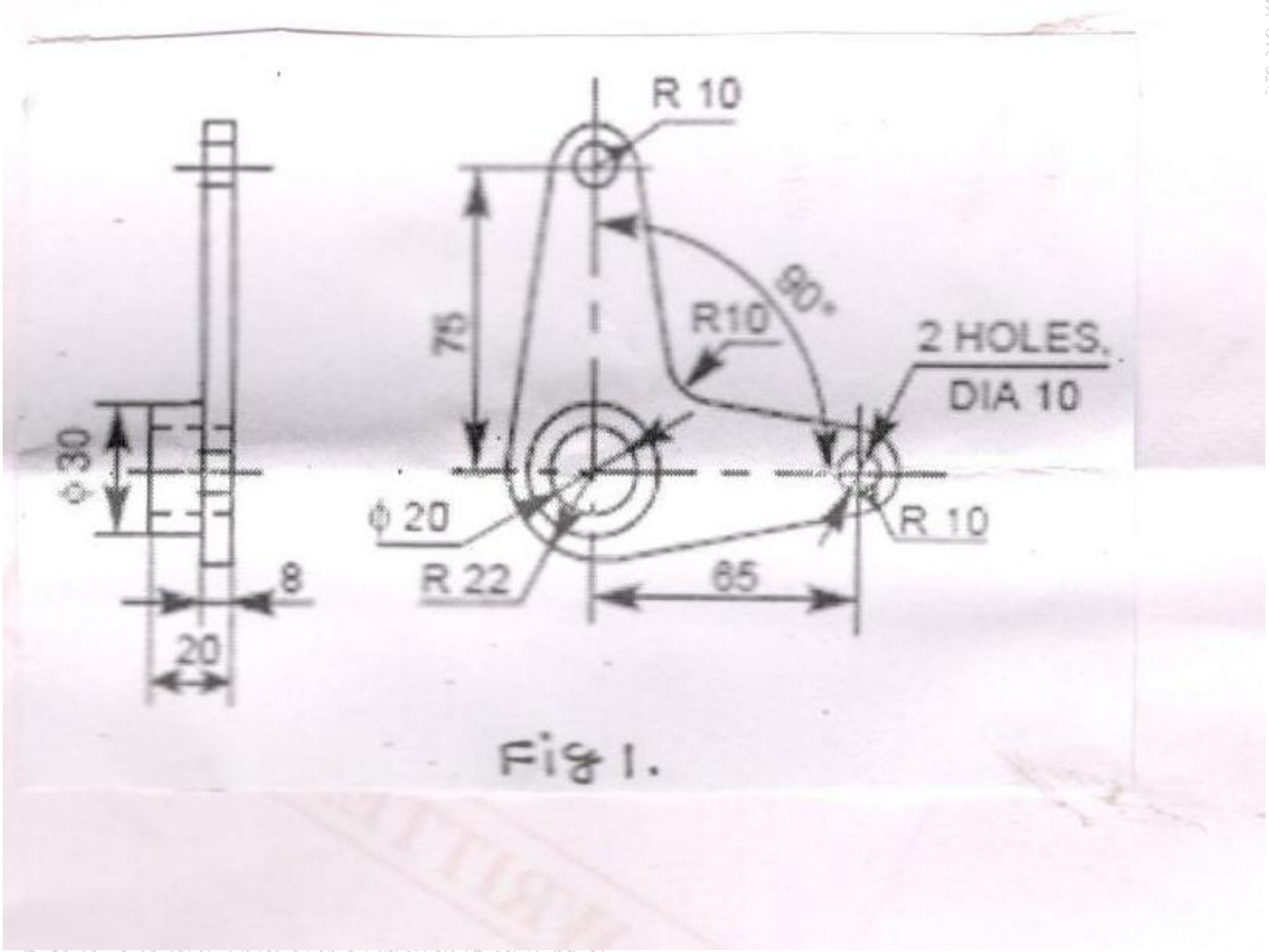

Fig 1.

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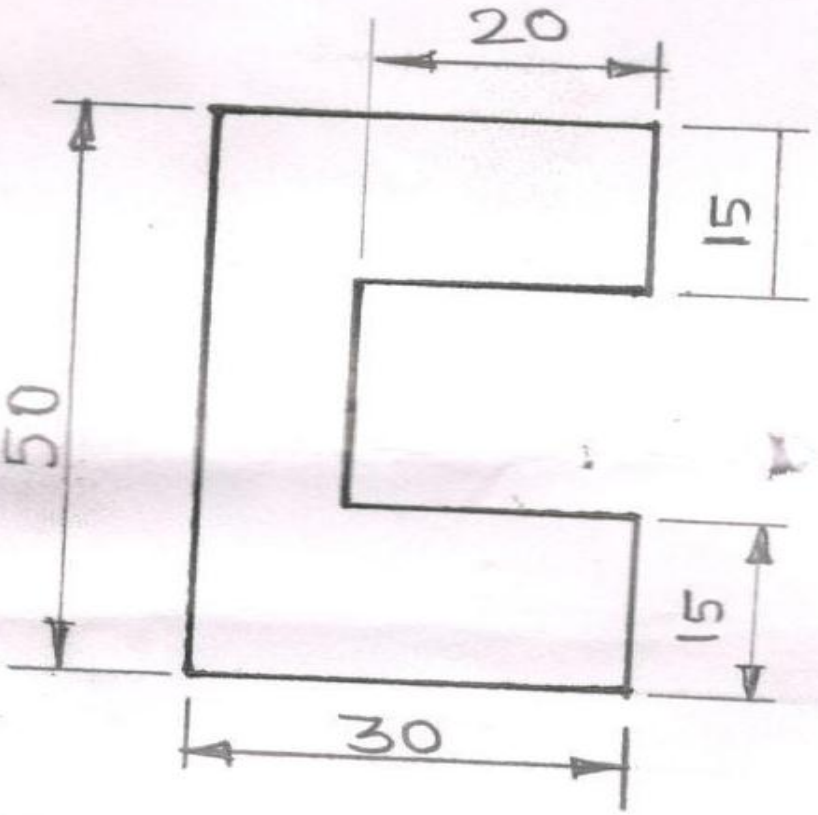

THK = 1 mm $T_S = 240\ N/mm^2$

Fig. 2.

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FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(Mech) Examination May/June 2017
(B) Tool Engineering (REV.From 2015-2016 Batch)

[Time: Four Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) Q. No.4 and Q.No.8 are compulsory.
ii) Solve three questions from each Section.
iii) Assume suitable data & Dimensions if required.
iv) All dimensions are in mm.

Section A

Q.1 (a) In an orthogonal cutting test on a mild steel tube of size 150mm diameter and 2mm thickness, conducted 100 m/min and 0.25 mm/rev feed, the following data were recorded. 08
Cutting Force = 1250 N, Feed Force = 300N
Chip thickness = 0.3mm, Contact length = 0.7 mm
Back rake = 10°, Net horsepower = 2KW
Calculate shear strain and shear energy per unit volume.
(b) Draw neat sketch of Cam operated strap clamp used in fixture design. 04

Q.2 (a) Explain the various elements of a single point cutting tool with the help of neat sketch. 08
(b) Explain with the aid of suitable diagram the indexing device used in jig design. 04

Q.3 a. What is tool life? Describe the Taylor tool life relationship in detail. Enlist the criteria used to evaluate tool life. 08

b. Explain six point location principle followed in jig and Fixture design. 04

Q.4 Design, draw and dimension suitable jig to drill Ø6mm hole in component shown in fig. 1. (Note : Drilling of Ø6mm hole is the last operation in process). 16
Draw minimum two views of assembly drawing of jig and detail drawings of Jig plate and bush.

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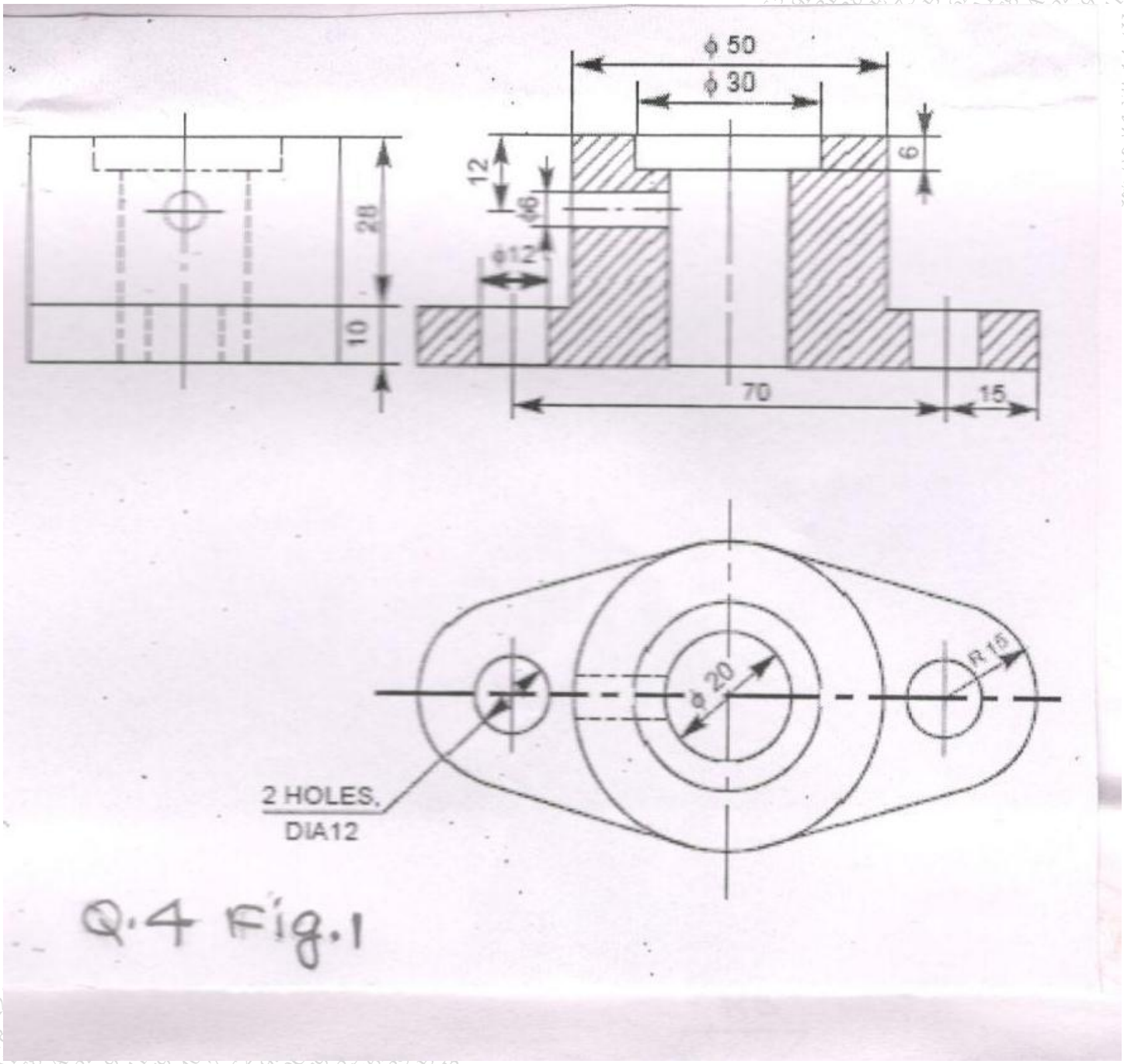

Q.4 Fig.1

OR

Design, draw and dimension suitable fixture to machine slot 12 mm wide and 10mm deep in component shown in Fig.2 16

Draw minimum two views of assembly drawing of fixture and detail drawings of any two important components.

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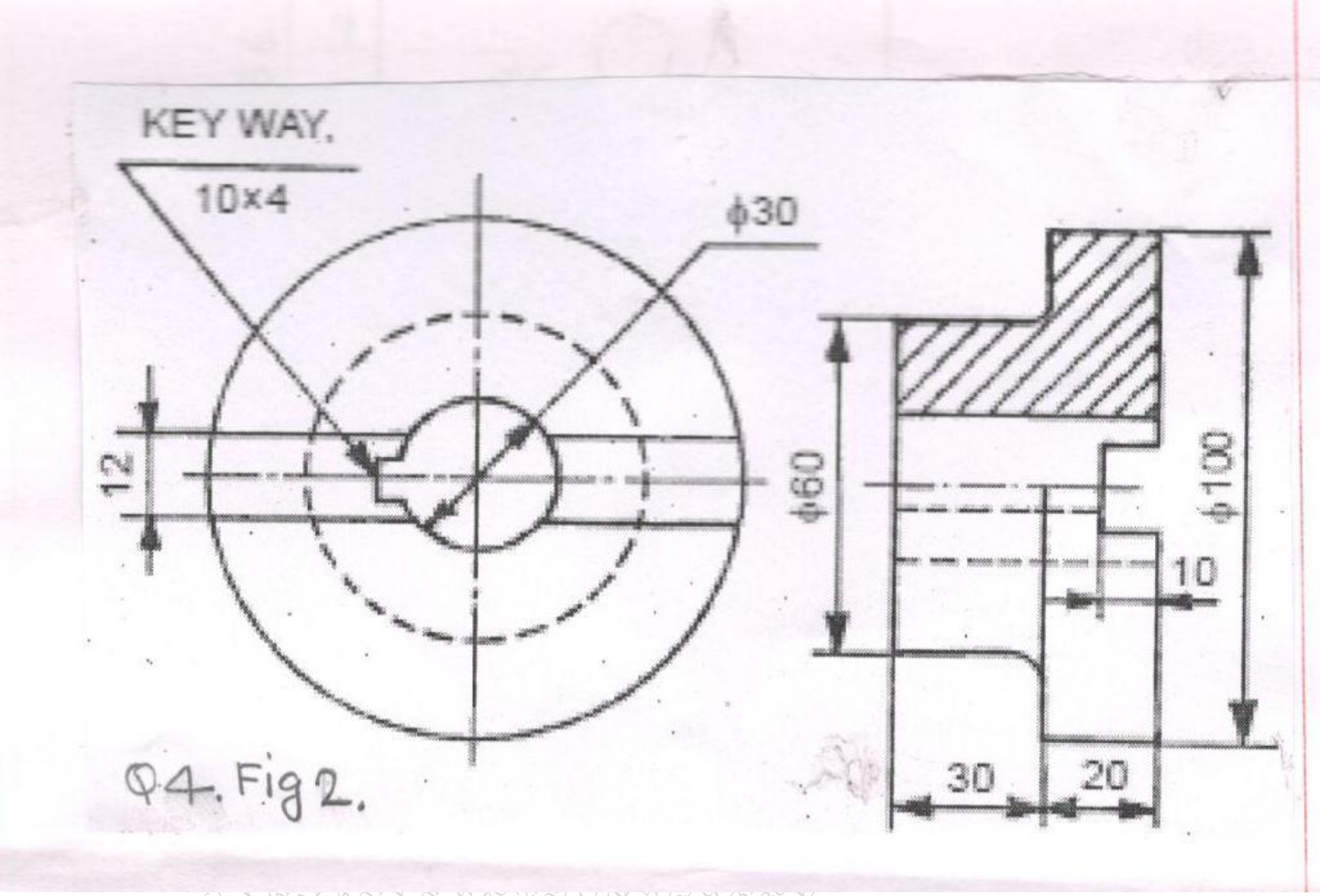

Section B

Q.5 (a) What is a spring back and how is it controlled in bending dies? 06
(b) Describe with neat sketches the nomenclature of twist drill. 06

Q.6 (a) What is the Function of stripper in progressive dies? Explain the various types of stripper with neat sketches. 06

(b) Describe with neat sketches the nomenclature of tap. 06

Q.7 (a) How does a hand reamer differ from a machine reamer? Explain with neat sketches 06
(b) Assume a shell to be drawn to a mean diameter of 75mm and a mean height of 200mm. What is the developed blank size required and how many drawing operations would be necessary to draw shell? (Assume corner radius = 3mm). 06

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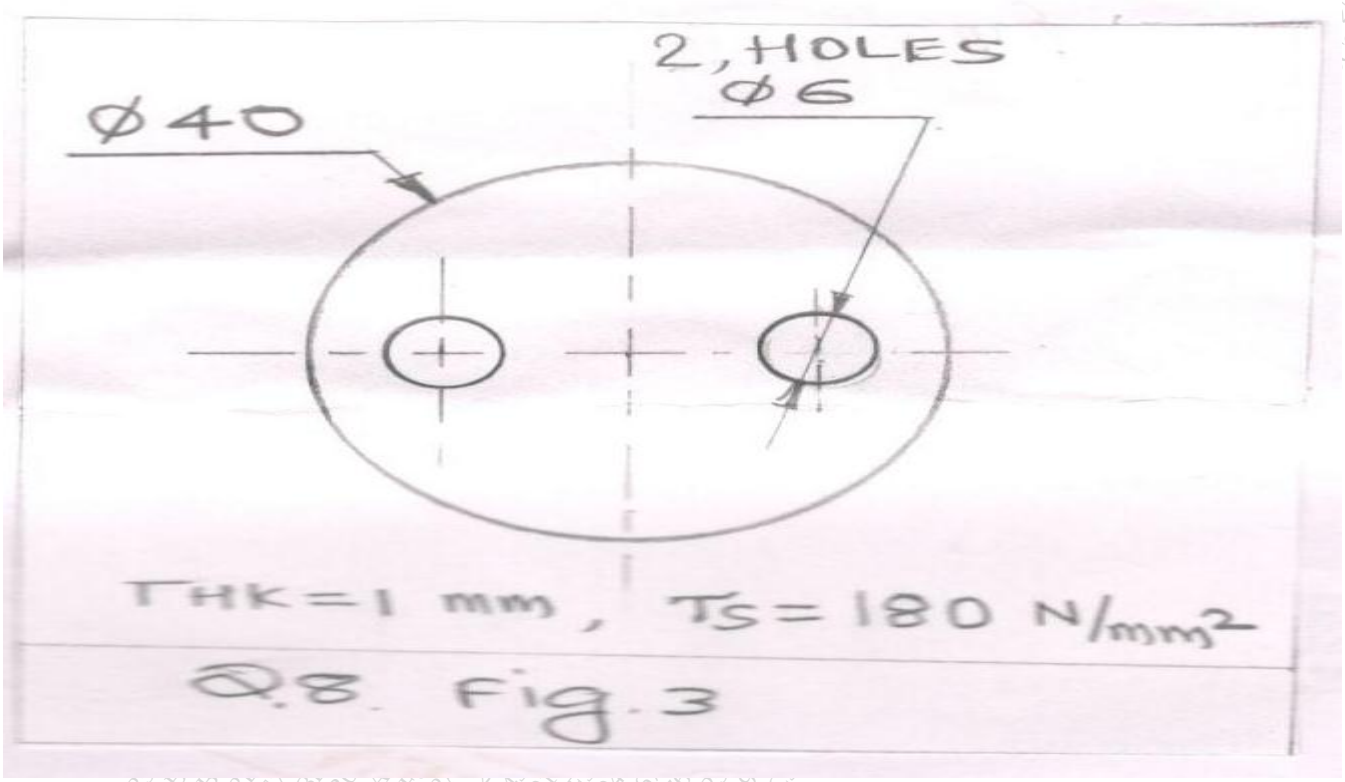
Q.8 Design and draw progressive press tool for producing component shown in Fig.3 16

i) Draw Strip layout.
ii) Solve necessary design calculations.
iii) Determine center of pressure.
iv) Draw sectional front view of three stage progressive die and top view of lower half of die.
v) Specify bill of material



OR

Design either a compound or progressive die for the components shown in fig.4 16

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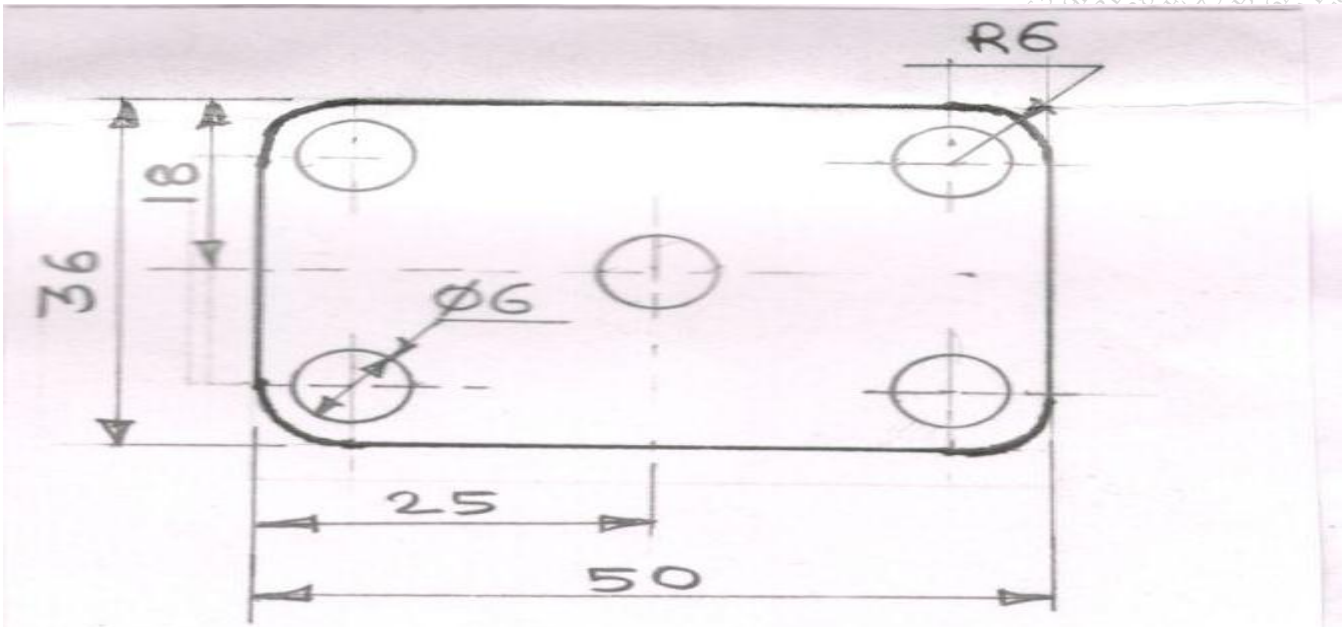

THK = 1·5 mm, T_s = 340 N/mm²

Q 8. Fig 4

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