Q.38 Draw front elevation, sectional plan of a plate girder from the following design data:-

a) Clear span of plate girder =8m
b) Web plate= 100mm x 8mm
c) Flange angles=215A 150 x 115X 8mm
d) Bearing plate= 300x 400 x 12mm
e) Thickness of filler plate =8mm
f) End bearing stiffners = ISA 150 x 115 x 8mm
g) Intermediate stiffners = ISA 100 x 75 x 8mm @ 1000 mn c/c
h) Flange plate (cover plates)== 400 x 10mm one at top and one at bottom

Q.39 Draw the plan, front elevation and side elevation of a slab base column for the following data:

a) ISMB 350 @ 514 N/m
b) Base plant = 500 x 500 x 16mm
c) Web cleat = 150 x 115 x 15mm
d) Flange cleat = 150 x 115 x 15mm
e) Holding down bolts = 25mm dia, 4Nos 350 long
f) Base slab = 700mm x 700mm x 500mm

Assume any other missing data.

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030761

6th Sem./Civil Engg.

Subject :Steel Structures Design and Drawing

Time : 6Hrs. M.M. : 150

SECTION-A

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.1 ISRO 50 means_____.

Q.2 The size of the rivet is expressed in terms of _____.

Q.3 The most commonly used rivet head is_____.

Q.4 The rivet is also termed as_____.

Q.5 Unit of slenderness ratio is_____.

Q.6 The rivet line is also termed as_____.

Q.7 As per unwin formula, nominal diameter is equal to_____.

Q.8 The metal added at the joint while welding is known as_____.

Q.9 The minimum size of filled weld is_____.

Q.10 The permissible shear stress in weld is_____.

SECTION-B

Note: Very Short answer type questions. Attempt any ten questions out of twelve questions. (10x2=20)

Q.11 Define structural steel.

Q.12 Define ductility.

Q.13 Define staggered pitch.

Q.14 Write the formula for the size of Butt Weld.

Q.15 Enlist any two factors on which strength of tension member depends.

Q.16 Define slenderness ratio.

Q.17 What is linking of column?

Q.18 Define Rise.

Q.19 Define shear force.

Q.20 What is the economical spacing of roof truss?

Q.21 Define compression member.

Q.22 Define Tension Member.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x5=40)

Q.23 Brief about mechanical properties of steel.

Q.24 What are in-determinates structure?

Q.25 What is rivet? Also define rivet value.

Q.26 What are the different ways pf arrangement of rivets?

Q.27 What are tacking rivets?

Q.28 State the conditions for side fillet weld.

Q.29 Give differences between short and long columns.

Q.30 Enlist various component of plate girder.

Q.31 Draw a rough sketch of a heal joint of roof truss.

Q.32 Draw various types of roof truss used for different spans in roof trussing.

SECTION-D

Note: Long answer type questions. Attempt any three questions out of four questions. (3x10=30)

Q.33 Calculate the strength of an ISA 100 x 75 x 8mm used as a tie member with longer leg connected at ends by 16mm diameter rivets. Provide tensile stress as 150N/ mm^2.

Q.34 Calculate the effective throat thickness of the following fillet welds:

(i) 8mm fillet weld. (ii) A fillet weld of one leg 6mm and other 8mm.

Q.35 Calculate the value of a 30mm diagram rivet in a lap joint connecting plates of thickness 20mm and 25mm. Take the value of permissible shear stress =100N/mm^2 and permissible bearing stress=300N/mm^2.

Q.36 Explain the different elements of steel truss.

SECTION-E

Long answer type questions. Attempt any two questions out the questions. (2x25=50)

Q.37 With the help of neat sketches, explain connections between purlin and roof covering in a roof truss.