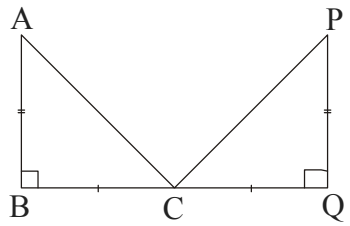
SHIKSHA CLASSES

Sub. : Maths **Answer Paper** **Marks : 20**

Std. : VIIIth - S.B. **13. Congruence of triangles**

Q.1 : **A) Select the most appropriate Alternative.** 02

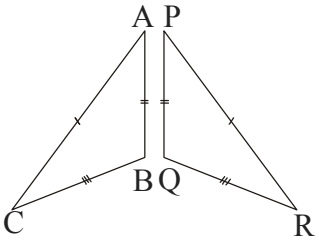
1)



In the figure, ΔABC is congruent with ΔPQC by ____ test.

Ans : d) SAS

2)



With the information given in the figure $\angle ACB \cong$ _____.

Ans : c) $\angle PRQ$

: B) Solve the following. 01

1) Write the criteria for congruence of triangles.

Ans : Criteria for congruence of triangles

i) Side - Angle - Side (SAS)

ii) Side - Side - Side (SSS)

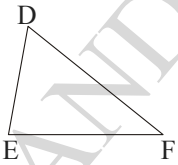
iii) Angle - Side - Angle (ASA)

iv) Angle - Angle - Side or Side - Angle - Angle (AAS or SAA)

v) Hypotenuse - Side test for right angled triangles.

Q.2 : A) Solve any one of the following. (Activity) 02

1) Fill in the blank of the following questions referring to the adjacent figure.



Ans : i) **$\angle F$** is the angle opposite to the side DE.

ii) **DF** is the side opposite to $\angle E$.

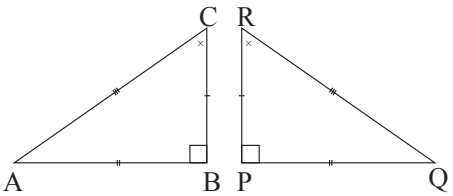
iii) **$\angle D$** is included by side DE and side DF.

iv) **EF** side is included by $\angle E$ and $\angle F$.

2) Activity : Fill in the blanks :

ΔABC and ΔPQR are congruent. Their congruent parts are indicated by the identical marks.

Anil and Rehana had written congruence of the triangles as follows.



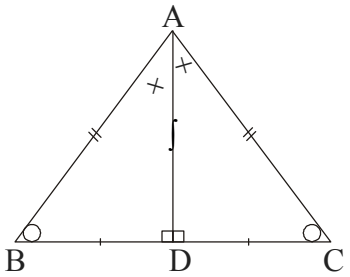
Ans : Anil : $\Delta ABC \cong \boxed{\Delta QPR}$

Rehana : $\Delta BAC \cong \boxed{\Delta PQR}$

: **B) Solve any one of the following.** 02

1) In the given figure, the identical marks show the congruent parts in the pair of triangles. State the correspondence between the vertices of the triangles in which the two triangles are congruent.

Ans : In ΔABD and ΔACD, side AD is common. Every segment is congruent to itself. Therefore,



Correspondence :

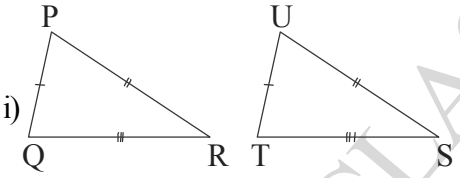
$A \leftrightarrow A, B \leftrightarrow C, D \leftrightarrow D.$

$\Delta ABD \cong \Delta ACD$

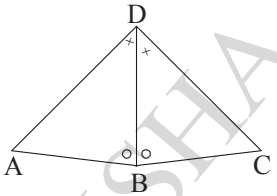
Note : It is a convension to indicate a common side by the sybmol '∫'

2) In the given figures parts of triangles bearing identical marks are congruent. State the test and the one to one correspondence of vertices by which the triangles in each pair are congruent.

i)



ii)



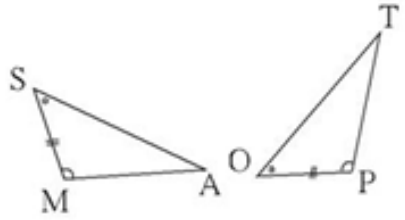
Ans : i) By SSS test, in the correspondence $PQR \leftrightarrow UTS$

ii) By ASA test, in the corespondence $DBA \leftrightarrow DBC$

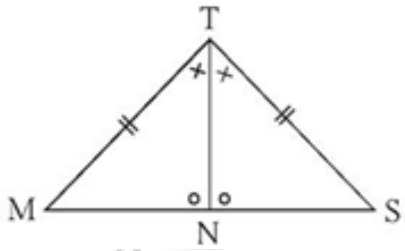
Q.3 : A) Solve any one of the following. (Activity) 03

1) In each pair of triangles in the following figures, parts bearing identical marks are congruent. State the test and correspondence of vertices by which triangles in each pair are congruent.

i)



ii)



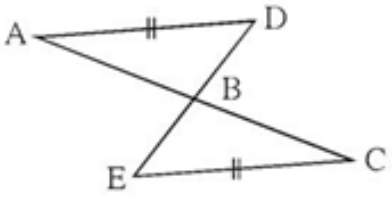
Ans : i) The triangles are congruent by $\boxed{ASA}$ test under the correspondence

$SMA \leftrightarrow \boxed{OPT}$

ii) The triangles are congruent by $\boxed{SAA}$ test under the correspondence

$MTN \leftrightarrow \boxed{STN}$

2) In the adjacent figure, seg AD ≅ seg EC Which additional information is needed to show that ΔABD and ΔEBC will be congruent by A-A-S test ?

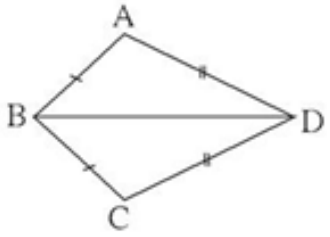


Ans : The additional information that is needed to show ΔABD and ΔEBC congruent by AAS test would be

$\angle ADB \cong \boxed{\angle CEB}$ or $\angle DAB \cong \boxed{\angle ECB}$

: B) Solve any one of the following. 03

1) In the adjacent figure, congruent sides of $\square ABCD$ are shown by identical marks. State if there are any pairs of congruent angles in the figure.



Ans : In ΔABD and ΔCBD,

Side BD is common

side $AB \cong$ side CB ...(given)

side $DA \cong$ side DC ...(given)

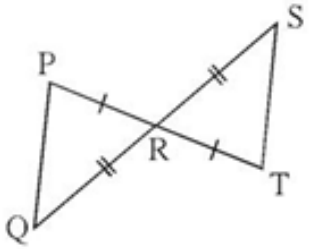
side BD is common

$\therefore \Delta ABD \cong \Delta CBD$ ...(S-S-S test)

$\therefore \left.\begin{array}{l} \angle ABD \cong \angle CBD \\ \angle ADB \cong \angle CDB \\ \angle BAD \cong \angle BCD \end{array}\right\}$

... (corresponding anges of congruent triangles).

2) In pair of triangles given below, parts shown by identical marks are congruent. State the test and the one to one correspondence of vertices by which triangles in pair are congruent write the remaining congruent parts.



Ans : In ΔPRQ and ΔTRS,

seg PR $\cong$ seg TR ... (Given)

$\angle PRQ \cong \angle TRS$ ...(Vertically opposite angles)

seg RQ $\cong$ segRS

$\therefore \Delta PRQ \cong \Delta TRS$ under $PRQ \leftrightarrow TRS$

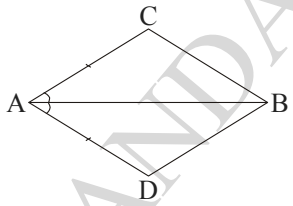
... (SAS test)

seg PQ $\cong$ seg ST ...(Corresponding sides of congruent triangles)

$\left.\begin{array}{l} \angle QPR \cong \angle STR \\ \angle PQR \cong \angle TSR \end{array}\right\}$ ... (Corresponding angles of congruent triangles)

Q.4 : Solve any one of the following. 04

1) In quadrilateral ABCD. AC = AD and AB bisects $\angle A$ (see figure) show that $\Delta ABC \cong \Delta ABD$, What can you say about BC and BD ?



Ans : Given : In quadrilateral ABCD, AC=AD and AB bisects $\angle A$.

To Prove : $\Delta ABC \cong \Delta ABD$

Proof : In ΔABC and ΔABD

AC = AD ---- (given)

$\angle BAC = \angle BAD$ --- (given)

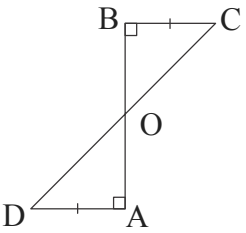
($\because$ AB bisects $\angle A$)

AB = AB ---- (common)

$\therefore \Delta ABC \cong \Delta ABD$ --- (By SAS)

Thus, BC = BD --- (corresponding side of congruent triangles)

2) AD and BC are equal perpendicular to a line segment AB. Show that CD bisects AB. (i.e. OB = OA) (see figure).



Ans : In ΔBOC and ΔAOD

$\angle OBC = \angle OAD = 90^0$ ---(given)

$\angle BOC = \angle AOD$ --- (Vertically opposite angles)

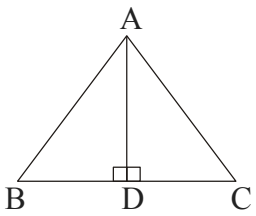
$BC = AD$ --- (given)

$\therefore \Delta BOC \cong \Delta AOD$ --- (By ASA)

Therefore, $\left.\begin{matrix} OB = OA \\ \text{and } OC = OD \end{matrix}\right\}$ (corresponding sides of congruent triangles)

Q.5 : Solve any one of the following. 03

1) In ΔABC, AD is the perpendicular bisector of BC (see figure). Show that ΔABC is an isosceles triangle in which AB = AC.



Ans : Given $AD \perp BC$

To prove : ABC is an isosceles triangle in which AB = AC.

Proof : In $\triangle ADB$ and $\triangle ADC$

DB = DC ----[As AD is $\perp$ bisector of BC]

$\angle ADB = \angle ADC$ ---- (each 90^0)

AD = AD ------ (common)

$\therefore \triangle ADB \cong \triangle ADC$ --- (By SAS)

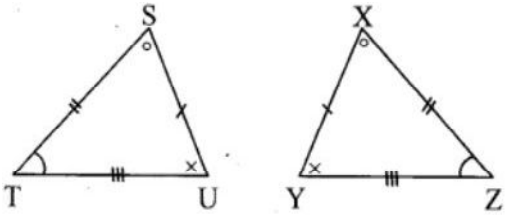
$\therefore$ AB = AC ------ (corresponding side of congruent triangle)

$\therefore \triangle ABC$ is an isosceles triangle in which AB = AC

2) In the adjacent figure, parts of triangles indicated by identical marks are congruent.

i) Identify the one to one correspondence of vertices in which the two triangles are congruent and write the congruence in two ways.

ii) State with reason, whether the statement, $\Delta XYZ \cong \Delta STU$ is right or wrong.



Ans : By observation, the trianlges are congruent in the correspondence $STU \leftrightarrow XZY$ hence

(i) $\Delta STU \cong \Delta XZY$ is one way; $\Delta UST \cong \Delta YXZ$ is another way.

Write the same congruence in some more different ways.

(ii) If the congruence is written as $\Delta XYZ \cong \Delta STU$, it will mean side $ST \cong$ Side XY, which is wrong.

$\therefore$ statement $\Delta XYZ \cong \Delta STU$ is wrong.

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