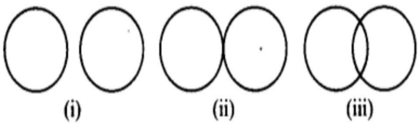
Question 1.
Draw different pairs of circles. How many points does each pair have in common? What is the maximum number of common points?

Solution:
Let us draw different pairs of circles as shown below:



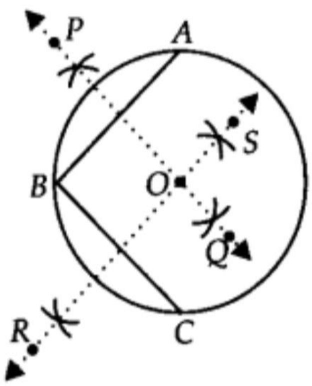
We have,

Figure	Maximum number of common points
(i)	nil
(ii)	one
(«i)	two

Thus, two circles can have at the most two points in common.

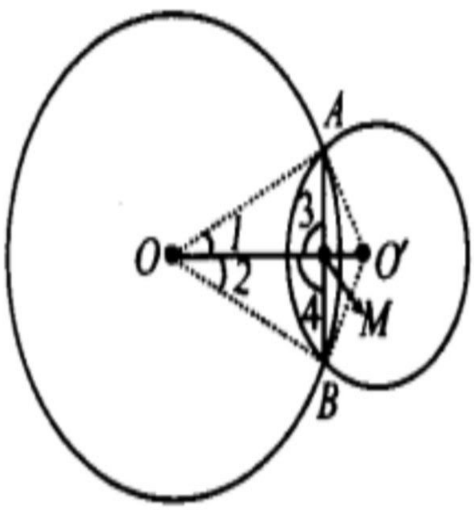
Question 2.
Suppose you are given a circle. Give a construction to find its centre.
Solution:

Steps of construction :
Step I : Take any three points on the given circle. Let these points be A, B and C.
Step II : Join AB and BC.
Step III : Draw the perpendicular bisector, PQ of AB.
Step IV: Draw the perpendicular bisector, RS of BC such that it intersects PQ at O.



Thus, ‘O’ is the required centre of the given drcle.

Question 3.
If two circles intersect at two points, prove that their centres lie on the perpendicular bisector of the common chord.
Solution:
We have two circles with centres O and O’, intersecting at A and B.
∴ AB is the common chord of two circles and OO’ is the line segment joining their centres.
Let OO’ and AB intersect each other at M.



∴ To prove that OO’ is the perpendicular bisector of AB,
we join OA, OB, O’A and O’B. Now, in ∆QAO’ and ∆OBO’,
we have
OA = OB [Radii of the same circle]
O’A = O’B [Radii of the same circle]
OO’ = OO’ [Common]
∴ ∆OAO’ ≅ ∆OBO’ [By SSS congruence criteria]
⇒ ∠1 = ∠2 , [C.P.C.T.]
Now, in ∆AOM and ∆BOM, we have
OA = OB [Radii of the same circle]
OM = OM [Common]
∠1 = ∠2 [Proved above]
∴ ∆AOM = ∆BOM [By SAS congruence criteria]
⇒ ∠3 = ∠4 [C.P.C.T.]
But ∠3 + ∠4 = 180° [Linear pair]
∴∠3=∠4 = 90°
⇒ AM ⊥ OO’
Also, AM = BM [C.P.C.T.]
⇒ M is the mid-point of AB.

Thus, OO' is the perpendicular bisector of AB.

Thanks…..