10th STANDARD MID-TERM EXAMINATION
MATHEMATICS

A

Duration : 2hour 45minutes Maximum Marks : 80

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24. Divide $(x^3 - 3x^2 + 10x - 5)$ by $(x - 2)$ using synthetic division method.

OR

Divide $(m^3 - 2m^2 + 5m - 3)$ by $(m - 3)$ using long division method.

25. In a circle of radius 4 cm, draw two radii such that the angle between them is 120°. Draw two tangents at the ends of the radii.

26. AB = 5cm. Draw a circle of diameter AB and construct tangents at A and B.

27. Draw a circles of radius 4 cm and construct a chord of 6cm length on it.

28. In ΔABC, P and Q are the points on AB and AC such that ∠APQ = ∠ACB. Prove that AP . AB = AQ . AC.

29. XY ∥ BC in ΔABC. If AX = 10cm, XB = 4cm and AC = 21cm, find AY and CY.

30. An aeroplane flies due north for 19km then changes direction and flies east for 180km. How far is it now in a straight line from its starting position.

31. If U={0, 1, 2, 3, 4, 5, 6}, P={1, 3, 5} and Q={4, 5, 6} show that $(P \cup Q)^I = P^I \cap Q^I$.

32. In a G.P. , $S_6 : S_3 = 35 : 8$ and the first term is 2. Find the 2nd term.

OR

Find the sum of series : 5 + 10 + 15 + ... + 200.

33. State and prove Basic Proportionality Theorem.

OR

Prove that the ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides.

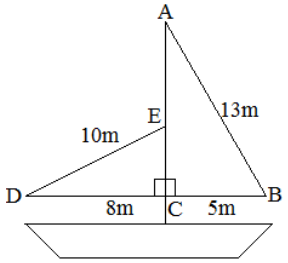
34. Prove that "If two circles touch each other externally, the centres and the point of contact are collinear".

35. What must be subtracted from $(x^3+5x^2+10x+1)$ so that it is exactly divisible by $(x+2)$?

OR

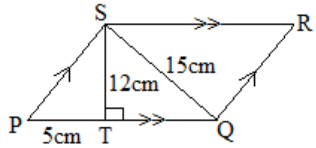
Find the zero of the polynomial $x^2 + 5x - 14$ and verify.

36. In the figure AC ⊥ DB , AB = 13m , BC = 5m , DC = 8m and DE = 10m.
Calculate the length of AE.



OR

In the figure PQRS is a parallelogram.
ST ⊥ PQ , ST = 12cm , PT = 5cm ,
SQ = 15cm and DE = 10m.
Calculate the perimeter of the parallelogram.



37. Find the common ratio of the G.P. in which sum of the third and fifth terms is 90 and its first term is 1. 4×4=16

OR

Find the sum of first 10 terms of an A.P. in which $T_3 = 12$ and $T_{50} = 106$.

38. By using remainder theorem find the remainder when $p(x) = (x^3 - 5x^2 - 9x + 10)$ is divided by $g(x) = (x - 1)$ and verify the answer by actual division.

39. Construct two circles of radii 3 cm and 2.5 cm whose centres are 9 cm apart. Construct a transverse common tangent. Measure and write its length.

40. Prove that "If two triangles are equiangular, then their corresponding sides are in proportion".

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