

TEST PAPER: MATHEMATICS

Time: 120 Minutes

Class: 10th I.C.S.E.

Max. Marks: 60 Marks

Date: 9th January, 2018

Marking Scheme: Three questions carry 10 marks each. Questions have 3 subparts each. Subparts (a) and (b) carry 3 marks each and subpart (c) carries 4 marks.

Question 1:

- Mohan deposited Rs. 80 per month in a cumulative deposit account for 6 years. Find the amount payable to him on maturity, if the rate of interest is 6% per annum.
- Solve the given inequation and graph it on a number line: $-3 < -\frac{1}{2} - \frac{2x}{3} \leq \frac{5}{6}$, $x \in \mathbb{R}$.
- A man invests Rs. 1680 in buying shares of nominal value Rs. 24 and selling at 12% premium. The dividend on the shares is 15% per annum. Calculate: i) The number of shares he buys; ii) The dividend he receives.

Question 2:

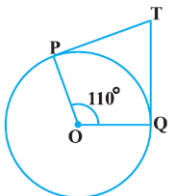
- A hotel bill for a number of people for overnight stay is Rs.4,800. If there were 4 people more, the bill each person had to pay, would have reduced by Rs.200. Find the number of people staying overnight.
- If $\frac{8a-5b}{8c-5d} = \frac{8a+5b}{8c+5d}$, prove that $\frac{a}{b} = \frac{c}{d}$.
- A trader buys x articles for a total cost of Rs.600.
 - Write down the cost of one article in terms of x . If the cost per article were Rs.5 more, the number of articles that can be bought for Rs.600 would be four less.
 - Write down the equation in terms of x for the above situation and solve it for x .

Question 3:

- If $x^3 + ax^2 + bx + 6$ has $(x-2)$ as a factor and leaves a remainder of 3 when divided by $(x-3)$, find the value of a and b .
- If the sum of a certain number of terms of the A.P. 25, 22, 19, ... is 116. Find the last term.
- A line segment joining $A(-1, \frac{5}{3})$ and $B(a, 5)$ is divided in the ratio 1:3 at P , the point where the line segment AB intersects the y -axis.
 - Calculate the value of a
 - Calculate the co-ordinates of P .

Question 4:

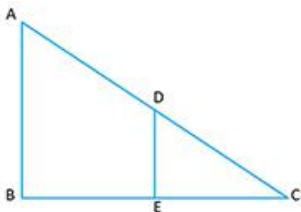
- If TP and TQ are the two tangents to a circle with centre O so that $\angle POQ = 110^\circ$, then find $\angle PTQ$.



- A hemispherical bowl of diameter 7.2 cm is filled completely with chocolate sauce. This sauce is poured into an inverted cone of radius 4.8 cm. Find the height of the cone if it is completely filled.
- A hollow sphere of internal and external diameters 4 cm and 8 cm respectively is melted into a cone of base diameter 8 cm. Find the height of the cone.

Question 5:

- A line intersects x-axis at point $(-2, 0)$ and cuts off an intercept of 3 units from the positive side of y-axis. Find the equation of the line.
- A jar contains 24 marbles, some are green and others are blue. If a marble is drawn at random from the jar, the probability that it is green is $\frac{2}{3}$. Find the number of blue balls in the jar.
- In the given figure, AB and DE are perpendicular to BC. If $AB = 9$ cm, $DE = 3$ cm and $AC = 24$ cm, calculate AD.



Question 6:

- Prove: $(1 - \tan A)^2 + (1 + \tan A)^2 = 2\sec^2 A$
- A man in a boat rowing away from a lighthouse 150 m high, takes 2 minutes to change the angle of elevation of the top of the lighthouse from 60° to 45° . Find the speed of the boat.
- The marks obtained by 30 students of Class X of a certain school in a Mathematics paper consisting of 100 marks are presented in table below. Find the mean of the marks obtained by the students using step-deviation method.

Marks obtained (x_i)	10	20	36	40	50	56	60	70	72	80	88	92	95
Number of student (f_i)	1	1	3	4	3	2	4	4	1	1	2	3	1