

GENERAL INSTRUCTIONS : 1. Q. No. 1 to 10 carries 3 marks each.
 2. Q.No. 11 to 20 carries 4 marks each.
 3. Q. No. 21 to 25 carries 6 marks each.

1. Draw the graph of the equation $5x + 4y + 20 = 0$ From the graph, find the coordinates of the point when i) $x = 0$ ii) $y = -5$.
2. The sum of the first six terms of an A.P. is zero and the fourth term is 2. Find the sum of its first 30 terms.
3. A watch is available for Rs. 1500 cash payment or for Rs. 360 cash down payment followed by three equal monthly instalments of Rs. 390 each. Compute the rate of interest charged under the instalment plan.
4. A car is available for Rs. 4,02,200 cash or Rs. 1,50,000 cash down payment and three equal half yearly instalments. If the interest is charged at 10% per annum compounded half yearly, find the value of each instalment.
5. In the given figure ABCD is a cyclic quadrilateral. AE is drawn parallel to CB and DA is produced. If angle ADC = 92 and angle FAE = 20 , determine angle BCD.

OR Two circles intersect in A and B. AC , AD are the diameters of circles respectively. prove that B, C, D are collinear.

6. Draw the tangent to a circle $C(0,4)$ at a given point P, when the centre of the circle is not known.
7. Find the sum of the series $51 + 50 + 49 + \dots + 21$
8. The total surface area of solid right circular cylinder is 231 sq.cm. Its curved surface is $\frac{2}{3}$ rd of the total surface. Determine the radius of its base and height.
9. Table shows the daily pocket allowance given to the children of a multi storey building. The mean of the pocket allowances is Rs. 18 Find out the missing frequency.

C. I.	11-13	13-15	15-17	17-19	19-21	21-23	23-25	
Freq.		3	6	9	13	---	5	4
10. A motor boat, whose speed is 9 km/h in still water, goes 12 km downstream and comes back in a total time of 3 hours. Find the speed of the stream.
11. A man bought 4 horses and 9 cows for Rs. 1340. He sells the horses at a profit of 10% and the cows at a profit of 20% and his whole gain is Rs. 188. What price did he pay for the horse?
12. By reduction of Rs. 1 per kg in the price of sugar, Mohan can buy one kg sugar more for Rs. 56. Find the original price of sugar per kilogram.
13. A rectangular reservoir is 120 m long and 75 m wide. At what speed per hour must water flow into it through a square pipe of 20 cm wide so that the water rises by 2.4 m in 18 hours?
14. Prove that
 $(\operatorname{cosec} A - \sin A)^2 (\sec A - \cos A)^2 [(\operatorname{cosec} A - \sin A)^2 + (\sec A - \cos A)^2 + 3]$
15. The vertices of a triangle are $(-2, 0)$, $(2,3)$ and $(1, -3)$. Is the triangle equilateral, isosceles or scalene?

16. Find the ratio in which the point (11, 15) divides the line-segment joining the points (15, 5) and (9, 20).
17. Find the third vertex of a triangle, if two of its vertices are (-3, 1) and (0, -2) and the centroid is at the origin.
18. A class room is 7m long, 6.5 m wide and 4 m high. It has one door 3 m x 1.4m and three windows each measuring 2m x 1 m. The interior walls are to be colour washed. The contractor charges Rs. 5.25 per sq. m. Find the cost of colour washing.
19. Prove that the following
 $\tan A / (1 + \cot A) + \cot A / (1 - \tan A) = 1 + \tan A + \cot A$
20. Five male and three female candidates are available for selection as a manager in a company. Find the probability that a) male is selected, and b) female is selected.
21. At the foot of a mountain, the elevation of its summit is 45°. After ascending 1000 m towards the mountain up a slope of 30° inclination the elevation is found to be 60°. Find the height of the mountain.
- OR
 The angle of elevation A of the top of a light house, as seen by a person on the ground, is such that $\tan A = 5/12$. When the person moves a distance of 240 m towards the light house, the angle of elevation becomes B. Such that $\tan B = 3/4$, find the height of the light house.
22. The percentage of various categories of workers in a state is given in the following table. Present the information in the form of pie chart.
- | Cultivators | Agricultural | Industrial | Commercial | others |
|-------------|--------------|------------|------------|--------|
| 49 | 25 | 12.5 | 10 | 12.5 |
23. If a line is drawn parallel to one side of a triangle, then the other two sides are divided in the same ratio - Prove.
 Using the above result, prove the following.
 In the following figure, ABCD is a parallelogram, P is a point on BC and DP when produced meets AB produced at L. Prove that $DP/DL = DC/BL$
24. Prove that the sum of either pair of the opposite angles of a cyclic quadrilateral is 180°. Using the above result, solve the following :
 In fig. $BD = DC$ and angle $DBC = 25^\circ$
 find the measure of angle BAC.
25. Annual income from salary of Shyam is Rs. 2,40,000. He contributes Rs. 2,000 per month to provident fund, pays annual LIC premium of Rs. 5,000, invests Rs. 15,000 in NSC's and donates Rs. 5,000 to PM's National Relief Fund carrying 100% relief. Calculate the income tax he has to pay for the year.
 Standard Deduction : 1/3rd of the total annual gross salary subject to maximum of Rs. 30,000 if income is less than Rs. 1.5 lakh and Rs. 25,000 if income is from Rs. 1.5 lakh to Rs. 3 lakh.

Rate of income tax :

- | | |
|----------------------------------|---|
| a) Upto Rs. 50,000 | No tax |
| b) From Rs. 50,001 to Rs. 60,000 | 10% of the amount exceeding Rs. 50,000 |
| c) From 60,001 to Rs. 1,50,000 | Rs. 1000 + 20% of the amount exceeding Rs. 60,000 |
| d) from Rs. 1,50,001 and above | Rs. 19,000 + 30% of the amount exceeding Rs. 1,50,000 |

REbate : 20% of the amount of saving subject to maximum Rs. 14,000 if taxable income is upto Rs. 1,50,000.

15% of the amount of saving subject to a maximum of Rs. 10,500 if taxable income is above Rs. 1,50,000.

Surcharge : 5% of the total tax payable. (After rebate)