MS-CIT
World-class Comprehensive Computer Course

Question Paper
Set- III
Std. – 10th EM/Semi
Subject – Algebra

MKCL KLiC Courses
Gateway to Knowledge Lit Careers

Time : 2 Hrs. **Marks : 40**

Note :
i. All questions are compulsory.
ii. Use of calculator is not allowed.
iii. Figures to the right of questions indicate full marks.

Q.1 A) Choose the correct alternative. **4**

1. Cumulative frequencies in a grouped frequency table are useful to find _____.
   a) mean b) median c) mode d) all of these
2. $\begin{vmatrix} 5 & 3 \\ -7 & -4 \end{vmatrix} =$
   a) -1 b) -41 c) 41 d) 1
3. In an A.P. 1st term is 1 and the last term is 20. The sum of all terms is 399, then n =
   a) 42 b) 38 c) 21 d) 19
4. If one root of the quadratic equation $p^2 - 3p + k = 0$ is 5, then the value of k is
   a) 0 b) 10 c) -10 d) 5

B) Solve the following questions. **4**

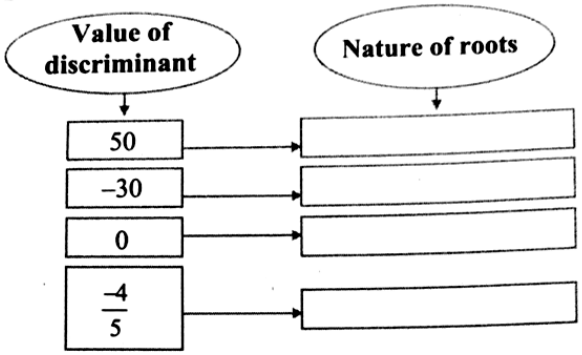
1. If $\Sigma f_i x_i = 69500$ and $\Sigma f_i = 50$, then find the mean $(\bar{x})$.
2. For an A. P. $t_3 = 20$ and $t_4 = 24$, find the common difference d.
3. If α and β are the roots of a quadratic equation such that $\alpha + \beta = 2$ and $\alpha\beta = -44$, find the quadratic equation.
4. Find the point of intersection of X-axis and the line $x - y = 4$.

Q.2 A) Complete the following activities. (Any two) **4**

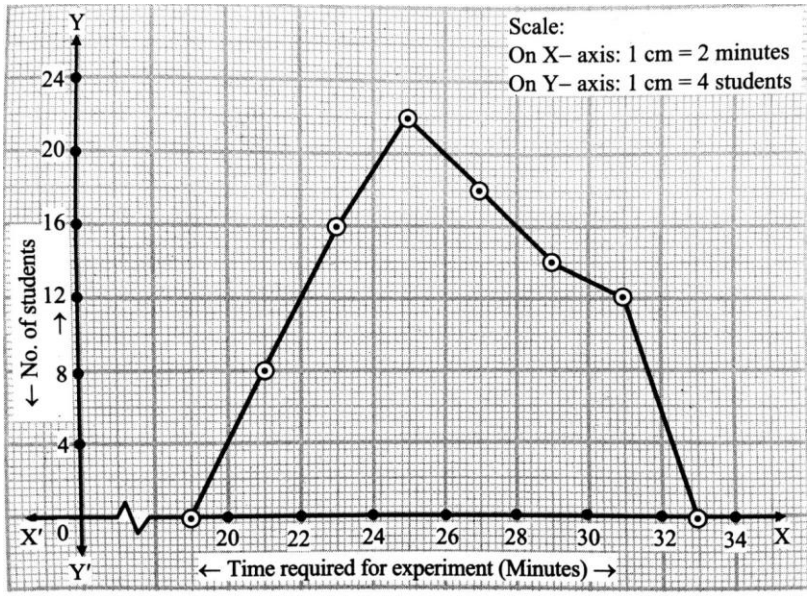
1. Complete the following table according to the given information.

No.	FV	Share is at	MV
1	₹ 10	Premium is ₹ 7	
2	₹ 25		₹ 16
3		AT PAR	₹ 5
4	₹ 20		₹ 30

2. Fill in the blanks.



3. Observe the given frequency polygon and complete the table.



Class Time required for experiment (minutes)		22 – 24	24 – 26
Class mark			25
Frequency (No. of students)	8	16	22
Co-ordinates of points	(21, 8)		(25, 22)

B) Solve the following questions. (Any four) **8**

1. The following table shows the number of students and the time they utilized daily for their studies. Find the mean time spent by students for their studies by direct method.

Time (hrs.)	0 – 2	2 – 4	4 – 6	6 – 8	8 – 10
No. of Students	7	18	12	10	3

2. Write sample space ‘S’ and number of sample points n(S) for the following experiment. Also, write event A in the set form and write n(A).
   One coin and one die are thrown simultaneously.
   Condition for event A : To get a head or tail and an even number.
3. 11, 8, 5, 2, ... In this A.P. which term is number -151 ?
4. Shriyash purchased a share of FV Rs. 100 for MV of Rs. 120. Company declared 15% dividend on the share. Find the rate of return.
5. Solve by factorisation method : $3x^2 - 29x + 40 = 0$

Q.3 A) Complete the following activities. (Any one) **3**

1. $\frac{5}{x-1}+\frac{1}{y-2}=2;\ \frac{6}{x-1}-\frac{3}{y-2}=1$

Replacing $\left(\frac{1}{x-1}\right)$ by m, $\left(\frac{1}{y-2}\right)$ by n

New equations

$\square$ ⟷ $6m-3n=1$

On solving

$m=\square, n=\square$

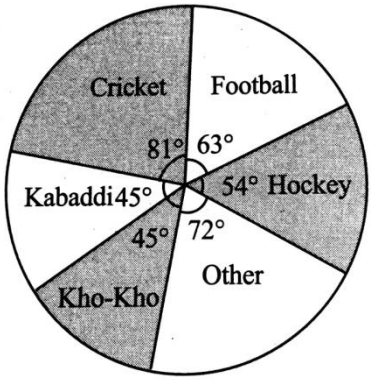
Replacing m, n by their original values.

$\frac{1}{x-1}=\frac{1}{3}$ ⟷ $\square$

On solving

$x=\square, y=\square$

2. A survey of students was made to know which game they like. The data obtained in the survey is presented in the given pie diagram. If the total number of students are 1000,



i. how many students like cricket ?
ii. how many students like football ?
iii. how many students prefer other games ?

Complete the following activity.

Measure of central angle $(\theta) = \frac{\text{Number of scores in the components}}{\text{Total number of scores}} \times 360°$

i. Central angle for cricket $(\theta) = \square$

Students who like cricket = $\square$

ii. Central angle for football $(\theta) = \square$

Students who like football = $\square$

iii. Central angle for other games $(\theta) = \square$

Students who like other games = $\square$

B) Solve the following questions. (Any two) **6**

1. The following table gives the information of frequency distribution of weekly wages of 150 workers of a company. Find the mean of the weekly wages by 'step deviation' method.

Weekly wages (Rs.)	1000 – 2000	2000 – 3000	3000 – 4000	4000 – 5000
No. of workers	25	45	50	30

2. Solve the following simultaneously equations graphically.
   $3x - 4y = -7; 5x - 2y = 0$
3. Solve the following quadratic equation by completing the square method.
   $x^2 + x - 20 = 0$
4. There are six cards in a box, each bearing a number from 0 to 5. Find the probability of each of the following events, that a card drawn shows,
   i) a natural number ii) a number less than 1 iii) a whole number

Q.4 Solve the following questions. (Any two) **8**

1. Sum of the numbers is 97. If the greater number is divided by the smaller, the quotient is 7 and the remainder is 1. Find the numbers.
2. A retail trader purchased certain CCTV's from a wholesaler who had purchased the same from a manufacturer. In each transaction the concerned seller levied 18% GST. Wholesaler earned a profit of 25%. If retail trader paid Rs. 51,344.75 for this transaction, then what is the original price for the manufacturer ?
3. How many two digit numbers leave the remainder 1 when divided by 5 ?

Q.5 Solve the following questions. (Any one) **3**

1. An express train takes 30 minutes less for a journey of 440 km, if its usual speed is increased by 8 km/hr. Find its usual speed.
2. In a certain race there are three boys A, B, C. The winning probability of A is twice B and the winning probability of B is twice than C. What are their probabilities of winning ?