

Time: 2 hrs.

- General Instructions :- i) All questions are compulsory.
ii) The question paper comprises four sections A, B, C and D.
iii) Section A contains question numbers 1 to 5 of one mark each.
iv) Section B contains question numbers 6 to 10 of 2 marks each.
v) Section C contains question numbers 11 to 15 of 3 marks each.
vi) Section D contains question numbers 16 to 20 of 4 marks each.
vii) Internal choice is also given in some questions.

SECTION-A [1×5=5]

- Q.1. If $HCF(72, 120) = 24$, then $LCM(72, 120)$ is :
a) 240
b) 2880
c) 1728
d) 360
- Q.2. The sum of the zeroes of the polynomial $8x^2 - 32x + 24$ is :
a) -4
b) 4
c) -3
d) 3
- Q.3. Probability of happening of an event is denoted by p and probability of non-happening of same event is denoted by q . Relation between p and q is :
a) $p + q = 1$
b) $p = 1, q = 1$
c) $p = q - 1$
d) $p + q + 1 = 0$
- Q.4. In what ratio, does x- axis divide the line segment joining the points A(3, 6) and B(-12, -3) ?
a) 1 : 2
b) 1 : 4
c) 4 : 1
d) 2 : 1
- Q.5. The value of k for which the pair of equations $3x - ky - 20 = 0$ and $6x - 10y + 40 = 0$ has no solution :
a) 10
b) 6
c) 5
d) 3

SECTION-B [2×5=10]

- Q.6. α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 4x + 3$, find the value of $\frac{1}{\alpha} + \frac{1}{\beta}$.
- Q.7. Two unbiased coins are tossed simultaneously. Find the probability of getting :
i) One head
ii) At most one head.
- Q.8. Solve the following pair of equation :
 $7x - 5y = 2$
 $x + 2y = 3$
- Q.9. If the points A(6, 1), B(8, 2), C(9, 4) and D(p, 3) are the vertices of a parallelogram, taken in order, find the value of p .
- Q.10. The following data gives the information on the observed lifetimes (in hrs.) of 225 electrical components:

Lifetimes (in hrs.)	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	10	35	52	61	38	29

Find the modal lifetime of the components.

OR

Find the mean of the following data by assumed mean method :

Class Interval	1-3	3-5	5-7	7-9	9-11
Frequency	7	8	2	2	1

SECTION - C [3 x 5 = 15]

- Q.11. Show that $5 + 3\sqrt{2}$ is an irrational number, given that $\sqrt{2}$ is irrational.
- Q.12. Champa went to a 'sale' to purchase some pants and skirts. When her friends asked her how many of each she had bought, she answered, "The number of skirts is two less than twice the number of pants purchased. Also, the number of skirts is four less than four times the number of pants purchased". Help her friends to find how many pants and skirts Champa bought.

OR

Jaya scored 40 marks in a test getting 3 marks for each correct answer and losing 1 mark for each incorrect answer. Had 4 marks being awarded for each correct answer and 2 marks were deducted for each incorrect answer then Jaya again would have scored 40 marks. How many questions were there in the test?

- Q.13. Calculate the median height of the following data:

Height (in cm)	135-140	140-145	145-150	150-155	155-160	160-165	165-170	170-175
No. of Boys	6	10	18	22	20	15	6	3

- Q.14. Find the largest number which divides 398, 436 and 542 leaving remainders 7, 11 and 15 respectively.
- Q.15. Find the zeroes of a quadratic polynomial $2x^2 - 8x + 6$ and verify the relationship between the zeroes and the coefficients.

SECTION - D [4 x 5 = 20]

- Q.16. Find the ratio in which P(4, m) divides the line segment joining the points A(2, 3) and B(6, -3). Hence, find m.
- Q.17. Five years hence, the age of Mahesh will be three times that of his son. Five years ago Mahesh was seven times that of his son. What are their present ages?
- Q.18. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting.
- a red king
 - either a king or a queen
 - neither a king or a queen
 - black jack
- Q.19. Without actually calculating the zeroes, form a quadratic polynomial whose zeroes are double of the zeros of the polynomial $5x^2 + 2x - 3$.
- Q.20. Find the coordinates of the points of trisection of the line segment joining the points A(2, -2) and B(-7, 4).

OR

Prove that (2, -2), (-2, 1) and (5, 2) are the vertices of an isosceles right angled triangle.

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