Section A (40 Marks)
Attempt all Questions in this section

1. Find the L.C.M of the following positive integers: 12, 24 and 28

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2. Solve the following pair of simultaneous equations using substitution methods

$$3x + 2y - 4 = 0$$
$$2x - y = 0$$

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3. a). Find the numbers represented by the letters X and Y in

$$\begin{pmatrix} 2 & 0 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 4 \\ 18 \end{pmatrix}$$

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b). Given the matrices $A = \begin{pmatrix} 2 \\ 1 \end{pmatrix}$, $B = (3 - 5)$
Find the product AB.

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4. Evaluate $X^2 + 2x$
         If $x = \sqrt{5}$ and $\sqrt{5} = 2.2361$

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5. A rectangle 6cm long and 5cm wide is enlarged so that its area becomes 270cm^2.
Find the area scale factor

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6. $X^2 - 8x + y^2 = 0$ is the equation of a circle.
Find the center and the radius of the circle

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7. Given that $\tan\theta = \frac{4}{3}$, Find the value of $\sin\theta - \cos\theta$

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8. Solve the inequality $5 \geq 1 - 2x$. Hence represent the solution on a number line.

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9. Simply $\log_{10} 40 + \log_{10} 5 - \log_{10} 2$

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10. Given that $Z_1 = (3 - 2i)$, $Z_2 = (-2 + 4i)$ are complex numbers. Work out.

(i). $Z_1 + Z_2$

(ii). $Z_1 - Z_2$

Section B (60 Marks)

Q11, (a). A school wants to form its management committee which should comprise of both men and women.

If a committee of 2 men and 3 women is to be chosen from 5 men and 4 women. Find the number of ways that the committee can be formed.

(b). Find the value of n if $^nP_2 = 6$

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12 (a). Find the equations of the tangent and normal to the curve

$Y = X^3 - 7x^2 + 3x + 2$ at the point (1, 2).

(b). Find $\int (3x^2 - 2x)dx$.

Hence evaluate $\int_2^3 (3x^2 - 2x)\, dx$.

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13. (a). The position vectors of points P and Q are OP = -4i + j – 4k and OQ = 6i + 3j – 6k.

Find PQ in terms of i, j and k.

(b). Given that $Z_1 = 2 + 3i$, $Z_2 = 4 + 7i$.
Find the modulus

$$\left| Z_1 - Z_2 \right|$$

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14. (a). Given that the mean of
25, 20, 30, x, 10, 15 is 20.
Find the value of x and hence state the mode for
the distribution.

(b). The table below shows the marks out of 40
obtained by second year students in certain
secondary school.

Marks	15	20	30	35	40
Frequency	2	10	3	10	5

(i). find the number of students in second year
class

(ii). Calculate the mean number of the students in
second year class

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15. in the sequences below, write the next two
digits

(i). 3, 9, 27, _____, _____

(ii). 1, 5, 9, _____, _____

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16. (a). Jackson loss 20% after selling his laptop for 2,000 SSP. At what price did he buy the laptop?

(b). Find the simple interest on SSP 5000 at a rate of 5% per annum for 3 years. Also determine the amount at end of the 3 years.

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16. (a). Jackson loss 20% after selling his laptop
for 2,000 SSP. At what price did he buy the
laptop?

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17. (a). Differentiate and then simplify the expression.
$$y = (x^2 - 3)(x + 1)^2$$

(b). If $\frac{dv}{dt} = 3t^2 + 6t + 2$, and $v = 4$ when $t = 2$
Find v in terms of t.