Section-A (MCQ's)

Q.1 **Choose the correct answer for each from the given options:**

(I) $\begin{bmatrix} 5 & 0 \\ 0 & 7 \end{bmatrix}$ is a _____ matrix.

(a) Diganol   (b) Scalar   (c) Rectangular   (d) Column

(ii) The mean of 30 observations is 100, their sum is _____.

(a) 900   (b) 1000   (c) 1500   (d) 3000

(iii) The polynomial expression $-1/4 + 2x + 5$ w.r.t the terms is called _____.

(a) Monomial   (b) Bionomial   (c) Trinomial   (d) None of these

(iv) $\log_a 1 = $ _____.

(a) 1   (b) a   (c) 0   (d) 10

(v) An inscribed angle of a major are is _____.

(a) Acute   (b) Obtuse   (c) 90   (d) None of these

(vi) $x^3 y^6 + 125 = $ _____.

(a) $(xy^2 - 5)(x^2 y^4 + 5xy^2 + 25)$ (b) $(xy^2 + 5)(x^2 y^4 - 5xy^2 + 25)$

(c) $(xy^2 + 5)(x^2 y^4 + 5xy^2 + 25)$ (d) $(xy^2 - 5)(x^2 y^4 - 5xy^2 + 25)$

(vii) The sub-duplicate ratio of 4:9 is _____.

(a) 16 : 81   (b) 2:3   (c) Both (a) & (b)   (d) None of these

(viii) $\cot 60 = $ _____.

(a) $\dfrac{1}{\sqrt{3}}$ (b) $\sqrt{3}$ (c) $\dfrac{\sqrt{3}}{2}$ (d) 1

(Ix) $(A \cup B)' = $ _____.

(a) $(A \cap B)'$ (b) $A \cup B'$ (c) $A \cap B'$ (d) None of these

(x) An angle with measure greater than 90 is called _____ angle.

(a) Right   (b) Congruent   (c) Acute   (d) Obtuse

(xi) $x + 1 = 0$, is a _____ equation.

(a) Quadratic   (b) LInear   (c) Non- Linear   (d) Irrational

(xii) In triangle ABC, $m \angle B = 90^0$ than _____.

(a) a^2 (b) $-a^2$ (c) $-b^2$ (d) None of these

(xiii) $\sqrt[n]{x^m} = $ _____.

(a) x^{mn} (b) $x^{n/m}$ (c) x^{m+n} (d) $x^{m/n}$

(xiv) Line segment joining the vertex and to the mid-point of the opposite side of traingle is called _____ .
   (a) Altitude   (b) Hypotenuse   (c) Median   (d) None of these
(xv) The characteristic of log 0.0000225 is _____ .
   (a) 4   (b) 5   (c) -4   (d) -5
(Xvi) $(a+b)^2 + (a-b)^2 = $ _____ .
   (a) 4ab   (b) -4ab   (c) $2(a^2 + b^2)$ (d) $2(a+b)^2$

(xvii) The order of   is _____ .
   (a) 2 x 1   (b) 1 x 2   (c) 1 x 1   (d) 2 x 2
(xviii) (3, -2) is in _____ quadrant.
   (a) First   (b) Second   (d) Third   (d) Fourth
(xix) If A = , then |A| = _____ .

   (a) 6   (b) 4   (c) 2   (d) 0

(xx) |-5| , absolute value of -5 is _____ .
   (a) -5   (b)   (c) 5   (d) None of these

Section-B

Note: Solve any TEN of the following questions. Each question carries 05 marks.

Q.2 Find the value of x - y when $x + y = -9$ and $xy = 20$.

Q.3 Find the factors of . $a^2(b-c) + b^2(c-a) + c^2(a-b)$

Q.4 If A = {1, 2, 3, 4}, find the two sets B and C that are subset of A such that $B \subseteq C$.

Q.5 Prove that $\cot\theta + \tan\theta = \cot\theta \sec^2\theta$

Q.6 Find the logarithm of 125 to the base .

Q.7 Discuss the advantages of tabulation and classification.

Q.8 Simplify $\dfrac{4}{x^2 - 4x - 5} + \dfrac{8}{x^2 - 1}$

Q.9 if x + 7 : 2 (x + 14) is the duplicate ratio of 5 : 8 , find the value of x.

Q.10 Find the solution set of |5y - 3| - 6 = 3.

Q.11 Prove that, the sum of measures of the angles of a triangle is 180·.

Q.12 Eliminate 'y' from the equation : $y + \dfrac{1}{y} = b$ and $y + \dfrac{1}{y} = b$

Q.13 If $y = \sqrt{5} - 2$, find the value of $y^2 - \dfrac{1}{y^2}$

Q.14 Find the inverse of $\begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$

Q.15 Define any ONE of the following terms and illustrate by drawing figure.
   Adjacent angles Vertically opposite angles

Section-C

Q.16 (a) Solve by using logarithm: $\dfrac{\sqrt{673.3}}{\sqrt[3]{58.4}}$

(b) Simplify: $\dfrac{4^m \times 15^{4m-2n+1} \times 9^{n-2m}}{10^{2m} \times 25^{m-n}}$

Q.17 (a) Consturct a triangle ABC $\overline{AB} = 4.5cm$, $m\,\overline{BC} = 5cm$, $m\angle B = 60°$ in which and draw its circumscribed.

(b) Find the value of : $\dfrac{\tan 30° + \tan 45°}{1 - \tan 30° \tan 45°}$

Q.18 (a) Solve the using matrics : $4x + y = 2$ and $7x + 2y = 3$.