SGD-11-19

1118 Warning:- Please write your Roll No. in the space provided and sign. Roll No----------

(Inter Part – I) (Session 2014-16 to 2017-19) Sig: of Student ----------

Mathematics (Objective) **Paper (I)**

Time Allowed:- 30 minutes **PAPER CODE 2197** Maximum Marks:- 20

Note:- You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write **PAPER CODE, which is printed on this question paper, on** the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q. 1

1) A quadratic equation has degree.

(A) 0 (B) 1 (C) 2 (D) 3

2) The roots of the equation $x^2+x-6=0$ are

(A) Real (B) Equal (C) Complex (D) Irrational

3) The given form $(x-4)^2=x^2-8x+16$ is

(A) A transcendental equation (B) Cubic equation (C) An identity (D) An equation

4) The third term of the sequence $a_n=(-1)^n(n-7)$ is

(A) 8 (B) 4 (C) -8 (D) -4

5) Let A , G , H be arithmetic, geometric and harmonic means between "a" & "b" respectively then $G^2=$

(A) A + H (B) $\sqrt{ab}$ (C) A/H (D) A H

6) $9\times8\times7$ is equal to

(A) 9! (B) $9!/7!$ (C) $3!/2!$ (D) $9!/6!$

7) The number π is

(A) Whole number (B) A natural number (C) A rational number (D) An irrational number

8) If every element of a set A is also an element of set B, then

(A) $A \subseteq B$ (B) $B \subseteq A$ (C) $A \cap B = \phi$ (D) $A \cap B = B$

9) If the matrices $A=\begin{bmatrix}1&2&3\\4&5&6\end{bmatrix}$ then A', the transpose of A is

(A) $\begin{bmatrix}1&4\\2&5\\3&6\end{bmatrix}$ (B) $\begin{bmatrix}1&2\\3&4\\5&6\end{bmatrix}$ (C) $\begin{bmatrix}1&3\\2&4\\5&6\end{bmatrix}$ (D) $\begin{bmatrix}1&2\\3&5\\4&6\end{bmatrix}$

10) If the determinant $\begin{vmatrix}k&4\\4&k\end{vmatrix}=0$ then k is equal to

(A) 16 (B) 0 (C) ±4 (D) 8

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SGD-11-18

1118 Warning:- Please, do not write anything on this question paper except your Roll No.

Mathematics (Subjective) (Session 2014-16 to 2017-19) Paper (I)

Time Allowed: 2.30 hours (Inter Part - I) Maximum Marks: 80

Section ---------- I

2. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) Define Recurring or Periodic decimal, Give one example. **(ii)** Factorize: $a^2 + 4b^2$

(iii) Find multiplicative inverse of "$-3-5i$".

(iv) Write $\{ x \mid x \in Z \wedge -5 < x < 5 \}$ in the descriptive and tabular form.

(v) Write inverse and contrapositive of $\sim p \rightarrow q$ **(vi)** Define (1 – 1) and onto function.

(vii) Find x and y if $\begin{bmatrix} x+3 & 1 \\ -3 & 3y-4 \end{bmatrix} = \begin{bmatrix} 2 & 1 \\ -3 & 2 \end{bmatrix}$

(viii) If $A = \begin{bmatrix} 1 & 2 & -3 \\ 0 & -2 & 0 \\ -2 & -2 & 1 \end{bmatrix}$, find cofactors A_{12} and A_{22} **(ix)** Without expansion verify that : $\begin{vmatrix} bc & ca & ab \\ \frac{1}{a} & \frac{1}{b} & \frac{1}{c} \\ a & b & c \end{vmatrix} = 0$

(x) State two basic techniques for solving a quadratic equation.

(xi) Solve the equation: $2x^4 - 32 = 0$ **(xii)** Discuss the nature of the roots of $2x^2 - 7x + 3 = 0$

3. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) Write the partial fraction form of $\frac{2x^4 - 3x^2 - 4x}{(x^2+2)^2 (x+1)^2}$.

(ii) Write the first four terms of the sequence if $a_n - a_{n-1} = n+2$, $a_1 = 2$

(iii) Sum the series upto 10^{th} term $1.11 + 1.41 + 1.71 + ----$

(iv) If $\frac{1}{a}, \frac{1}{b}$ and $\frac{1}{c}$ are in G.P show that the common ratio is $\pm\sqrt{\frac{a}{c}}$

(v) Find Vulgar fraction equivalent to the recurring decimal. $1.3\dot{4}$

(vi) Find A , G , H and show that $G^2 = A.H$ if a = -2 , b = -6 (with usual notation)

(vii) Find the value of n when ${}^nP_2 = 30$ with usual notation.

(viii) Find the value of n when ${}^nC_{12} = {}^nC_6$ with usual notation.

(ix) A box contains 10 red , 30 white and 20 black marbles. A marble is drawn at random. Find the probability that it is either red or white.

(x) Show that the formula is true for $n = 1, 2$.

$$1^3 + 3^3 + 5^3 + -----+(2n-1)^3 = n^2[2n^2 - 1]$$

(xi) Using Binomial theorem expand $(9.9)^5$

(xii) Expand upto 4 terms, taking the value of x such that the expansion is valid $(4-3x)^{1/2}$

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