

BOARD OF INTERMEDIATE EDUCATION, KARACHI

INTERMEDIATE EXAMINATION, 2016 (ANNUAL)

Date: 19.05.2016

9:30 a.m. to 9:50 a.m.

MATHEMATICS PAPER – I

(Science Pre-Engineering & Science General Groups)

Max. Marks: 20

Time: 20 minutes

The correct answers are
highlighted in red colour.

SECTION 'A'

(MULTIPLE CHOICE QUESTIONS) – (M.C.Qs.)

Code No: MT-01

Write this Code No. in the Answerscript.

NOTE:

- This section consists of 20 part questions and all are to be answered. Each question carries one mark.
- Do not copy the part questions in your answerbook. Write only the answer in full against the proper number of the question and its part.
- The code of your question paper is to be written in bold letters in the beginning of the answerscript.
- The use of calculator is allowed. All notations are used in their usual meanings.

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

i) The period of $\tan \theta$ is:

- * $\frac{3\pi}{2}$ * $\frac{\pi}{2}$ * π * 2π

ii) If $\begin{bmatrix} 3 & 5 \\ 9 & -\lambda \end{bmatrix}$ is a singular matrix, then λ will be:

- * **15** * 27 * -15 * -27

iii) If Discriminant of a quadratic equation $ax^2 + bx + c = 0$, $a \neq 0$, is zero, then the roots of the equation are:

- * Irrational and equal * **Real and equal**
* Complex and unequal * Rational and unequal

iv) If $A = \{0, 1\}$, $B = \{2, 1\}$ and $C = \{2, 3\}$, then $A \times (B \cap C) =$:

- * ϕ * $\{(1, 3), (0, 1)\}$ * **$\{(0, 2), (1, 2)\}$** * $\{(2, 3), (1, 1)\}$

v) The probability of getting the tail in a single toss of a coin is:

- * $\frac{1}{3}$ * **$\frac{1}{2}$** * $\frac{2}{3}$ * 2

vi) Simplified form of $\frac{(n+1)!}{(n-1)!}$ is:

- * $\frac{n-1}{n+1}$ * $n(n-1)$ * **$n(n+1)$** * $\frac{n+1}{n-1}$

vii) The middle term in the expansion of $\left(x - \frac{2y}{3}\right)^{10}$ is:

- * 3rd * 4th * 5th * **6th**

viii) $(1 - \omega - \omega^2)^4 =$:

- * -1 * 2 * 4 * **16**

ix) If the measurements of the sides of a triangle ABC are 3 units 4 units and 5 units, then $2s =$:

- * 6 unit * 8 units * **12 units** * 16 units

x) If 'A' is a non-singular matrix, then $A^{-1} =$:

- * $\frac{Adj A}{A}$ * **$\frac{Adj A}{|A|}$** * $\frac{|Adj A|}{|A|}$ * $\frac{|A|}{Adj A}$

Continued on the next page.....

- xi) The sum of the roots of $x^2 - 15x + 6 = 0$ is:
* -15 * 15 * 3 * $\frac{15}{2}$
- xii) $\frac{1}{\sqrt{1 + \cot^2 \theta}}$:
* $\operatorname{cosec} \theta$ * $\sin \theta$ * $\operatorname{cosec}^2 \theta$ * $\sin^2 \theta$
- xiii) $\sum n = :$
* $\frac{n(n+1)}{2}$ * $\frac{n+1}{2}$ * $\frac{n^2(n+1)^2}{2}$ * $\frac{n(n+2)}{2}$
- xiv) If $\cos \theta$ is positive and $\sin \theta$ is negative, then $\rho(\theta)$ lies in this quadrant:
* 1^{st} * 2^{nd} * 3^{rd} * 4th
- xv) The matrix $\begin{bmatrix} 2 & 0 & 0 \\ 0 & -2 & 0 \\ 0 & 0 & 2 \end{bmatrix}$ is a:
* Scalar matrix * Null matrix * Diagonal matrix * Row matrix
- xvi) The multiplicative inverse of (c, d) is:
* $\left(\frac{c}{c^2 + d^2}, \frac{-d}{c^2 + d^2}\right)$ * $\left(\frac{-c}{c^2 + d^2}, \frac{d}{c^2 + d^2}\right)$
* $\left(\frac{c}{c^2 - d^2}, \frac{-d}{c^2 - d^2}\right)$ * $\left(\frac{-c}{c^2 - d^2}, \frac{d}{c^2 - d^2}\right)$
- xvii) The equation having the roots ω and ω^2 is:
* $x^2 + x + 1 = 0$ * $x^2 - x + 1 = 0$ * $x^2 + x - 1 = 0$ * $x^2 - x - 1 = 0$
- xviii) $\begin{pmatrix} 7 \\ 2, 2 \end{pmatrix}$ is equal to:
* 315 * 630 * 1260 * 2520
- xix) The nth term of the sequence 2,4,6,8,..... is:
* 2^n * 2n * $\frac{1}{2^n}$ * $\frac{1}{2n}$
- xx) If $z = x + iy$, then the real part of $z + \bar{z}$ is:
* 2x * $2ix$ * $2y$ * $2iy$