

BOARD OF INTERMEDIATE EDUCATION, KARACHI
INTERMEDIATE EXAMINATION, 2016 (ANNUAL)

Date: 09.05.2016
9:30 a.m. to 9:50 a.m.

MATHEMATICS PAPER – II
(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-09
Write this Code No. in the Answerscript.

- NOTE:**
- i) This section consists of 20 part questions and all are to be answered. Each question carries one mark.
 - ii) 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.
 - iii) The code of your question paper is to be written in bold letters in the beginning of the answerscript.
 - iv) 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) $\frac{d}{dx} \ln e^{x^2} = :$
 * x^2 * **$2x$** * $\frac{1}{e^{x^2}}$ * $\ln x^2$
- ii) If $\frac{dy}{dx} = 1$, then:
 * **$y = x + c$** * $y = x^2 + c$ * $y^2 = x + c$ * $y = -x + c$
- iii) $\int \tan 45^\circ dx = :$
 * **$x + c$** * $\sec^2 45^\circ + c$ * $\ln \sec 45^\circ + c$ * $\cot 45^\circ + c$
- iv) $\int e^x \sin x + \cos x dx = :$
 * $e^x \cos x + c$ * $-e^x \cos x + c$ * **$e^x \sin x + c$** * $e^x + c$
- v) $\int \frac{dx}{x+1} - \frac{dx}{x+2} = :$
 * **$\ln x+1 - \ln x+2 + c$** * $\ln x+1 + \ln x+2 + c$
 * $\frac{\ln x+1}{\ln x+2} + c$ * $\frac{\ln x+2}{\ln x+1} + c$
- vi) Equation of a circle with centre (0, -5) and diameter 4 units is:
 * **$x^2 + (y+5)^2 = 4$** * $x-5^2 + y-0^2 = 4^2$
 * $x^2 + y-5^2 = 4^2$ * $x+5^2 + y^2 = 4$
- vii) This circle has its centre on y-axis:
 * $x^2 + y^2 + 2x + 3 = 0$ * **$x^2 + y^2 - 2y - 3 = 0$**
 * $x^2 + y^2 + 3x + 2y = 0$ * $x^2 + y^2 + 3x + 2y = 2$
- viii) The length of the latus rectum of parabola $x-1^2 = -8 y+2$ is:
 * 2 units * 4 units * 6 units * **8 units**
- ix) The centre of ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$ is:
 * 5,0 * 3,5 * **0,0** * 5,3
- x) If $e = 2$, then conic is:
 * ellipse * parabola * **hyperbola** * circle

Continued on the next page.....

- xi) If three vectors $\vec{a}, \vec{b}, \vec{c}$ are coplanar, then $[\vec{a} \ \vec{b} \ \vec{c}] = :$
 * 1 * **0** * \vec{c} * \vec{a}
- xii) Direction cosines of the vector $\hat{i} + \hat{j} - \hat{k}$ are:
 * $\frac{1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}, \frac{1}{\sqrt{3}}$ * $\frac{-1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}$
 * 1, 1, -1 * **$\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{-1}{\sqrt{3}}$**
- xiii) If $f : -1, 5 \longrightarrow \square$ is defined by $f(x) = x^2$ then $f^{-2} = :$
 * 4 * -2 * **undefined** * -4
- xiv) $\lim_{x \rightarrow 0} \frac{e^x - 1}{x} = :$
 * $e^x \ln a$ * **1** * $\ln x$ * $\frac{1}{\ln x}$
- xv) $\lim_{x \rightarrow 0} \frac{\sin \frac{2}{3}x}{2x} = :$
 * 1 * $\frac{3}{2}$ * $\frac{2}{3}$ * **$\frac{1}{3}$**
- xvi) The slope of a straight line which bisects the first and third quadrants is:
 * **1** * 0 * -1 * ∞
- xvii) The area of a triangle whose vertices are (0, 0), (2, 0) and (0, 4) is:
 * 8 sq.units * **4 sq.units** * 2 sq.units * 1 sq.unit
- xviii) If the equation of a straight line is $3x - y + 5 = 0$, then the point (1, 2) lies:
 * above the line * **below the line** * on the line * on both sides of the line
- xix) Two straight lines represented by $ax^2 + 2hxy + by^2 = 0$ will be coincident if:
 * $a + b = 0$ * $a = b$ * $h^2 + ab = 0$ * **$h^2 - ab = 0$**
- xx) The point of concurrency of the medians of a triangle is called:
 * Incentre * **Centroid** * Orthocentre * Circumcentre

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