NEB-GRADE XII

2081 (2024)

Mathematics

(For Regular Students only)

(For the students whose first two digits of registration number starts from 80)

Attempt **all** the questions.

Group 'A' **[11×1=11]**

Rewrite the correct options of each questions in your same answer sheet.

1. The permutation of 'n' things taken 'r' at a time when each things may occur any numbers of times is...

   A) n ways B) r^n ways C) n^r ways D) (n×r) ways.

2. Which one of the following is Euler's form of complex number -i ?

   A) $e^{\frac{\pi i}{4}}$ B) $e^{\frac{3\pi i}{2}}$

   C) $e^{\frac{3\pi i}{4}}$ D) $e^{\frac{\pi i}{2}}$

3. in ΔABC, $\angle A=30^0$, $\angle B=45^0$, which one of the following is a:c ?

   A) $\frac{\sqrt{2}}{\sqrt{3}+1}$ B) $\frac{3+1}{\sqrt{2}}$ C) $\frac{\sqrt{3}+i}{2\sqrt{2}}$ D) $\frac{2\sqrt{2}}{\sqrt{3}+1}$

4. Which one of the following has transverse axis and conjugate axis ?

   A) $y^2-4y-4x+4=0$ B) $2y^2-3x^2-6=0$

   C) $2y^2+3x^2-6=0$ D) $2x^2+2y^2=72$

5. It is given that $\vec{a}$ and $\vec{b}$ are two vectors such that $\left|\vec{a}\times\vec{b}\right| = \left|\vec{a}.\vec{b}\right|$.

   What is the angle between $\vec{a}$ and $\vec{b}$?

   A) π B) $\frac{\pi}{2}$ C) $\frac{\pi}{4}$ D) $\frac{\pi}{6}$

6. In a school there were 100 students, 35% students failed in mathematics, 20% students failed in science and 15% failed in both of the subjects. A student selected at random, the probability of the student fail in mathematics given that failed in science already is

   A) $\frac{3}{7}$ B) $\frac{4}{7}$ C) $\frac{3}{4}$ D) $\frac{1}{4}$

Contd...

7. Which one of the following is the derivative of cosec $h^{-1}(x)$?

A) $\frac{1}{x\sqrt{x^2+1}}$ B) $\frac{-1}{x\sqrt{x^2+1}}$

C) $\frac{1}{x\sqrt{1-x^2}}\ (|x|<1)$ D) $\frac{-1}{x\sqrt{1-x^2}}\ (|x|<1)$

8. Which one of the following is equal to $\lim_{x \to 0} \frac{e^{3x}-1}{2x}$?

A) 0 B) $\frac{1}{2}$ C) $\frac{3}{2}$ D) 3

9. Which one of the following represents the equation of normal to the curve $x^2 = 2y$ at the point (-2, 2) ?

A) $2x+y+6=0$ B) $2x-2y+6=0$
C) $2x-y+6=0$ D) $x-2y+6=0$

10. Which one of the following is the solution of differential equation $x\,dy - y\,dx = 0$?

A) $x = cy$ B) $y = cx$ C) $xy = c$ D) $x-y = c$

11. In Gauss elimination method, the coefficient of the variables of the element a_{ij} where $i = j$ are known as...

A) pivot element B) common element
C) non basic element D) basic element

Or

A shot 40 kg projected from a 400 kg gun with a velocity of 60 m/sec, then the velocity with which the gun would commence to recoil, if free to move in the line of projection is

A) 6 m/sec B) *60 m/sec* C) *6 km/min* D) *600 m/sec*