

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) $(n \times r)$ ways. $P(n, r)$

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 $\triangle ABC$, $\angle A = 30^\circ$, $\angle B = 45^\circ$, which one of the following is a:c?

A) $\frac{\sqrt{2}}{\sqrt{3}+1}$

B) $\frac{3+1}{\sqrt{2}}$

C) $\frac{\sqrt{3}+1}{2\sqrt{2}}$

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 $|\vec{a} \times \vec{b}| = |\vec{a} \cdot \vec{b}|$.

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 $\operatorname{cosec} h^{-1}(x)$?

~~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 $\lim_{x \rightarrow 0} \frac{e^{3x} - 1}{2x}$?

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