



The Times Secondary School
Dillibazar, Kathmandu
Second Unit Test – 2076

Grade: XII Set A Full Marks:25
Stream: Science Pass Marks: 10
Subject: Basic Mathematics. Time : 45Mins

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate the full marks.

Attempt all the questions.

1. Prove that $\frac{2}{1!} + \frac{4}{3!} + \frac{6}{5!} + \dots$ to $\infty = e$ [2]
2. Find the eccentricity of an ellipse if its latus rectum is equal to one half of its major axis. [2]
3. Integrate $\int \sqrt{x^2 + 4x - 12} dx$ [2]
4. Evaluate : $\int \frac{dx}{1+\sin x+\cos x}$. [4]
5. Find the value of $1 + \frac{1+x}{2!} + \frac{1+x+x^2}{3!} + \dots$ to ∞ [4]
6. Find the equation of the plane through the intersection of the planes $2x+3y+10z=8$ and $2x-3y+7z=2$ and perpendicular to the plane $3x-2y+7z=2$. [6]
7. Evaluate: $\int_0^1 \sqrt{1+x^2} . dx$ using Simpson's $\frac{1}{3}$ rule with $n = 4$ [6]

The End



The Times Secondary School
Dillibazar, Kathmandu
Second Unit Test – 2076

Grade: XII Set B Full Marks:25
Stream: Science Pass Marks: 10
Subject: Basic Mathematics. Time : 45Mins

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate the full marks.

Attempt all the questions.

1. Prove that $\frac{1}{2!} + \frac{2}{3!} + \frac{3}{4!} + \dots$ to $\infty = 1$ [2]
2. Find the eccentricity and foci of the hyperbola $\frac{x^2}{25} - \frac{y^2}{16} = 1$ [2]
3. Integrate $\int \frac{dx}{x-\sqrt{x^2-9}}$ [2]
4. Evaluate: $\int \frac{dx}{3\sin x - 4\cos x}$. [4]
5. Show that: $1 + \frac{1+\frac{2^2}{2!}+\frac{2^4}{3!}+\frac{2^6}{4!}+\dots}{1+\frac{1}{2!}+\frac{2}{3!}+\frac{2^2}{4!}+\dots} = e^2$ [4]
6. Find the equation of the plane through the intersection of the planes $x+y+z=6$ and $2x+3y+4z+5=0$ and perpendicular to the plane $4x+5y-3z=8$. [6]
7. Evaluate: $\int_0^1 \frac{dx}{1+x}$. dx using Trapezoidal rule for $n = 4$ [6]

The End