



RAN - 2003000201030033



RAN-2003000201030033

F. Y. B. Sc. (Sem. - I) Examination

March - 2023

Mathematics - I : (MTH - 101)

Time: 1 Hour]

[Total Marks: 50

સૂચના : / Instructions

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.

Fill up strictly the details of signs on your answer book

Name of the Examination:

F. Y. B. Sc. (Sem. - I)

Name of the Subject :

Mathematics - I : (MTH - 101)

Subject Code No.: 2003000201030033

Seat No.:

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

Student's Signature

- (2) Follow usual notations and conventions.
- (3) There is no negative marking for wrong answer.
- (4) There are total 33 questions.
- (5) Section - I contains 16 MCQs (1 to 16) each of which carries a weightage of 1 mark.
- (6) Section - II contains 17 MCQs (17 to 33) each of which carries a weightage of 2 marks.

O.M.R. Sheet ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ

O.M.R. Sheetની પાછળ છાપેલ છે.

***Important instructions to fillup O.M.R. Sheet
are given on back side of the provided O.M.R. Sheet.***

Q. 7. $\cosh^2\theta - \sinh^2\theta$ is equal to _____.

- A. 1
B. 0
C. -1
D. 2

Q. 8. $(x + iy) \cdot (x - iy)$ is equal to _____.

- A. x^2
B. $x^2 + y^2$
C. $x^2 - y^2$
D. y^2

Q. 9. $\operatorname{sech}^2u + \operatorname{tanh}^2u$ is equal to _____.

- A. -1
B. 0
C. 1
D. 2

Q. 10. Real part of $e^{i\pi}$ is equal to _____.

$e^{i\pi}$ નો વાસ્તવિક ભાગ _____ છે.

- A. -1
B. 0
C. 1
D. 2

Q. 11. $1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots + \frac{x^r}{r!} + \dots$, is the expansion of _____.

$1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots + \frac{x^r}{r!} + \dots$ એ _____ નું વિસ્તરણ છે.

- A. $\log(x)$
B. $\sin(x)$
C. e^x
D. $\cos(x)$

Q. 12. $\tanh^{-1}\left\{\frac{x-a}{x+a}\right\} =$ _____.

- A. $\log\frac{x}{a}$
B. $\log\frac{x}{a^2}$
C. $\frac{1}{2}\log\frac{x}{a}$
D. $2\log\frac{x}{a}$

Q. 13. $\tanh^{-1}x =$ _____.

- A. $\sinh^{-1}\frac{x}{\sqrt{1-x^2}}$
B. $\sinh^{-1}(x)$
C. $\sinh^{-1}(1-x^2)$
D. $\sinh^{-1}(x^{-1})$

Q. 20. If $x + iy = \sin(u + iv)$ then $\frac{x^2}{\cosh^2 v} + \frac{y^2}{\sinh^2 v} = \underline{\hspace{2cm}}$.

જો $x + iy = \sin(u + iv)$ હોય તો $\frac{x^2}{\cosh^2 v} + \frac{y^2}{\sinh^2 v} = \underline{\hspace{2cm}}$.

A. -1

B. 0

C. 1

D. 2

Q. 21. If $\tan(\alpha + i\beta) = x + iy$ then $x^2 + y^2 + 2x \cot 2\alpha = \underline{\hspace{2cm}}$.

જો $\tan(\alpha + i\beta) = x + iy$ હોય તો $x^2 + y^2 + 2x \cot 2\alpha = \underline{\hspace{2cm}}$.

A. 1

B. 0

C. -1

D. 2

Q. 22. $\cosh^{-1}x = \underline{\hspace{2cm}}$.

A. $\ln(x + \sqrt{x^2 - 1})$

B. $\ln(x - \sqrt{x^2 - 1})$

C. $\ln(x + \sqrt{x^2 + 1})$

D. $\ln(x - \sqrt{x^2 + 1})$

Q. 23. $\cosh^4 A - \sinh^4 A = \underline{\hspace{2cm}}$.

A. $2 \cosh^2 A$

B. $2 \cosh^2 A - 1$

C. $2 \cosh^2 A + 1$

D. $\cosh^2 A$

Q. 24. $(1 + i)^5 = \underline{\hspace{2cm}}$.

A. $4(1 + i)$

B. $-4(1 - i)$

C. $-4(1 + i)$

D. $4(1 - i)$

Q. 25. $\frac{(\cos \theta - i \sin \theta)^5}{(\cos \alpha + i \sin \alpha)^7} = \underline{\hspace{2cm}}$.

A. $\cos(5\theta + 7\alpha) - i \sin(5\theta + 7\alpha)$

B. $\sin(5\theta + 7\alpha)$

C. $\sin(5\theta + 7\alpha) + i \cos(5\theta + 7\alpha)$

D. $\cos(5\theta + 7\alpha)$

SPACE FOR ROUGH WORK