MANONMANIAM SUNDARANAR UNIVERSITY

DIRECTORATE OF DISTANCE AND CONTINUING EDUCATION

INTERNAL ASSIGNMENT FOR MAY 2025 EXAMINAITONS

B.Sc. Mathematics – First Semester

மொழித்தாள் – தாள் – I

தமிழ் இலக்கிய வரலாறு

Sub-Code: J1TL11

1.) **(அ)** எட்டுத்தொகைஇ பத்துப்பாட்டு நூல்களை குறித்து எழுதுக.

(அல்லது)

(ஆ) அற இலக்கியங்களின் வைப்பு முறையை எடுத்துரைக்க.

2.) **(அ)** பன்னிரு திருமுறைகளின் வைப்பு முறையை விவரி.

(அல்லது)

(ஆ) சித்தர் இலக்கியங்கள் குறித்து கட்டுரை வரைக.

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B.Sc. Mathematics – First Semester

General English - I (Part II English)

Sub-Code: J2EN11

1.) **(A)** Explain the character of Malala from the 1st chapter of "I am Malala".

(OR)

(B) Delineate "Alice Fell" poem by Words worth.

2.) **(A)** Write a critical appreciation of the poem "Stopping by woods on a snowy Evening" by Robert Frost.

(OR)

(B) Eluminate the fairies in "The Magic Brocade".

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B.Sc. Mathematics – First Semester

Algebra & Trigonometry

Sub-Code: JMMA11

1.) **(A)** Find the positive roots of the equation $x^3 + 18x - 6 = 0$ correct to three places of decimals using Horner's method.

(OR)

(B) Find the eigenvalues and eigen vectors of the matrix A= $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$.

2.) **(A)** Prove that Log $\left(\frac{1}{1-e^{i\theta}}\right)$ = log $\left(\frac{cosec\left(\frac{\theta}{2}\right)}{2}\right)$ + i$\left(2n\pi + \frac{\pi}{2} - \frac{\theta}{2}\right)$.

(OR)

(B) Prove that if n is large $\left(n - \frac{1}{3n}\right)\log\frac{n+1}{n-1} = 2 + \frac{8}{45n^4} + \ldots..$

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B.Sc. Mathematics – First Semester

Differential Calculus

Sub-Code: JMMA12

1.) **(A)** Find y_n, where $y = \frac{3}{(x+1)(2x-1)}$ is partial fraction.

(OR)

(B) If $u = \tan^{-1}\frac{x^3+y^3}{x-y}$, prove that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = \sin 2u$.

2.) **(A)** Transform $\frac{\partial^2 v}{\partial x^2} + \frac{\partial^2 v}{\partial y^2}$ into polar co-ordinates.

(OR)

(B) Find the envelope of the circles drawn on the radius vectors of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ as parameter.

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B.Sc. Mathematics – First Semester

Allied Physics

Sub-Code: JEPH11

1.) **(A)** Derive an expression to find the young's modulus of the beam by non-uniform bending.

(OR)

(B) Discuss the Joule – Thomson Porus plug experiment with a neat diagram.

2.) **(A)** Derive an expression to find the peak, average and RMS value of an alternating (ac) current and voltage.

(OR)

(B) State and Prove De Morgan's Theorem with the necessary circuit diagrams.

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B.Sc. Mathematics – First Semester

Mathematics for Competitive Examination I

Sub-Code: JSMA11

1.) **(A)** **(i.)** Of the three numbers, the sum of the first two is 45 ; the sum of the second and the third is 55 and the sum of third and thrice the first is 90. Find the third number.

(ii) If a+b+c =13, $a^2 + b^2 + c^2$ = 69 then find ab+bc+ca.

(OR)

(B)) **(i)** Each boy contributed rupees equal to the number of girls and each girl contributed rupees equal to the number of boys in a class of 60 students. If the total contribution thus collected is Rs. 1600. How many boys are there in the class?

(ii) Find x if $\frac{13^3+7^3}{13^2+7^{2-x}} = 20$.

2.) **(A)** **(i)** The ratio of three numbers is 3:4:5 and the sum of their squares is 1250. Find the sum of the numbers.

(ii) A, B, C enters into the partnership investing Rs. 35,000 , Rs.45,000 and Rs.55,000 respectively. Then find the respective shares of A, B, C in an annual profit of Rs. 40,500.

(OR)

(B) **(i)** Simplify $\frac{785\ X\ 785\ X\ 785 + 435\ X\ 435\ X435}{785\ X\ 785 + 435\ X\ 435 - 785\ X\ 435}$.

(ii) If x$*$ y = $x^2 + y^2$- xy then find the value of 9$*$ 11.

(iii) $\frac{3}{8}$ is what part of $\frac{1}{12}$?

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B.Sc. Mathematics – First Semester

Bridge Mathematics

Sub-Code: JFMA11

1.) **(A)** **(i)** How many words can be formed by 3 vowels and 6 consonants taken from 5 vowels and 10 consonants?

(ii) Prove that Cos(A+B) = CosACosB-SinASinB.

(OR)

(B) **(i)** Compute $(98)^5$ using binomial theorem.

(ii) Find the derivative of the function $2x^2 + 3x - 5$ at x = -1. Also Prove that $f'(0) + 3f'(-1) = 0$.

2.) **(A)** **(i)** Prove that SinA + SinB = 2Sin$\frac{A+B}{2}$Cos$\frac{A-B}{2}$.

(ii) If Arithmetic mean and Geometric mean of two positive numbers a and b are 10 and 8 respectively. Find the numbers.

(OR)

(B) **(i)** Find $\lim_{x\to 0}\frac{sinx}{x}$ and $\lim_{x\to 0}\frac{1-cosx}{x}$.

(ii) Find the derivative of $\frac{x^n-a^n}{x-a}$ for some constant a.