MANONMANIAM SUNDARANAR UNIVERSITY

DIRECTORATE OF DISTANCE AND CONTINUING EDUCATION

INTERNAL ASSIGNMENT [redacted]

B.SC MATHS

SEMESTER III

பொதுத்தமிழ் 3 –J1TL31

1. அ. மூவேந்தர் வரலாறு கூறும் செய்திகளை விளக்குக.

OR

ஆ. ஐரோப்பியர் வருகையினால் தமிழகத்தில் ஏற்பட்ட சமூக மறுமலர்ச்சி மற்றும் பெண்களின் பங்கையும் விவரி.

2. அ. 19 ஆம் நூற்றாண்டில் ஏற்பட்டசமூகமறுமலர்ச்சியைவிளக்குக.

OR

ஆ. விடுதலைக்குப்பின் ஏற்பட்டதொழிலநுட்பவளர்ச்சியைவிவரி.

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B.SC MATHS

SEMESTER III

NAME OF THE COURSE: GENERAL ENGLISH – III (J2EN31)

1. a) What message does WangariMaathai convey in her Nobel Prize Acceptance Speech?

   OR

   b) How does "Anxiety Monster" by RhonaMcFerran portray the struggle with anxiety?

2. a) Discuss how does "In a Grove" by AkutagawaRyunosuke explore multiple perspectives of truth.

   OR

   b) What is the function of infinitives and gerunds in sentences and how do they affect meaning?

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B.SC MATHS

SEMESTER III

NAME OF THE COURSE : Vector Calculus and Applications (JMMA31)

1. a) Find $\emptyset$ if $\nabla\emptyset$ is $(6xy + z^3)\vec{i} + (3x^2 - z)\vec{j} + (3xz^2 - y)\vec{k}$

(OR)

b) Find the equation of the tangent plane to the surface $x^2 - 4y^2 + 3z^2 + 4 = 0$ at the point (3,2,1).

2. a) Show that $\iint_S f \cdot n \, dS = \iiint_V a^2 \, dV$ $where\, r = \emptyset a \, and \, a = \nabla\emptyset and \, \nabla^2\emptyset = 0.$

(OR)

b) Show that $\int_C (3x^2 - 8y^2)dx + (4y - 6xy)dy = 20$, where C is the boundary of the rectangular area enclosed by the lines x=0, x=1, y=0, y=2

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B.SC MATHS

SEMESTER III

NAME OF THE COURSE : Differential Equations and Applications (JMMA32)

1. a) Solve $(x^2 - yx^2)\frac{dy}{dx} + (y^2 + x^2y^2) = 0.$

(OR)

b) Solve $\frac{dy}{dx} = \frac{x+2y-3}{2x+y-3}$

2. a) Solve $(y + z)p + (z + x)q = x + y$

(OR)

b) Solve $p^2 + q^2 = npq$

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B.SC MATHS

SEMESTER III

NAME OF THE COURSE : Statistics I (JEMA31)

1. a) The first four moments of a distribution about $x = 4$ are $-1.5, 17, -30$ and 108. Find the first four moments (i) about mean (ii) about the origin (iii) about $x = 2$ (iv) Also calculate β_1 and β_2.

(OR)

b) Find the correlation coefficient for the following data.

x	10	12	18	24	23	27
y	13	18	12	25	30	10

2. a) Calculate the rank correlation coefficient for the following data.

x	33	56	50	65	44	38	44	50	15	26
y	50	35	70	25	35	58	75	60	55	26

(OR)

b) Fit a straight line to the following data regarding x as the independent variable.

x	0	1	2	3	4
y	1	1.8	3.3	4.5	6.3

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B.SC MATHS

SEMESTER III

NAME OF THE COURSE : Computational Mathematics (JSMA31)

1. a) Find the positive real root of $x \log_{10} x = 1.2$ using bisection method in four iterations.

(OR)

b) Find the negative root of $x^3 - 2x + 5 = 0$ correct to three places of decimals by the Newton – Raphson method

2. a) Solve the following system of equations by Gauss Jordan Method

$$5x - 2y + 3z = 18$$
$$x + 7y - 3z = -22$$
$$2x - y + 6z = 22$$

(OR)

b) Solve $\frac{\partial^2 u}{\partial^2 x^2} + \frac{\partial^2 u}{\partial y^2} = 0$ in $0 \le x \le 4; 0 \le y \le 4$ given that u(0,y) = 0;

u(4,y) = 8+2y; u(x,0) = $\frac{x^2}{2}$; u(x,4) = x^2 with $\Delta x = \Delta y = 1$

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B.SC MATHS

SEMESTER III

Mathematics for Competitive Examination – III (JNMA31)

1. a) (i) Find the square root of 1471369.

   (ii) Find the sum: $3 + \frac{1}{\sqrt{3}} + \frac{1}{3+\sqrt{3}} + \frac{1}{3-\sqrt{3}}$

(OR)

b) (i) A train travelling with constant speed crosses a 90 m long platform in 12 seconds and a 120 m long platform in 15 seconds. Find the length of the train and its speed.

(ii) The age of father 10 years ago was thrice the age of his son. 10 years hence father's age will be twice that of his son. Find the ratio of their present ages.

2. a) (i) A lawn is in the form of a rectangle having its sides in the ratio 2 : 3. The area of the lawn is 16 hectares. Find the length and breadth of the lawn.

(ii) If the diagonal of a square is decreased by 15%, find the percentage decrease in its area.

(OR)

b) (i) If each edge of a cube is increased by 50%, find the percentage increase in its surface area.

(ii) If the radius of a sphere is increased by 50%, find the increase percent in volume and the increase percent in the surface area.

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B.SC MATHS

SEMESTER III

ENVIRONMENTAL SCIENCE – JEVS31

1 .a. Discuss the various type of aquatic ecosystems? And why its important

பல்வேறு வகையான நீர்வாழ் சுற்றுச்சூழல் அமைப்பைப் பற்றி விவரிக்கவும்?அது ஏன் முக்கியமானது.

OR

b. Narrate the various source of air pollution and How does air pollution affect the human health?

காற்று மாசுபாட்டின் பல்வேறு ஆதாரங்களை விவரிக்கவும் மற்றும் காற்று மாசுபாடு மனித ஆரோக்கியத்தை எவ்வாறு பாதிக்கிறது?

2. a. What is acid rain? How is it caused? Explain the effect of acid rain on surface waters

அமிலமழைஎன்றால்என்ன? எப்படிஏற்படுகிறது?
மேற்பரப்புநீரில்அமிலமழையின்விளைவைவிளக்குக.

OR

b. What is biodiversity? Explain different types of biodiversity? And its conservation

பல்லுயிர்என்றால்என்ன? பல்வேறுவகையானபல்லுயிர்களைவிளக்குக? மற்றும் அதன் பாதுகாப்பு.