

# MANONMANIAM SUNDARANAR UNIVERSITY

DIRECTORATE OF DISTANCE AND CONTINUING EDUCATION

INTERNAL ASSIGNMENT

**B.Sc. Mathematics**

**SEMESTER – IV**

**தமிழும்அறிவியலும் (J1TL41)**

1. அ. அறிவியலில்மனிதவாழ்வுபெறுமிடத்தைக்கட்டுரைக்க.  
அல்லது  
ஆ. பழந்தமிழ்இலக்கியங்களில்உள்ளஅறிவியல்சிந்தனைகளைக்கட்டுரைக்க.
2. அ. சிற்றிலக்கியங்களில்உள்ளஅறிவியல்சிந்தனைகளைக்கட்டுரைவரைக.  
அல்லது  
ஆ. இணையத்தமிழ்கல்விக்கழகம்மற்றும்நூலகத்தின்செயல்பாட்டைவிவரிக்க

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## **B.Sc. Mathematics**

### **General English – IV (J2EN41)**

1. a) Discuss the challenges faced by Adeline Yen Mah in *Chinese Cinderella*.

**OR**

- b) Analyze the speech on *The Quality of Mercy* in *The Merchant of Venice*.

2. a) How does *Pride* by Dahlia Ravikovitch portray the hidden strength behind emotional vulnerability?

**OR**

- b) Write a Welcome Address speech on the occasion of a literary conference at your college.

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## B.Sc. Mathematics

### Sequence and Series-JMMA41

1.a)(i) Prove that a sequence cannot converge to two different limits.

(ii) Prove that any convergent sequence is a bounded sequence. (or)

b)(i) Show that  $\lim_{n \rightarrow \infty} (1 + \frac{1}{n})^n = \lim_{n \rightarrow \infty} (1 + \frac{1}{n} + \frac{1}{2!} + \dots + \frac{1}{n!}) = e$ .

(ii) Discuss the behaviour of the geometric sequence  $(r^n)$ .

2.a) State and prove Cauchy's second limit theorem.

(or)

b) Prove that any convergent sequence is a Cauchy sequence.

Prove that Cauchy's general principle of convergence

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**B.Sc. Mathematics**

## Fourier Series and Integral Transforms-JMMA42

1.a) Find the Fourier Series expansion of period  $2l$  for the function  $f(x) = (l-x)^2$  in the range  $(0, 2l)$ . Deduce the sum of the series  $\sum_{n=1}^{\infty} \frac{1}{n^2}$ .

(or)

b) Find the Fourier series expansion of  $f(x) = x^2 + x$  in  $(-2, 2)$ . Hence find the sum of the series  $1 + \frac{1}{2^2} + \frac{1}{3^2} + \dots + \infty = \frac{\pi^2}{6}$ .

2.a) Find the half-range cosine series of  $f(x) = \sin x$  in  $(0, \pi)$ .

(or)

b) (i) Find  $L^{-1} \left[ \frac{cs+d}{(s+a)^2+b^2} \right]$  (ii) Find  $L^{-1} \left[ \frac{s^2-s+2}{(s-3)(s+2)} \right]$

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## B.Sc. Mathematics

### Numerical Methods - JEMA41

1.a) Find the cubic polynomial which takes the following values:  $y(1) = 24, y(3) = 120,$

$y(5) = 336,$  and  $y(7) = 720$ . Hence, or otherwise, obtain the value of  $y(8)$ .

(or)

b) Calculate the first and second derivatives of the function tabulated in the preceding example at the point  $x = 2.2$  and also  $dy/dx$  at  $x = 2.0$ .

2.a) Explain the Milne's method.

(or)

b) Explain the Adams-Moulton Method.

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**B.Sc. Mathematics**

## **OFFICE AUTOMATION -JNMA41**

1.a) Briefly explain the use of Formatting toolbar in Word. (or)

b) Briefly explain how would you search a particular character in the document and replace it with another.

2.a) Briefly explain the Mail Merge.

(or)

b) Explain different ways to view slides in PowerPoint.

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**B.Sc. Mathematics**

**GeoGebra -JSMA41**

1.a) What is GeoGebra and how does it work?

(or)

b) Construct the rectangle and equilateral triangle.

2.a) Explain the resizing and reflecting a picture.

(or)

b) Explain the exporting a dynamic worksheet to a web page for advanced users.

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**ValueBasedEducation-JVBE41**

1. a) Analyze the women rights in India.  
(or)  
b) Explain the concept and types of child abuse.
  
2. a) Examine the causes and effect so falcoholism and drug addiction.  
(or)  
b) Discuss the role of being a good civilian.