

No. of Printed Pages : 03

Roll No.

AA-606

M. Tech. EXAMINATION, May 2018

(First Semester)

(B. Scheme) (Re-appear Only)

(ESEM/RE)

ESEM115B

REMEDIAL MATHEMATICS AND
REMEDIAL ENVIRONMENTAL SCIENCE

Time : 3 Hours]

[*Maximum Marks : 75*

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

(2-12/10) M-AA-606

P.T.O.

Unit I

1. Define biosphere and its evolution in detail. **15**
2. Write short notes on the following :
 - (i) Communities Properties
 - (ii) Species Interaction. **15**

Unit II

3. Name the few fungi and actinomycetes which are important for humans. Discuss their importance in our daily life. **15**
4. Write short notes on any *two* of the following :
 - (i) Microbial diversity
 - (ii) Classification of animals
 - (iii) Diversity of life-forms. **15**

Unit III

5. (a) If $x = 4z^2 + 5$, $y = 6z^2 + 7z + 3$, find $\frac{d^2y}{dx^2}$. **8**

(b) If $y = (x^2 + 1)^2 \sqrt{2x - 5}$; find $\frac{dy}{dx}$. **7**

6. Prove that : **15**

$$\begin{pmatrix} a+b+2c & a & b \\ c & b+c+2a & b \\ c & a & c+a+2b \end{pmatrix} = 2(a+b+c)^3$$

Unit IV

7. For the vector, $a = 2i + j + k$ and $b = i + j + 2k$. Obtain :
 - (i) The vector product $a \times b$
 - (ii) The area of the parallelogram formed by the two vectors a and b . **15**
8. Solve the following system of homogeneous equations : **15**

$$3x + 2y + 7z = 0$$

$$3x - 3y - 2z = 0$$

$$5x + 9y + 23z = 0$$