

# 12/128-BE

**B. Tech. (First Semester) Examination, 2012**

**Paper - EAS-104/EAS-204**

**(Professional Communication)**

*Time : Three Hours]*

*[Maximum Marks : 100*

*Note :* Attempt all Sections as per instructions.

## ***Section-A***

Attempt *all* parts.

1. (a) Give the synonyms of the following words : 5
  - (i) Esteem
  - (ii) Prevent
  - (iii) Rage
  - (iv) Savage
  - (v) Yield.
- (b) Give the antonyms of the following words : 5
  - (i) Adversity
  - (ii) Innocent
  - (iii) Shallow
  - (iv) Illusion
  - (v) Reveal.

(2)

(c) Give meaning of any five of the following homophones and use them in sentences of your own : 10

- (i) Ark, Arc
- (ii) Assent, Ascent
- (iii) Bough, Bow
- (iv) Pain, Pane
- (v) Marshal, Martial
- (vi) Soar, Sore
- (vii) Nay, Neigh.

### Section-B

Attempt *all* questions. Give answer of each question in about 150-200 words. 10×5

2. What is technical communication ? How technical communication is different from general communication ?

Or

What are different levels of communication ? Discuss the organizational level of communication.

3. What is a paragraph ? Discuss various methods for developing a paragraph.



Or

What are the requisites of good sentence writing?

4. What is a claim letter? As the librarian of your college write a letter claiming compensation for 50 books arrived in a damaged condition. Or as an alternative demand replacement at the publisher cost.

Or

What is a report? Discuss the various features of the style of a report.

5. Comment on body language as a presentation strategy.

Or

How can nuances of voice dynamics help the speaker to make his oral presentations impressive?

6. What are the different approaches to human activity as laid down by Moody E. Prior in the essay 'Humanistic and scientific approaches to human activity.' Illustrate.

Or

The purity of scientific language is not the same as the purity of literary language. Comment in the light of A. Huxley's essay 'The Language of Literature & Science'.

(4)

**Section-C**

Attempt any *two* questions. Give answer of each question in about 500 – 700 words. 15×2

7. What are different barriers to communication ? Discuss.
8. What is a proposal ? Write a technical proposal for building an auditorium in the premises. Invent necessary details along with cost estimate.
9. Discuss briefly the principles of writing effective letters.
10. What are the paralinguistic features of presentation strategies ? How could articulation be improved by voice modulation ?
11. What is the thrust of Bronowski's argument throughout the paragraphs ?

**D**

**B. Tech. (C)**

Time : Th

Note :



**12/451-BT**

**B. Tech. (First Semester) Examination, 2012**

**Paper-EAS-163**

**(Mathematics-I)**

*Time : Three Hours]*

*[Maximum Marks : 100*

*Note :* Attempt all Sections as per instructions.

**Section-A**

Attempt *all* parts. Give answer of each part in about 50 words.  $2 \times 10 = 20$

1. (i) Evaluate :

$$D^n [\sin(ax+b)].$$

(ii) Define homogeneous function. How to check the function be homogeneous or not ?

(iii) Define stationary and extreme points of the function  $f(x, y)$ .

(2)

- (iv) Define rank of the matrix  $A = [a_{ij}]_{m \times n}$ .
- (v) Write the condition for a system of  $n$  equation in  $n$  unknowns to have a unique infinite solution and no solution.
- (vi) Define eigenvalue and eigenvector of the matrix  $A = [a_{ij}]_{m \times n}$ .
- (vii) How to change the order of integration?

$$\int_a^b \int_{f_1(x)}^{f_2(x)} \phi(x, y) dx dy.$$

- (viii) Define Beta and Gamma function.
- (ix) Define line integral of the vector calculus.
- (x) State the Gauss divergence theorem of the vector calculus.

### Section-B

Attempt *all* questions. Give answer of each question in about 200 words.

10×5=50

2. If  $y^{1/m} + y^{-1/m} = 2x$ , prove that :

$$(x^2 - 1)y_{n+2} + (2n+1)xy_{n+1} + (n^2 - m^2)y_n = 0.$$

Or

Expand  $e^x \sin y$  in powers of  $x$  and  $y$  as far as terms of third degree.



3. Prove that :

$$\frac{\partial(u,v)}{\partial(x,y)} = \frac{\partial(u,v)}{\partial(r,s)} \cdot \frac{\partial(r,s)}{\partial(x,y)},$$

where  $u, v$  are functions of  $r, s$  and  $r, s$  are functions of  $x, y$ .

Or

Use elementary row or column operations to find the rank of the matrix :

$$A = \begin{bmatrix} 1 & 2 & -1 & 3 \\ 4 & 1 & 2 & 1 \\ 3 & -1 & 1 & 2 \\ 1 & 2 & 0 & 1 \end{bmatrix}.$$

4. Investigate the values of the  $\lambda$  and  $\mu$  so that the system :

$$2x + 3y + 5z = 9$$

$$7x + 3y - 2z = 8$$

$$2x + 3y + \lambda z = \mu$$

has (i), unique solution (ii) no solution and (iii) an infinite number of solution.

(4)

Or

Verify Cayley-Hamilton theorem for the matrix :

$$A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}.$$

Hence find  $A^{-1}$ .

5. To prove that :

$$\Gamma_m \left[ \left( m + \frac{1}{2} \right) \right] = \frac{\sqrt{\pi}}{2^{2m-1}} \Gamma_{2m} \quad m > 0.$$

Or

Change the order of integration in the integral :

$$\int_0^{a \cos \alpha} \int_{x \tan \alpha}^{\sqrt{a^2 - x^2}} f(x, y) dy dx.$$

6. Find the constants  $a$  and  $b$  so that the surface  $ax^2 - byz = (a+z)x$  will be orthogonal to the surface  $4x^2 + z^3 = 4$  at the point  $(1, -1, 2)$ .



Or

State and prove Green's theorem in plane curve.

### Section-C

Attempt any *two* questions. Give answer of each question in about 500 words.  $15 \times 2 = 30$

7. Trace the curve :

$$x^3 + y^3 = 3axy.$$

8. Find the point upon the plane  $ax + by + cz = p$  at which the function  $\phi = x^2 + y^2 + z^2$  has a minimum value and find this minimum  $\phi$ .

9. A square matrix  $A$  is defined by :

$$A = \begin{bmatrix} -1 & 2 & -2 \\ 1 & 2 & 1 \\ -1 & -1 & 0 \end{bmatrix}.$$

Find the modal matrix  $P$  and the resulting diagonal matrix  $D$  of  $A$ .

(6)

10. If the variables  $x, y, z$  are all positive such that  $h_1 \leq x+y+z \leq h_2$ , then prove that the triple integral :

$$\iiint f(x+y+z) x^{l-1} y^{m-1} z^{n-1} dx dy dz =$$

$$\frac{\Gamma(l) \Gamma(m) \Gamma(n)}{\Gamma(l+m+n)} \int_{h_1}^{h_2} f(u) u^{l+m+n-1} du.$$

11. Verify Stoke's theorem for a vector field defined by  $F = (x^2 - y^2)i + 2xyj$  in the rectangular region in  $z=0$ , plane bounded by the lines  $x=0, x=a, y=0$  and  $y=b$ .

Time : T

Note