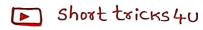
#### MATHS-6B

# SEMESTER-5

#### LONGS



### \* UNIT-1 %-



- 1) Evaluate II xy (x+y) dx dy over the area between y=x2, y=x [Pg.NO.2] 4a 2Jax
- 2 Change the order of integration and evaluate Is dxdy.

  Answer > [Pg.NO.29]
- 3 Change into the polar Co-ordinates and evaluate a pra-x = -(x+42) dx dy. Ans->[Pg.NO.30]
- a Evaluate of y dx dy (Ams -> Pg.NO.14)

### \* UNIT-2 %-

- To Evaluate SSS xyz dx dydz over the positive Octant of the Sphere x4y72=a2.
- 2) find the Volume bounded by the ellipse Parabolids  $2 = \chi^{2} + 3y^{2}$  and  $2 = 8 - \chi^{2} - y^{2}$ .
- 3 Using cylindrical Co-ordinates, find the volume of 9581234096 the Sphere x+y+2 = ar.

-: <u>3--114U.</u>

Tf a = x+y+z, b = x+y+2, c = xy+y2+2x. Jhen P.T. [grad a grad b grad c] = 0 [pg.No.3]

2 Find the Directional desirative of the function xy + y 2 + 2x along the tangent to the Curve x = t, y=t", 2=t3 at (1/11). [Pg. NO. 5]

3 find dirf and Curif where f = grad (x+y+2-3xy2)

(y) P.T. grad (A·B) = (B.V) A + (A·V)B + Bx Curl A + Axcurl B

Evaluate  $\oint F. ds$  where  $f = 3x^{\gamma}i + (2xz-y)j + 2k$  along the Straight line c' from (0,0,0) to (2,1,3). [Pg. NO. 3]

② If  $F = (x^2 + y^2)^{\frac{1}{2}} - 2xy^{\frac{1}{2}}$ . Evaluate  $\int_{C} F \cdot dr$  where the Curve c is the rectangle in the my plane bounded by y=0, y=b, x=0, x=a. [Pg.No.4]

3 Evaluate & F.N ds where  $f = 2i - 3y^2 + x$  and s'isthe Surface xity=16 included in the first Octant between 2=0 and 2=5. (Pg.NO.6) 9581234096

- Evaluate I f. N ds where f = 182i 12j + 3yK and S' is the part of the plane 2x + 3y + 6z = 12 located in the first Octant. [Pg. NO. 8]
- If  $f = 2x \neq i xj + y \neq K$ . Evaluate  $\int F dv$  where, v = 1 is the region bounded by the Surfaces x = 0, x = 2  $y = 0, y = 6, 2 = x^2, 2 = 4$ . [Pg. NO.1]

### \*UNIT-5

- State and Prove Gauss divergence theorem. [Pg.NO.3]
- 2) State and Prove Green's theorem in a plane. [Pg.NO.7]
- State and Power Stokes Theosem. [Pg.No.10]
- (y) Verify Gauss Divergence theosem to evaluate  $\int ((x^3 y^2)^{\frac{1}{2}} 2x^2y^{\frac{1}{2}} + \frac{1}{2}K) \cdot N \, ds \text{ over the Surface}$ S

  Cube bounded by the Co-ordinate planes
  of a Cube bounded by the Co-ordinate planes  $7 = y = 2 = a. \quad (p_{3.16})$

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## SHORTS

Evaluate 
$$\int_{0}^{2} \int_{0}^{x+y} e^{x+y} dy dx$$
 [Pg.NO.1]

Evaluate: 
$$\int_{R} \frac{dx}{(1+x^2)(1+y^2)}$$
 over  $(0,1:0,1)$ 

(ii) 
$$\int_{0}^{3} \int_{0}^{6} (x^{\gamma}+y^{2}) dx dy$$
(iii)  $\int_{0}^{3} \int_{0}^{6} (x^{\gamma}+3y^{2}) dx dy$ 
(Fg.No.16)

# \* UNIT-2 %

### #UNIT-3 ;

- Tf  $A = 5t^2i + t^3j t^3k$  and  $B = sint^3 cost^3j$ i, d/dt (A·B) ii, d/dt (AxB) iii, d/dt (A·A) [Pg.NO.14]
- Tf  $\phi = 2\pi z^4 x^2y$  find the value of  $\left|\frac{\partial \phi}{\partial x} + \frac{\partial \phi}{\partial y} + \frac{\partial \phi}{\partial z} \right|$ at (2,-2,1). [Pg. NO.15]
- 3 S.T. 34427 + 4x327 j-32 y k is Solenoidal [Fg. NO.17]

### \* UNIT-4:-

- Find & f.dr where  $f = xy^{\frac{1}{2}} + y + \frac{1}{2}x^{\frac{1}{2}} + 2x^{\frac{1}{2}}$  and the Curve c is  $\bar{\mathfrak{I}}=\mathsf{ti}+\mathsf{t'j}+\mathsf{t}^3\bar{\mathsf{K}}$ ,  $\mathsf{t'}$  Varying from -1 to 1.[Rg.14]
- 2) If F = (3x + 6y) = 14y = j + 20x = F. dr along the lines from (0,0,0) to (1,0,0) then to (1,1,0) to (1,1,1). (pg.16)
- 3) If F= 3xyi-yrj evaluate Sf.dr where C is the Curve y= 222 in xy plane from (0,0) to (1,2) (Pg.17)

### \* UNIT-5:

- S.T. S(axi+byj+czk). Nds =  $\frac{4\pi}{3}$  (a+b+c) where s' is the Surface of the Sphere x+y+=1. [Pg.NO.26]
- 2) Compute of (ax+by+c22) ds Over the Sphere xx+y+2=1
- 3 Evaluate & (Cosxsiny-xy) dx + (Sinxcosy) dy by Green's theorem, c'is the Circle x+y=1. (Ps.29)