RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES,BASAR

(A.Y.2021-2022)

Subject:DE and VC Exam:E1S2(all except EE)MT-II

DATE:1-10-2022 ID No: Duration:60 Min

Subject code:MA1201 Max Marks:30

SECTION-A

Answer all the questions.Each carries two marks 10 x 2= 20

Note: Write the amswers in orderly at one place

1.The general solution of the differential equation$(D^3 - 3D - 2)y = 0$ is ...

A.$y(x)=(c_1 + c_2x)e^{-x} + c_3e^{2x}$ B.$y(x)=(c_1 + c_2x)e^{-2x} + c_3e^{-x}$
C.$y(x)=(c_1 + c_2x)e^{x} + c_3e^{2x}$ D.$y(x)=(c_1 + c_2x)e^{x} + c_3e^{-2x}$

2.The general solution of differential equation $4x^2y^{ll} + y = 0$ is ...

A.$y(x)=(c_1 + c_2lnx)x^{-1/2}, x > 0$ B.$y(x)=(c_1 + c_2x)e^{x/2}, x > 0$
C.$y(x)=(c_1 + c_2x)e^{x/2}, x > 0$ D.$y(x)=(c_1 + c_2lnx)x^{1/2}, x > 0$

3.The particular Integral of $y^{ll} + y = 6sinx$ is ...

A.$y_p = 3xcosx$ B.$y_p = -3xcosx$ C.$y_p = -3xsinx$ D.$y_p = 3xsinx$

4.By changing the order of integration,the integral $\int_{-a}^{a}\int_{0}^{\sqrt{a^2-y^2}} f(x,y)dxdy$ transformed to ...

A.$\int_{-a}^{a}\int_{-\sqrt{a^2-x^2}}^{\sqrt{a^2-x^2}} f(x,y)dydx$ B.$\int_{0}^{a}\int_{0}^{\sqrt{a^2-x^2}} f(x,y)dydx$
C.$\int_{0}^{a}\int_{-\sqrt{a^2-x^2}}^{\sqrt{a^2-x^2}} f(x,y)dydx$ D.$\int_{-a}^{a}\int_{0}^{\sqrt{a^2-x^2}} f(x,y)dydx$

5.The value of the integral $\int\int_R x^2dxdy$ over the region R bounded by the hyperbola $xy=4,y=0.x=1,x=4$ is...

A.-16/3 B.16/3 C.-30 D.30

6.The value of the integral$\int\int\int(x+y+z)dzdydx$ over the volume bounded by the planes $x=0,x=1,y=0,y=1,z=0,z=1$ is...

A.$\frac{5}{2}$ B.$\frac{3}{2}$ C.$\frac{-3}{2}$ D.$\frac{-5}{2}$

7.The gradient of a scalar point function $ln(x+y+z)$ at (1,2,-1)is...
A.$\frac{i+j+k}{2}$ B.$\frac{i-j+k}{2}$ C.$\frac{i-j-k}{2}$ D.$\frac{-i-j-k}{2}$

8.The value of the integral $\int\int\frac{1}{xy}dxdy$,over the region bounded by 1≤x≤2,1≤y≤2 is...

A.$log2^2$ B.$2log2$ C.$log4$ D.$(log2)^2$

9.If $f(x\ ,\ y\ ,\ z)=xsin(x\ +\ y\ +\ z)$,then $Curl(gradf)$ is...
A.0 B.$\bar{0}$ C.1 D.-1

10.If $f(x,y,z)=x^2-y^2$, C is the closed curve $x=3cost, y=3sint,\ 0\leq t\leq 2\pi$ then $\int_C f(x,y,z)ds=...$
A.$\frac{2}{3}$ B.$\frac{-2}{3}$ C. 0 D.$\frac{5}{3}$

SECTION-B

Answer any two of the following questions. 2 x 5 =10

11. [2+3]

(a)Find the equation of the tangent plane to the surface $z=16-x^2-y^2$ at (1,3,6).

(b)Find the directional derivative of xyz at (1,4,3) in the direction of the line from (1,2,3) to (1,-1,-3).

12. [2+3]

(a)Find the particular Integral of $(D^3+1)y=cos(2x-1)$

(b)Solve $y^{ll}+16y=32sec2x$ by the method of variation of parameters

13. [5]

Find the volume of the solid in the fifrst octant bounded by the paraboloid $z=36-4x^2-9y^2$

14. [2+3]

(a)Evaluate the integral $\int\int_R e^{x^2}dxdy$,where R is the region given by R $=[(x,y):2y\leq x\leq 2, 0\leq y\leq 1]$

(b)Evaluate $\int\int r^3drd\theta$ over the area included between the circles $r=2sin\theta$ and $r=4sin\theta$.

End os the MT Question paper