Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore-641 043

Bachelor's Degree Examination April - 2019

Semester II

Class : I UG **Time : 3 hours**

Major: Physics **Max Marks: 100**

18BPH102-DSE II – Mathematics II

Part-A(10x1=10)

Answer All Questions

1. $\int_1^2 \int_1^5 xydxdy =$ _____

a. 63 b. 4/63 c.63/4 d. 1 63/4

2. The area of cardiod is _____

a. $\frac{3\pi}{a^2}$ b. $\frac{3}{a^2}$ c. $\frac{\pi}{a^2}$ d. $\frac{32\pi}{a^2}$

3. A function f(x) is said to be periodic if and only if f(x+p) =_____

a. f(x) b. f(-x) c. f(p) d. f(-p)

4. If f(-x) = f(x) for all x then f(x) is _____

a. odd b. even c. odd and even d. 0

5. The y= Px+f(p) is known as _____ equation.

a. Clairuts b. Lagrange c. Linear d. none

6. The solution of P=log(px-y) is

a. y=cx b.y =cx-e^x c. e^c d. y=cx-e+c

7. L(e^{-at}) =

a. $\frac{1}{s-a}$ b. $1/(s+a)$ $c)1/(2s-a)$ $d)1/(s-at)$

8. L(t^2) =

a. $\frac{2}{s^3}$ b. $\frac{s}{a}$ c. $\frac{3}{s^3}$ d. $\frac{1}{s^3}$

9. $L^{-1}\left[\frac{1}{S+a}\right]$ =

a. e^{at} b. e^{-at} c. e^{a2t} d. none

10. $\frac{4}{5}$ $L^{-1}\left[\frac{1}{P+2}\right]$ =

a. $\frac{4}{5}$ e^{pt} b. $\frac{4}{5}\ e-pt$ c. 4/5 $d)\ o$

PART-B **5x6 =30**

Answer All Questions

11.a)Evaluate $\iiint_v xyz\,dxdydz$ over the positive octant of the sphere $x^2+y^2+z^2=a^2$

(or)

11. b) Evaluate $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}\int_0^{2\cos\theta} r^2\,d\theta dr$

12.a) Write the properties of Even and odd Function

(or)

12.b) Find fourier series of f(x) =x in $(0, 2\pi)$ of periodicity 2π

13.a) solve $D^2-6D+8=0$

(or)

13.b) solve $\sqrt{1+p^2}\,x+p = a\sqrt{1+p^2}$

14.a) Find the Laplace transform of $Sin^2 5t$ and $\cos^2 6t$

(or)

14. b) Prove L(Sinhat) = a/s^2-a^2 and L(Coshat) = S/s^2-a^2

15.a) Find $L^{-1}[1/s(s-1)(s-2)]$

(or)

15.b) Find $L^{-1}[2s+3/(s+2)^2+5]$

PART-C **5x12=60**

Answer All Questions

16.a) Evaluate $\iint xy\,dxdy$ over the positive quadrant of the ellipse $x^2/a^2+y^2/b^2=1$

(OR)

16.b) Evaluate $\iiint_v xyz\,dxdydz$ over the positive octant of the sphere $x^2+y^2+z^2=a^2$

17.a) Expand f(x) = ½ $(\pi - x)$ in $(0, 2\pi)$ as a fourier series of periodicity 2π

(OR)

17.b) Find the fourier series of periodicity 2π for f(x) = 0 for $-\pi < x < 0$ or

π for $0 < x < \pi$

18.a) Solve $y+px = p^2x^4$

(OR)

18.b) Solve $x^2(y-px) = yp^2$

19.a) Find i) $L[e^{-t}\sin t\cos t]$ ii) $L[\cos^3 5t]$

(OR)

19.b) Find i) $L[1-\cos t/t^2]$ ii) L[sinhat/t]

20.a) Evaluate $L^{-1}[3s^2+16s+26/s(s^2+4s+13)]$

(OR)

20.b)Find $L-[1/s(s^2+9)]$ and $L-1[1/s^2(s^2+9)]$

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