G.PULLAIAH COLLEGE OF ENGINEERING & TECHNOLOGY

B. Tech I Year-I Semester (R15) II MID EXAMINATIONS.NOV/2016

MATHEMATICS-I (Common to ALL) **SETNO-1**

Time: 20 Min **Marks: 10**

Roll no: **Signature of Invigilator:**

ANSWER ALL QUESTIONS

1.The radius of curvature of any point on the curve $y = c.\cosh\left(\frac{x}{c}\right)$ is [ ]

a)c.$\cosh^2\left(\frac{x}{c}\right)$ b)$\frac{1}{C}$.$\sinh^2\left(\frac{x}{c}\right)$ c)$c.\tanh^2\left(\frac{x}{c}\right)$ d)none

2. Radius of curvature of the curve $x = a\theta$ at (r,θ) is [ ]

a)$\frac{r^2+a^2}{r^2+2a^2}$ b)$\frac{(r^2+a^2)^{1/2}}{2(r^2+a^2)}$ c)$\frac{(r^2+a^2)^{3/2}}{r^2+a^2}$ d)none

3.$\int_0^1\int_0^1\int_0^1 e^{x+y+z}\,dx\,dy\,dz$ [ ]

a)$(e-1)^2$ b) $(e-1)$ c) $(e-1)^3$ d)none

4.The limits of integration of $\iint(x^2+y^2)\,dx\,dy$ over the domain bounded by $y = x^2$ and $y^2 = x$ are [ ]

a)$x = 0$ to $1, y = \sqrt{x}$ to x^2 b) $x = 0$ to $1, y = 0$ to 1

c)$x = y^2$ to $\sqrt{y}, y = 0$ to 1 d)none

5.$\int_0^1\int_0^2\int_1^2 x^2\,yz\,dz\,dy\,dx =$ [ ]

a)$1/2$ b)$1/4$ c)1 d)$3/2$

6.$\iint r^3\,dr\,d\theta$ over the region included between the circles $r = 2\sin\theta$ and $r = 4\sin\theta$ is [ ]

a)$\int_0^{\Pi}\int_{2\sin\theta}^{4\sin\theta} r^3\,dr\,d\theta$ b)$\int_0^{\Pi/2}\int_{2\sin\theta}^{4\sin\theta} r^3\,dr\,d\theta$

c)$\int_{-\Pi}^{\Pi}\int_{2\sin\theta}^{4\sin\theta} r^3\,dr\,d\theta$ d)none

7.$\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}\,dx\,dy =$ [ ]

a)$\frac{\Pi}{4}$ b) $\frac{\Pi}{2}$ c)0 d) $\frac{\Pi}{6}$

8.On converting into polar coordinates,$\int_0^a\int_0^{\sqrt{a^2-x^2}}(x^2+y^2)\,dy\,dx =$ [ ]

a) $\int_0^a\int_0^{\Pi/2} r^2\,dr\,d\theta$ b)$\int_0^a\int_0^{\Pi/2} r^3\,dr\,d\theta$ c)$\int_0^a\int_0^{\Pi/4} r^3\,dr\,d\theta$ d) $\int_0^a\int_0^{\Pi/4} r^2\,dr\,d\theta$

9.In polar coordinates $\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}\,dx\,dy =$ [ ]

a)$\int_0^{\Pi/2}\int_0^\infty e^{-r^2}\,dr\,d\theta$ b)$\int_0^{\Pi/4}\int_0^\infty e^{-r}\,r\,dr\,d\theta$ c)$\int_0^{\Pi/2}\int_0^\infty e^{-r^2}\,r\,dr\,d\theta$ d)$\int_0^{\Pi/2}\int_0^\infty e^{-r}\,dr\,d\theta$

10. $\int_0^1\int_0^1\int_0^1 x\,yz\;dx\,dy\,dz =$ [ ]

a)$\frac{1}{3}$ b)$\frac{1}{5}$ c)$\frac{1}{8}$ d)$\frac{1}{12}$

11.$\nabla(\log r) =$

a)$\frac{\bar{r}}{r}$ b)$\frac{\bar{r}}{r^2}$ c)$\frac{2\bar{r}}{r}$ d)$\bar{r}$ [ ]

12.The directional derivatives of $\emptyset(x,y,z) = xy + yz$ at $P = (1,1,0)$ in the $direction$ of $\bar{e} = \bar{\imath} - 3\bar{\jmath}$+5$\bar{k}$ is [ ]

a) $\frac{1}{\sqrt{35}}$ b)$\frac{2}{\sqrt{35}}$ c) $\frac{3}{\sqrt{35}}$ d) $\frac{4}{\sqrt{35}}$

13.$\nabla^2\left(\frac{1}{r}\right) =$ [ ]

a)$\frac{-1}{r^2}$ b) $\frac{1}{r^2}$ c)1 d)0

14.If $\bar{F}$ =$(2+y)\bar{\imath}$ $+ax\bar{\jmath}$ $+2z\bar{k}$ is irrotational is [ ]

a)1 b)2 c)3 d)

15.If $\bar{f}(x,y,z)$=$xy^2\bar{\imath}$ + $2x^2y\bar{\jmath}$ -$3ayz\bar{k}$ at $(1,1,1)$ is solinoidal then a = [ ]

a)0 b)2 c)1 d)-1

FILL IN THE BLANKS

16.Gauss theorem states that ---

17.Stoke's theorem states that ---

18.Write the Line integral formula ---

19.Greens theorem states that ---

20.Write the surface integral formula ---

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B. Tech I Year-I Semester (R15) II MID EXAMINATIONS.NOV/2016

MATHEMATICS-I (Common to ALL) **SETNO-2**

Time: 20 Min **Marks: 10**

Roll no: **Signature of Invigilator:**

ANSWER ALL QUESTIONS

1.$\nabla(\log r) =$

a)$\frac{\bar{r}}{r}$ b)$\frac{\bar{r}}{r^2}$ c)$\frac{2\bar{r}}{r}$ d)$\bar{r}$ [ ]

2.The directional derivatives of $\emptyset(x,y,z) = xy + yz \; at \; P = (1,1,0) \; in \; the \; direction$ of $\bar{e} = \bar{\imath} - 3\bar{\jmath}$+5$\bar{k}$ is [ ]

a) $\frac{1}{\sqrt{35}}$ b)$\frac{2}{\sqrt{35}}$ c) $\frac{3}{\sqrt{35}}$ d) $\frac{4}{\sqrt{35}}$

3.$\nabla^2\left(\frac{1}{r}\right) =$ [ ]

a)$\frac{-1}{r^2}$ b) $\frac{1}{r^2}$ c)1 d)0

4.If $\bar{F}$ =$(2+y)\bar{\imath}$ +$ax\bar{\jmath}$ +2$z\bar{k}$ is irrotational is [ ]

a)1 b)2 c)3 d)

5.If $\bar{f}(x,y,z)$=$xy^2\bar{\imath}$+ $2x^2y\bar{\jmath}$ -3$ayz\bar{k}$ at $(1,1,1)$ is solinoidal then a = [ ]

a)0 b)2 c)1 d)-1

6.The radius of curvature of any point on the curve $y = c.\cos h\left(\frac{x}{c}\right) \; is$ [ ]

a)c.$\cos h^2\left(\frac{x}{c}\right)$ b)$\frac{1}{C}$.$\sin h^2\left(\frac{x}{c}\right)$ c)$c.\tan h^2\left(\frac{x}{c}\right)$ d)none

7. Radius of curvature of the curve $x = a\theta$ at $(r,\theta) \; is$ [ ]

a)$\frac{r^2+a^2}{r^2+2a^2}$ b)$\frac{(r^2+a^2)^{1/2}}{2(r^2+a^2)}$ c)$\frac{(r^2+a^2)^{3/2}}{r^2+a^2}$ d)none

8.$\int_0^1\int_0^1\int_0^1 e^{x+y+z}\,dx\,dy\,dz$ [ ]

a)$(e-1)^2$ b) $(e-1)$ c) $(e-1)^3$ d)none

9.The limits of integration of $\iint(x^2+y^2)\,dx\,dy$ over the domain bounded by $y = x^2 \; and \; y^2 = x \; are$ [ ]

a)$x = 0 \; to \; 1, y = \sqrt{x} \; to \; x^2$ b) $x = 0 \; to \; 1, y = 0 \; to \; 1$

c)$x = y^2 \; to \; \sqrt{y}, y = 0 \; to \; 1$ d)none

10.$\int_0^1\int_0^2\int_1^2 x^2\,yz\,dz\,dy\,dx =$ [ ]

a)$1/2$ b)$1/4$ c)1 d)$3/2$

11.$\iint r^3\,dr\,d\theta$ over the region included between the circles $r = 2\sin\theta$ and $r = 4\sin\theta \; is$ [ ]

a)$\int_0^{\Pi}\int_{2\sin\theta}^{4\sin\theta} r^3\,dr\,d\theta$ b)$\int_0^{\Pi/2}\int_{2\sin\theta}^{4\sin\theta} r^3\,dr\,d\theta$

c)$\int_{-\Pi}^{\Pi}\int_{2\sin\theta}^{4\sin\theta} r^3\,dr\,d\theta$ d)none

12.$\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}\,dx\,dy =$ [ ]

a)$\frac{\Pi}{4}$ b) $\frac{\Pi}{2}$ c)0 d) $\frac{\Pi}{6}$

13. On converting into polar coordinates,$\int_0^a\int_0^{\sqrt{a^2-x^2}}(x^2+y^2)\,dy\,dx =$ [ ]

a) $\int_0^a\int_0^{\Pi/2} r^2\,dr\,d\theta$ b)$\int_0^a\int_0^{\Pi/2} r^3\,dr\,d\theta$ c)$\int_0^a\int_0^{\Pi/4} r^3\,dr\,d\theta$ d) $\int_0^a\int_0^{\Pi/4} r^2\,dr\,d\theta$

14.In polar coordinates $\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}\,dx\,dy =$ [ ]

a)$\int_0^{\Pi/2}\int_0^\infty e^{-r^2}\,dr\,d\theta$ b)$\int_0^{\Pi/4}\int_0^\infty e^{-r}\,r\,dr\,d\theta$ c)$\int_0^{\Pi/2}\int_0^\infty e^{-r^2}\,r\,dr\,d\theta$ d)$\int_0^{\Pi/2}\int_0^\infty e^{-r}\,dr\,d\theta$

15. $\int_0^1\int_0^1\int_0^1 x\,yz\;dx\,dy\,dz =$ [ ]

a)$\frac{1}{3}$ b)$\frac{1}{5}$ c)$\frac{1}{8}$ d)$\frac{1}{12}$

FILL IN THE BLANKS

16.Greens theorem states that --

17.Write the surface integral formula ---

18.Gauss theorem states that ---

19.Stoke's theorem states that ---

20.Write the Line integral formula ---

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B. Tech I Year-I Semester (R15) II MID EXAMINATIONS.Nov/2016

MATHEMATICS-I (Common to ALL) **SETNO-3**

Time: 20 Min **Marks: 10**

Roll no: **Signature of Invigilator:**

ANSWER ALL QUESTIONS

1.$\iint r^3\, dr\, d\theta$ over the region included between the circles $r = 2\sin\theta$ and $r = 4\sin\theta$ is [ ]

a)$\int_0^{\Pi}\int_{2\sin\theta}^{4\sin\theta} r^3\, dr\, d\theta$ b)$\int_0^{\Pi/2}\int_{2\sin\theta}^{4\sin\theta} r^3\, dr\, d\theta$ c)$\int_{-\Pi}^{\Pi}\int_{2\sin\theta}^{4\sin\theta} r^3\, dr\, d\theta$ d)none

2.$\int_0^{\infty}\int_0^{\infty} e^{-(x^2+y^2)}\, dx\, dy =$ [ ]

a)$\frac{\Pi}{4}$ b) $\frac{\Pi}{2}$ c)0 d) $\frac{\Pi}{6}$

3.On converting into polar coordinates,$\int_0^a\int_0^{\sqrt{a^2-x^2}}(x^2+y^2)\, dy\, dx =$ [ ]

a) $\int_0^a\int_0^{\Pi/2} r^2\, dr\, d\theta$ b)$\int_0^a\int_0^{\Pi/2} r^3\, dr\, d\theta$ c)$\int_0^a\int_0^{\Pi/4} r^3\, dr\, d\theta$ d) $\int_0^a\int_0^{\Pi/4} r^2\, dr\, d\theta$

4.In polar coordinates $\int_0^{\infty}\int_0^{\infty} e^{-(x^2+y^2)}\, dx\, dy =$ [ ]

a)$\int_0^{\Pi/2}\int_0^{\infty} e^{-r^2}\, dr\, d\theta$ b)$\int_0^{\Pi/4}\int_0^{\infty} e^{-r}\, r\, dr\, d\theta$ c)$\int_0^{\Pi/2}\int_0^{\infty} e^{-r^2}\, r\, dr\, d\theta$ d)$\int_0^{\Pi/2}\int_0^{\infty} e^{-r}\, dr\, d\theta$

5. $\int_0^1\int_0^1\int_0^1 x\,yz\, dx\, dy\, dz =$ [ ]

a)$\frac{1}{3}$ b)$\frac{1}{5}$ c)$\frac{1}{8}$ d)$\frac{1}{12}$

6.The radius of curvature of any point on the curve $y = c.\cos h\left(\frac{x}{c}\right)$ is [ ]

a)c.$\cos h^2\left(\frac{x}{c}\right)$ b)$\frac{1}{C}$.$\sin h^2\left(\frac{x}{c}\right)$ c)$c.\tan h^2\left(\frac{x}{c}\right)$ d)none

7. Radius of curvature of the curve $x = a\theta$ at (r,θ) is [ ]

a)$\frac{r^2+a^2}{r^2+2a^2}$ b)$\frac{(r^2+a^2)^{1/2}}{2(r^2+a^2)}$ c)$\frac{(r^2+a^2)^{3/2}}{r^2+a^2}$ d)none

8.$\int_0^1\int_0^1\int_0^1 e^{x+y+z}\, dx\, dy\, dz$ [ ]

a)$(e-1)^2$ b) $(e-1)$ c) $(e-1)^3$ d)none

9.The limits of integration of $\iint(x^2+y^2)\, dx\, dy$ over the domain bounded by $y = x^2$ and $y^2 = x$ are [ ]

a)$x = 0$ to $1, y = \sqrt{x}$ to x^2 b) $x = 0$ to $1, y = 0$ to 1

c)$x = y^2$ to $\sqrt{y}, y = 0$ to 1 d)none

10.$\int_0^1\int_0^2\int_1^2 x^2\, yz\, dz\, dy\, dx =$ [ ]

a)$1/2$ b)$1/4$ c)1 d)$3/2$

11.$\nabla(\log r) =$

a)$\frac{\bar{r}}{r}$ b)$\frac{\bar{r}}{r^2}$ c)$\frac{2\bar{r}}{r}$ d)$\bar{r}$ [ ]

12.The directional derivatives of $\emptyset(x,y,z) = xy + yz$ at $P = (1,1,0)$ in the $direction$ of $\bar{e} = \bar{\imath} - 3\bar{\jmath}$+5$\bar{k}$ is [ ]

a) $\frac{1}{\sqrt{35}}$ b)$\frac{2}{\sqrt{35}}$ c) $\frac{3}{\sqrt{35}}$ d) $\frac{4}{\sqrt{35}}$

13.$\nabla^2\left(\frac{1}{r}\right) =$ [ ]

a)$\frac{-1}{r^2}$ b) $\frac{1}{r^2}$ c)1 d)0

14.If $\bar{F}$ =$(2+y)\bar{\imath}$ +$ax\bar{\jmath}$ +2$z\bar{k}$ is irrotational is [ ]

a)1 b)2 c)3 d)

15.If $\bar{f}(x,y,z)$=$xy^2\bar{\imath}$ + $2x^2y\bar{\jmath}$ -3$ayz\bar{k}$ at $(1,1,1)$ is solinoidal then a = [ ]

a)0 b)2 c)1 d)-1

FILL IN THE BLANKS

16.Write the Line integral formula --

17.Greens theorem states that --

18.Write the surface integral formula --

19.Greens theorem states that --

20.Write the surface integral formula --

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MATHEMATICS-I (Common to ALL) **SETNO-4**

Time: 20 Min **Marks: 10**

Roll no: **Signature of Invigilator:**

ANSWER ALL QUESTIONS

1.On converting into polar coordinates,$\int_0^a \int_0^{\sqrt{a^2-x^2}} (x^2+y^2)\, dy\, dx =$ [ ]

a) $\int_0^a \int_0^{\Pi/2} r^2\, dr\, d\theta$ b)$\int_0^a \int_0^{\Pi/2} r^3\, dr\, d\theta$ c)$\int_0^a \int_0^{\Pi/4} r^3\, dr\, d\theta$ d) $\int_0^a \int_0^{\Pi/4} r^2\, dr\, d\theta$

2.In polar coordinates $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)}\, dx\, dy =$ [ ]

a)$\int_0^{\Pi/2} \int_0^\infty e^{-r^2}\, dr\, d\theta$ b)$\int_0^{\Pi/4} \int_0^\infty e^{-r}\, r\, dr\, d\theta$ c)$\int_0^{\Pi/2} \int_0^\infty e^{-r^2}\, r\, dr\, d\theta$ d)$\int_0^{\Pi/2} \int_0^\infty e^{-r}\, dr\, d\theta$

3. $\int_0^1 \int_0^1 \int_0^1 x\,yz\; dx\, dy\, dz =$ [ ]

a)$\frac{1}{3}$ b)$\frac{1}{5}$ c)$\frac{1}{8}$ d)$\frac{1}{12}$

4.$\nabla(\log r) =$

a)$\frac{\bar{r}}{r}$ b)$\frac{\bar{r}}{r^2}$ c)$\frac{2\bar{r}}{r}$ d)$\bar{r}$ [ ]

5.The directional derivatives of $\emptyset(x,y,z) = xy + yz\ at\ P = (1,1,0)\ in\ the\ direction$ of $\bar{e} = \bar{\imath} - 3\bar{\jmath}$+5$\bar{k}$ is [ ]

a) $\frac{1}{\sqrt{35}}$ b)$\frac{2}{\sqrt{35}}$ c) $\frac{3}{\sqrt{35}}$ d) $\frac{4}{\sqrt{35}}$

6.$\nabla^2\left(\frac{1}{r}\right) =$ [ ]

a)$\frac{-1}{r^2}$ b) $\frac{1}{r^2}$ c)1 d)0

7.If $\bar{F}$ =$(2+y)\bar{\imath}$ +$ax\bar{\jmath}$ +2$z\bar{k}$ is irrotational is [ ]

a)1 b)2 c)3 d)

8.If $\bar{f}(x,y,z)$=$xy^2\bar{\imath}$ + $2x^2y\bar{\jmath}$ -3$ayz\bar{k}$ at $(1,1,1)$ is solinoidal then a = [ ]

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9.The radius of curvature of any point on the curve $y = c.\cos h\left(\frac{x}{c}\right)\ is$ [ ]

a)c.$\cos h^2\left(\frac{x}{c}\right)$ b)$\frac{1}{C}$.$\sin h^2\left(\frac{x}{c}\right)$ c)$c.\tan h^2\left(\frac{x}{c}\right)$ d)none

10**.** Radius of curvature of the curve $x = a\theta$ at $(r,\theta)\ is$ [ ]

a)$\frac{r^2+a^2}{r^2+2a^2}$ b)$\frac{(r^2+a^2)^{1/2}}{2(r^2+a^2)}$ c)$\frac{(r^2+a^2)^{3/2}}{r^2+a^2}$ d)none

11.$\int_0^1 \int_0^1 \int_0^1 e^{x+y+z}\, dx\, dy\, dz$ [ ]

a)$(e-1)^2$ b) $(e-1)$ c) $(e-1)^3$ d)none

12.The limits of integration of $\iint (x^2+y^2)\, dx\, dy$ over the domain bounded by $y = x^2\ and\ y^2 = x\ are$ [ ]

a)$x = 0\ to\ 1, y = \sqrt{x}\ to\ x^2$ b) $x = 0\ to\ 1, y = 0\ to\ 1$ c)$x = y^2\ to\ \sqrt{y}, y = 0\ to\ 1$ d)none

13**.**.$\int_0^1 \int_0^2 \int_1^2 x^2\, yz\, dz\, dy\, dx =$ [ ]

a)$1/2$ b)$1/4$ c)1 d)$3/2$

14.$\iint r^3\, dr\, d\theta$ over the region included between the circles $r = 2\sin\theta$ and $r = 4\sin\theta\ is$ [ ]

a)$\int_0^{\Pi} \int_{2\sin\theta}^{4\sin\theta} r^3\, dr\, d\theta$ b)$\int_0^{\Pi/2} \int_{2\sin\theta}^{4\sin\theta} r^3\, dr\, d\theta$ c)$\int_{-\Pi}^{\Pi} \int_{2\sin\theta}^{4\sin\theta} r^3\, dr\, d\theta$ d)none

15.$\int_0^\infty \int_0^\infty e^{-(x^2+y^2)}\, dx\, dy =$ [ ]

a)$\frac{\Pi}{4}$ b) $\frac{\Pi}{2}$ c)0 d) $\frac{\Pi}{6}$

FILL IN THE BLANKS

16. Write the Line integral formula ---

17. Greens theorem states that --

18. Write the surface integral formula --

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