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| **FINAL Scheme of Valuation/Answer Key**(Scheme of evaluation (marks in brackets) and answers of problems/key) |
| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY****FOURTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2019** |
| **Course Code: MA202** |
| **Course Name: PROBABILITY DISTRIBUTIONS, TRANSFORMS AND NUMERICAL METHODS** |
| Max. Marks: 100 |  | Duration: 3 Hours |
| ***Normal distribution table is allowed in the examination hall.*** |
| **PART A** (**MODULES I AND II**) |
| ***Answer two full questions*.**  |
|  |
| 1 | a) | P(X=0) = P(X>0) = P(X<0) = k-------------------(1)k = 1/3-----------------------(2)P(X=0) =1/3; P(X=1) = P(X=2) = P(X=3) = k1k1+ k1+ k1=1/3  k1=1/9-----------(1)similarly P(X= -1) = P(X= -2) = P(X= -3) = 1/9-------(1)

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| X | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| P(X=x) | 1/9 | 1/9 | 1/9 | 1/3 | 1/9 | 1/9 | 1/9 |
| F(X) | 1/9 | 2/9 | 3/9 | 6/9 | 7/9 | 8/9 | 1 |

and F(X)=0 for X< -3 ; F(X)=1 for X ≥ 3 | 2 |
|  | b) |  np(1+q) =1.8---------------(1)5p(2-p) =1.8----------------(2)p = .2------------------(2)q =.8 -------------(1)P(X=x) = 5Cx(0.2)x(0.8)5-x x = 0,1,2,---,5 ------------(2) |  |
| 2 | a) | λ = np = 5(0.02) = 0.1----------------(1)**P(X=x)=------------(1)****(i**) P(X2/2 ) = 0.99 --------------------------------(3)P(X1- P(X>=1- P(X=5) =0.99 -----------------------------(2)Suitable stage marks can also be given for using binomial distribution with p=0.02 &q=0.98 |  |
|  | b) |  = kf (x) = k-------------------(2)since f(x) is a density fun k=1/2 -----------------------------------(3) mean= ---------(2) Var X=3 -------------------(1)  | 2 |
| 3 | a) |  --------------(2) α=3 ----------------------------------(3)P(IXI<1)=P(IXI>1) α=2 ------------------------(2) |  |
|  | b) | P(X<5)=0.05 -------------(1)P(5<X<25)=0.25-----------(1) = 1.65----------(2) = 0.53------(2)μ=34.47 --------------(1)17.86 --------------(1) |  |
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| **PART B** (**MODULES III AND IV**) |
| ***Answer two full questions*.**  |
| 4 | a) | F[f(x)]=-------(1) = -------(1) =----------(2)f (x) =--------(1)1-IxI=-------(2) |  |
|  | b) | f (x)=--------(2) =d---------------(3)d------------(3) |  |
| 5 | a) | Fs[f(x)]=-------(1) =-------------------------(2) f(x)=-------(1)e-x =----------(2)=-----------(1) |  |
|  | b) | (i) L[e-tsint]=------(2)L[te-tsint]=-----(1) =-------(1)(ii)L[] = -----(1) = - ----(1) =log------------(2) |  |
| 6 | a) | L[(D2-4D+5)y] = 4L[e3t]------(1)L(y)-sy(0)-(0)-4[L(y)-y(0)]+5L(y)=----(2)L(y)=------------------(2) y=2 e3t+ e2tsint---------------------(2) |  |
|  | b) |  = ------(1) =cosat \*-------------------(2) = ----(2) = -------------------(3) |  |
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| **PART C** (**MODULES V AND VI**) |
| ***Answer two full questions*.**  |
| 7 | a) | = - -----(1)Root lies bet 0 & 1----(1)=0.6667--------(2),=0.730159 --------(2),=0.73205 --------(2),=0.73204 --------(1), Ans-0.7320------(1) |  |
|  | b) | Table------------(3)=1941, p=0.5 --------(1),Formulae------(1)y= 21.69-------------(2)=1981, p= -0.5 --------(1),Backward formulae-------(1)y= 40.56---------------(2)increase=18.87------(1) |  |
|  |  |  |  |
| 8 | a) | formulae----(2)Substitution-----(2)Ans= 37.2307-----(3) |  |
|  | b) | Augment matrix------(1)Row reduction –(3)z = 5----(1), y = -9 ---(1), x = 7 ---(1) |  |
|  | c) | x =(14-2y-z),y=(10-x+z),z=(20-x-y)------(1)first iteration x=3.5,y=1.3,z=1.9-----------(2)second iteration x=2.375,y=1.905,z=1.965-----------(1)third iteration x=2.056,y=1.982,z=1.995-----------(1)fourth iteration x=2.010,y=1.997,z=1.999-----------(1) |  |
| 9 | a) | V=-------(1)

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| x | 0.0 | 0.25 | 0.5 | 0.75 | 1 |
| y | 1 | .9896 | .9589 | .9089 | .8415 |
| y2 | 1 | .979308 | .919489 | .826099 | .708122 |

=0.89474---(2)Volume= \*0.89474 =2.81204----(1) | (3) |
|  | b) | =-----(2)=1+0.2(0+1) =1.2-----(2)=1.48-----------------(2) |  |
|  | c) | =0.2,=0.205,=0.20525,=0.21525,-----(2)=0.21517-----------(1)=2.20517------------(1)=0.2105,=0.21604,=0.2163,=0.22214,-----(2)=0.21622-----------(1)=2.42139 |  |