| POSSESSION OF MOBILES IN   | V EXAM IS UFM PRACTICE   |
|--|--|
| Name_Vaiblev   | Enrollment No. 211000  |
| Jaypee Institute of Informa<br>T-2 Examination,<br>B. Tech. IV   | Even Som 2022  |
| Course Title: Probability and Random Processes Course Code: 15B11MA301   | Maximum Time: 1 Hour<br>Maximum Marks: 20  |
| After pursuing the course, students will be able to CO1: explain the basic concepts of probability, conditional probability conditional probability and explain one and two dimensional random variable CO3: apply some probability distributions to various discrete and CO4: solve the problems related to the component and system relia CO5: identify the random processes and compute their averages. CO6: solve the problems on Ergodic process, Poisson process and All questions are compulsory. | lity and Bayes' theorem. les along with their distributions and statistical averages. solutions                  |
| All questions are compulsory.  | warkov chain.  |
| The number of flaws on a magnetic assett   |  |
| Synt loast two Haws III a Single cassette tane?  | Produced continuously at a factory follows Poisson $\rho_{x=0}$  |
| exactly six flaws in a single cassette tane?   |  |
| 2. (i) Identify the distribution and its parameter if the $M_X(t) = e^t (5 - 4 e^t)^{-1}$  |  |
| (ii) The digits after the decimal point of a random  | m number between 0 and 1 are numbers selected at   |
| number from (0, 1), on the average, how many dig   | its are there before the fifth 29  |
| Suppose that the time (in hours) taken by a ma   | alamin (   |
| following Erlang distribution with parameters $k = (i)$ at most 4 hours, $= 45$ (ii) at least 3 hours,   | 2, $\lambda = 2$ . Find the probability that repair takes  |
| (a) between 1 and 3.5 hours.   |  |
| 4. The marks scored by the students of D. T  | [CO3, 3 Marks]   |
| What is the probability of a particular at a   | [CO3, 3 Marks] ear in the course 'Probability and random processes' of a mean of 527 and standard deviation 112. |
|  |  |
| The delisity function of time to failure (in years) of   | [OOS, 5 Marks]   |
| $f(t) = 2 a t e^{-at^2}$   | a > 0, $t > 0$   |
| Find (i) the reliability function $R(t) = 2 a t e^{-at^2}$ WITTF -   | , 426, 130   |
| MITT   |  |
| Hazard rate function $\lambda(t)$  |  |
| the design life for a reliability of $e^{-7a}$ , give Calculate the reliability of $e^{-7a}$ , given the reliability of $e^{-7a}$ .  | ven 3 years of wear-in period. [CO4, 4 Marks]  |
| 6. Calculate the reliability of the following system-  | [CO4, 4 Marks]   |
| 0.85   | 0.7  |
|  | - 0.90 - × (t)   |
| 0.80   |  |
| <b>&gt;</b>  | 0.6  |
|  | 0.80   |
| 7114   |  |
|  | 0.90   |
|  |  |
| 2000年  |  |
|  |  |

## Areas Under the One-Tailed Standard Normal Curve

This table provides the area between the mean and some Z score. For example, when Z score = 1.45 the area = 0.4265.

|  |                       | σ=1  |
|--|-----------------------|------|
| 100  | 0.42                  | 265  |
| Andrew Charles and the Control of th | and the second second |      |
| 7  | 'μ=0                  | 1.45 |

| 0.0  | Z   | 1 000  | Control of the last  |              |  | Andrew Control | and the second section of the second   |  | enganisara e el electronic   | and the second second second   |  |
|--|-----|--------|--|--------------|--|----------------|--|--|--|--|--|
| 0.1  |     |        |  | 0.02         |  | 7              |  | μ=υ  | 1 45   |  |  |
| 0.2  | 0.1 |        | The state of the s | 0.0080       | 0.0130   | 0.04           | 0.05   | 0.06   | 0.07   | 80.0   | 0.09   |
| 0.3  |     |        | 0.0438   | 0.0478       | 0.0517   |                | 0.0199   | 0.0239   | 0.0279   | ASSESSMENT OF THE PERSON OF  | The second second second second second   |
| 0.4  |     |        | 0.0832   | 0.0871       |  | _              | - Contraction of the Contract  | A STREET, STRE | and the second section of the second   | - Carried State of the Control of th | According to the Control of the Cont |
| 0.5  |     |        | 0.1217   | 0.1255       |  | 1000           | AND THE RESIDENCE AND ADDRESS OF THE PARTY.  | AND DESCRIPTION OF THE PERSON NAMED IN   | - makes consider was improved to contain and   | with the second state of the second state of   | AND DESCRIPTION OF THE PERSON  |
| 0.5         0.1915         0.1950         0.1985         0.2019         0.2054         0.2088         0.2123         0.2157         0.2190         0.2224           0.6         0.2257         0.2291         0.2324         0.2357         0.2389         0.2422         0.2464         0.2762         0.3762         0.3762         0.3315         0.3365         0.3865         0.3868         0.3768         0.3531         0.3551         0.3370         0.3390         0.3397         0.3391         0.3779         0.3790         0.3390         0.3391         0.3790         0.3390         0.3997         0.3611         0.4661         0.4671         0.4626         0.4821         0.4632         0.4612         0.4672         0.4622         0.4636         0.44827   |     |        | 0.1591   |              |  |                | -  | AND PROPERTY AND ADDRESS.  | THE RESERVE AND THE PERSON NAMED IN COLUMN 2 IN COLUMN | The state of the s | THE RESERVE AND ADDRESS OF THE PERSON NAMED IN   |
| 0.6  |     | 0.1915 | 0.1950   |              |  |                | And the same of the same of  | THE RESERVE AND ADDRESS OF THE PERSON NAMED IN   |  |  |  |
| 0.7  | -   | 0.2257 | 0.2291   |              | Account the Contract of the Co | -              | Commence of the last of the la | THE PERSON NAMED IN COLUMN 2 IS NOT THE OWNER, THE PERSON NAMED IN COLUMN 2 IS NOT THE OWNER, THE PERSON NAMED IN COLUMN 2 IS NOT THE OWNER, THE PERSON NAMED IN COLUMN 2 IS NOT THE OWNER, |  |  |  |
| 0.8         0.2881         0.2910         0.2939         0.2967         0.2995         0.3023         0.3051         0.3078         0.3106         0.3133           0.9         0.3159         0.3186         0.3212         0.3283         0.3264         0.3289         0.3315         0.3365         0.3385         0.3661           1.0         0.3413         0.3488         0.3461         0.3485         0.3508         0.3591         0.3577         0.3599         0.3599         0.3661           1.1         0.3643         0.3665         0.3686         0.3708         0.3729         0.3749         0.3770         0.3790         0.3790         0.3790         0.3790         0.3790         0.3790         0.3106         0.3889           1.2         0.3849         0.3869         0.3888         0.3907         0.3925         0.3944         0.3962         0.3980         0.3997         0.4015           1.4         0.4192         0.4207         0.4222         0.4236         0.4291         0.4260         0.4313           1.5         0.4322         0.4207         0.4222         0.4237         0.4251         0.4251         0.4221         0.4230         0.4315         0.4363           1.6  |     | 0.2580 | 0.2611   | <del> </del> |  | ~              |  |  | -  | 1  | +  |
| 0.9  | 1   | 0.2881 | 0.2910   | -            |  |                |  | 0.3051   |  | 1  | -  |
| 1.0  | 0.9 | 0.3159 | 0.3186   |              |  |                | 0.3289   | 0.3315   | 0.3340   | 0.3365   | 0.3389   |
| 1.1         0.3643         0.3656         0.3686         0.3708         0.3729         0.3749         0.3770         0.3790         0.3810         0.3839           1.2         0.3849         0.3869         0.3888         0.3907         0.3925         0.3944         0.3962         0.3980         0.3997         0.4015           1.4         0.4032         0.4049         0.4066         0.4082         0.4021         0.4115         0.4131         0.4147         0.4162         0.4171           1.6         0.4322         0.4245         0.4257         0.4376         0.4322         0.4364         0.4446         0.4445         0.4484         0.4495         0.4505         0.4515         0.4525         0.4535         0.4541           1.6         0.4452         0.4463         0.4474         0.4484         0.4495         0.4505         0.4515         0.4525         0.4535         0.4541           1.7         0.4554         0.4631         0.4564         0.4573         0.4582         0.4591         0.4599         0.4608         0.4616         0.4625         0.4633           1.8         0.4641         0.4649         0.4566         0.4572         0.4732         0.4734         0.4673         0.4750 <td></td> <td>0.3413</td> <td>0.3438</td> <td></td> <td></td> <td></td> <td>0.3531</td> <td>0.3554</td> <td>0.3577</td> <td>0.3599</td> <td>0.3621</td>  |     | 0.3413 | 0.3438   |              |  |                | 0.3531   | 0.3554   | 0.3577   | 0.3599   | 0.3621   |
| 1.2         0.3859         0.3869         0.3888         0.3907         0.3925         0.3944         0.3962         0.3980         0.3997         0.4015           1.3         0.4032         0.4049         0.4066         0.4082         0.4099         0.4115         0.4131         0.4147         0.4162         0.4777           1.4         0.4192         0.4207         0.4222         0.4236         0.4251         0.4265         0.4251         0.4207         0.4222         0.4306         0.4311           1.6         0.4452         0.4463         0.4474         0.4484         0.4495         0.4505         0.4515         0.4525         0.4535         0.4554           1.7         0.4554         0.4564         0.4573         0.4582         0.4591         0.4599         0.4608         0.4610         0.4625         0.4531           1.8         0.4641         0.4649         0.4656         0.4664         0.4671         0.4678         0.4683         0.4693         0.4699         0.4706           1.9         0.4771         0.4778         0.4783         0.4783         0.4783         0.4784         0.4750         0.4756         0.4761         0.4767           2.0         0.4771  |     | 0.3643 | 0.3665   |              |  |                | 0.3749   | 0.3770   | 0.3790   | 0.3810   | 0.3830   |
| 1.4  |     | 1      | 0.3869   | 0.3888       |  |                | 0.3944   | 0.3962   | 0.3980   | 0.3997   | 0.4015   |
| 1.5         0.4322         0.1245         0.4257         0.4370         0.4302         0.4354         0.4406         0.4436         0.44125         0.4411           1.6         0.4452         0.4463         0.4474         0.4484         0.4495         0.4505         0.4505         0.4525         0.4525         0.4545           1.7         0.4554         0.4564         0.4573         0.4582         0.4591         0.4599         0.4608         0.4616         0.4625         0.4565           1.8         0.4641         0.4649         0.4656         0.4664         0.4671         0.4678         0.4686         0.4693         0.4699         0.4706           1.9         0.4713         0.4719         0.4726         0.4732         0.4738         0.4744         0.4750         0.4766         0.4767           2.0         0.4772         0.4778         0.4783         0.4783         0.4793         0.4798         0.4803         0.4808         0.4812         0.4817           2.1         0.4821         0.4826         0.4830         0.4834         0.4838         0.4841         0.4864         0.4867         0.4835         0.4877         0.4878         0.4878         0.4881         0.4884         0.4887 <td></td> <td>-</td> <td>0.4049</td> <td>0.4066</td> <td>0.4082</td> <td>0,4099</td> <td>0.4115</td> <td>0.4131</td> <td>0.4147</td> <td>0.4162</td> <td>0.4177</td>  |     | -      | 0.4049   | 0.4066       | 0.4082   | 0,4099         | 0.4115   | 0.4131   | 0.4147   | 0.4162   | 0.4177   |
| 1.6         0.4452         0.4463         0.4474         0.4484         0.4455         0.4555         0.4555         0.4525         0.4525         0.4535         0.4545           1.7         0.4554         0.4564         0.4573         0.4582         0.4591         0.4559         0.4563         0.4664         0.4671         0.4678         0.4668         0.4663         0.4663         0.4664         0.4671         0.4678         0.4686         0.4693         0.4699         0.4706           1.9         0.4713         0.4719         0.4726         0.4732         0.4738         0.4744         0.4750         0.4766         0.4767           2.0         0.4772         0.4778         0.4783         0.4793         0.4798         0.4803         0.4808         0.4812         0.4817           2.1         0.4821         0.4826         0.4830         0.4834         0.4838         0.4842         0.4866         0.4857         0.4857           2.2         0.4861         0.4864         0.4868         0.4871         0.4878         0.4878         0.4881         0.4887         0.4887           2.3         0.4833         0.4896         0.4898         0.4901         0.4967         0.4922         0.4927 <td></td> <td></td> <td></td> <td>0.4222</td> <td>0.4236</td> <td>0.4251</td> <td>0.4265</td> <td>0.4279</td> <td>0.4292</td> <td>0.4306</td> <td>0.4319</td>  |     |        |  | 0.4222       | 0.4236   | 0.4251         | 0.4265   | 0.4279   | 0.4292   | 0.4306   | 0.4319   |
| 1.7         0.4554         0.4564         0.4573         0.4583         0.4591         0.4599         0.4608         0.4616         0.4625         0.4633           1.8         0.4641         0.4649         0.4656         0.4664         0.4671         0.4678         0.4686         0.4693         0.4706           1.9         0.4713         0.4719         0.4726         0.4732         0.4738         0.4744         0.4750         0.4756         0.4761         0.4767           2.0         0.4772         0.4778         0.4738         0.4783         0.4783         0.4783         0.4783         0.4803         0.4803         0.4812         0.4817           2.1         0.4821         0.4826         0.4830         0.4834         0.4833         0.4842         0.4846         0.4850         0.4817           2.2         0.4861         0.4868         0.4871         0.4875         0.4878         0.4881         0.4884         0.4887         0.4889           2.3         0.4893         0.4962         0.4893         0.4901         0.4904         0.4906         0.4909         0.4911         0.4913         0.4913         0.4913         0.4913         0.4913         0.4913         0.4913         0.4913 <td>15</td> <td>0 4333</td> <td>0.4345</td> <td>0.4357</td> <td>0.4370</td> <td>0-4382</td> <td>0.4394</td> <td>0.4400</td> <td>0.4418</td> <td>0.4425</td> <td>0.4.41</td>  | 15  | 0 4333 | 0.4345   | 0.4357       | 0.4370   | 0-4382         | 0.4394   | 0.4400   | 0.4418   | 0.4425   | 0.4.41   |
| 1.8         0.4641         0.4649         0.4656         0.4664         0.4671         0.4678         0.4686         0.4693         0.4699         0.4706           1.9         0.4713         0.4719         0.4726         0.4732         0.4733         0.4744         0.4750         0.4755         0.4761         0.4767           2.0         0.4772         0.4778         0.4783         0.4788         0.4793         0.4803         0.4808         0.4812         0.4817           2.1         0.4821         0.4826         0.4830         0.4834         0.4838         0.4842         0.4846         0.4855         0.4857           2.2         0.4861         0.4864         0.4868         0.4871         0.4875         0.4878         0.4881         0.4864         0.4887         0.4893           2.3         0.4893         0.4960         0.4904         0.4906         0.4909         0.4911         0.4913         0.4913         0.4913         0.4913         0.4913         0.4913         0.4913         0.4922         0.4927         0.4929         0.4931         0.4934         0.4932           2.5         0.4938         0.4940         0.4943         0.4943         0.4940         0.4944         0.4943 <td>1.6</td> <td>0.4452</td> <td>0.4463</td> <td>0.4474</td> <td>0.4484</td> <td>0.4495</td> <td>0.4505</td> <td>0.4515</td> <td>0.4525</td> <td>0.4535</td> <td>0.4545</td>   | 1.6 | 0.4452 | 0.4463   | 0.4474       | 0.4484   | 0.4495         | 0.4505   | 0.4515   | 0.4525   | 0.4535   | 0.4545   |
| 1.8         0.4641         0.4649         0.4656         0.4664         0.4671         0.4678         0.4686         0.4693         0.4769         0.4706           1.9         0.4713         0.4719         0.4726         0.4732         0.4738         0.4744         0.4750         0.4756         0.4761         0.4767           2.0         0.4772         0.4778         0.4783         0.4783         0.4793         0.4798         0.4803         0.4808         0.4812         0.4817           2.1         0.4821         0.4826         0.4830         0.4834         0.4838         0.4842         0.4866         0.4857         0.4878         0.4881         0.4864         0.4857         0.4878         0.4881         0.4884         0.4887         0.4890           2.3         0.4893         0.4896         0.4898         0.4901         0.4904         0.4906         0.4909         0.4911         0.4913         0.4916           2.4         0.4918         0.4920         0.4922         0.4925         0.4927         0.4929         0.4931         0.4932         0.4934         0.4932           2.5         0.4938         0.4940         0.4941         0.4943         0.4953         0.4955         0.4956 <td>1.7</td> <td>0.4554</td> <td>0.4564</td> <td>0.4573</td> <td>0.4582</td> <td>0.4591</td> <td>0.4599</td> <td>0.4608</td> <td>0.4616</td> <td>0.4625</td> <td>0.4633</td>   | 1.7 | 0.4554 | 0.4564   | 0.4573       | 0.4582   | 0.4591         | 0.4599   | 0.4608   | 0.4616   | 0.4625   | 0.4633   |
| 2.0         0.4772         0.4778         0.4783         0.4788         0.4793         0.4798         0.4803         0.4808         0.4812         0.4817           2.1         0.4821         0.4826         0.4830         0.4834         0.4838         0.4842         0.4846         0.4850         0.4854         0.4857           2.2         0.4861         0.4864         0.4868         0.4871         0.4875         0.4878         0.4881         0.4884         0.4887         0.4890           2.3         0.4893         0.4896         0.4898         0.4901         0.4904         0.4906         0.4909         0.4911         0.4913         0.4916           2.4         0.4918         0.4920         0.4922         0.4925         0.4927         0.4929         0.4931         0.4932         0.4934         0.4936           2.6         0.4938         0.4940         0.4941         0.4943         0.4945         0.4960         0.4961         0.4962         0.4963         0.4964           2.7         0.4965         0.4967         0.4968         0.4959         0.4970         0.4971         0.4972         0.4973         0.4974           2.8         0.4974         0.4975         0.4968  | 1.8 | 0.4641 | 0.4649   | 0.4656       | 0.4664   | 0.4671         | 0.4678   | 0.4686   | 0.4693   | 0.4699   | +  |
| 2.1         0.4821         0.4826         0.4830         0.4834         0.4838         0.4842         0.4846         0.4850         0.4854         0.4857           2.2         0.4861         0.4864         0.4868         0.4871         0.4875         0.4878         0.4881         0.4884         0.4887         0.4890           2.3         0.4893         0.4896         0.4898         0.4901         0.4904         0.4906         0.4909         0.4911         0.4913         0.4916           2.4         0.4918         0.4920         0.4922         0.4925         0.4927         0.4929         0.4931         0.4932         0.4934         0.4936           2.5         0.4938         0.4940         0.4941         0.4943         0.4945         0.4946         0.4948         0.4949         0.4951         0.4952           2.6         0.4953         0.4955         0.4956         0.4957         0.4959         0.4960         0.4961         0.4962         0.4963         0.4964           2.7         0.4965         0.4966         0.4967         0.4968         0.4969         0.4970         0.4971         0.4972         0.4973         0.4973         0.4974           2.9         0.4981  | 1.9 | 0.4713 | 0.4719   | 0.4726       | 0.4732   | 0.4738         | 0.4744   | 0.4750   | 0.4756   | 0.4761   | 0.4767   |
| 2.2         0.4861         0.4864         0.4868         0.4871         0.4875         0.4878         0.4881         0.4884         0.4887         0.4890           2.3         0.4893         0.4896         0.4898         0.4901         0.4904         0.4906         0.4909         0.4911         0.4913         0.4916           2.4         0.4918         0.4920         0.4922         0.4925         0.4927         0.4929         0.4931         0.4932         0.4934         0.4936           2.5         0.4938         0.4940         0.4941         0.4943         0.4945         0.4946         0.4948         0.4949         0.4951         0.4952           2.6         0.4953         0.4955         0.4956         0.4957         0.4959         0.4960         0.4961         0.4962         0.4963         0.4964           2.7         0.4965         0.4966         0.4967         0.4968         0.4969         0.4970         0.4971         0.4972         0.4973         0.4972         0.4973         0.4974         0.4973         0.4977         0.4978         0.4979         0.4979         0.4979         0.4979         0.4979         0.4979         0.4979         0.4979         0.4986         0.4985         0.  | 2.0 | 0.4772 | 0.4778   | 0.4783       | 0.4788   | 0.4793         | 0.4798   | 0.4803   | 0.4808   | 0.4812   | 0.4817   |
| 2.3         0.4893         0.4896         0.4898         0.4901         0.4904         0.4906         0.4909         0.4911         0.4913         0.4916           2.4         0.4918         0.4920         0.4922         0.4925         0.4927         0.4929         0.4931         0.4932         0.4934         0.4936           2.5         0.4938         0.4940         0.4941         0.4943         0.4945         0.4946         0.4948         0.4949         0.4951         0.4952           2.6         0.4953         0.4955         0.4956         0.4957         0.4959         0.4960         0.4961         0.4962         0.4963         0.4964           2.7         0.4965         0.4966         0.4967         0.4968         0.4969         0.4970         0.4971         0.4972         0.4973         0.4973           2.8         0.4974         0.4975         0.4966         0.4977         0.4977         0.4978         0.4979         0.4979         0.4980         0.4981           2.9         0.4981         0.4982         0.4982         0.4983         0.4984         0.4984         0.4985         0.4985         0.4986           3.0         0.4987         0.4987         0.4988  | 2.1 | 0.4821 | 0.4826   | 0.4830       | 0.4834   | 0.4838         | 0.4842   | 0.4846   | 0.4850   | 0.4854   | 0.4857   |
| 2.4         0.4918         0.4920         0.4922         0.4925         0.4927         0.4929         0.4931         0.4932         0.4934         0.4936           2.5         0.4938         0.4940         0.4941         0.4943         0.4945         0.4946         0.4948         0.4949         0.4951         0.4952           2.6         0.4953         0.4955         0.4956         0.4957         0.4959         0.4960         0.4961         0.4962         0.4963         0.4964           2.7         0.4965         0.4966         0.4967         0.4968         0.4969         0.4970         0.4971         0.4972         0.4973         0.4974           2.8         0.4974         0.4975         0.4976         0.4977         0.4977         0.4978         0.4979         0.4979         0.4980         0.4981           2.9         0.4981         0.4982         0.4982         0.4983         0.4984         0.4985         0.4965         0.4986         0.4986           3.0         0.4987         0.4987         0.4988         0.4988         0.4989         0.4989         0.4990         0.4990           3.1         0.4990         0.4991         0.4991         0.4991         0.4992  | 2.2 | 0.4861 | 0.4864   | 0.4868       | 0.4871   | 0.4875         | 0.4878   | 0.4881   | 0.4884   | 0.4887   | 0.4890   |
| 2.5         0.4938         0.4940         0.4941         0.4943         0.4945         0.4946         0.4948         0.4949         0.4951         0.4952           2.6         0.4953         0.4955         0.4956         0.4957         0.4959         0.4960         0.4961         0.4962         0.4963         0.4964           2.7         0.4965         0.4966         0.4967         0.4968         0.4969         0.4970         0.4971         0.4972         0.4973         0.4974           2.8         0.4974         0.4975         0.4976         0.4977         0.4977         0.4978         0.4979         0.4979         0.4980         0.4981           2.9         0.4981         0.4982         0.4982         0.4983         0.4984         0.4985         0.4985         0.4985         0.4986         0.4986           3.0         0.4987         0.4987         0.4988         0.4988         0.4982         0.4988         0.4986         0.4988         0.4989         0.4988         0.4998           3.1         0.4990         0.4991         0.4991         0.4991         0.4992         0.4992         0.4992         0.4992         0.4993         0.4993         0.4993           3.2  | 2.3 | 0.4893 | 0.4896   | 0.4898       | 0.4901   | 0.4904         | 0.4906   | 0.4909   | 0.4911   | 0.4913   | 0.4916   |
| 2.6         0.4953         0.4955         0.4956         0.4957         0.4959         0.4960         0.4961         0.4962         0.4963         0.4964           2.7         0.4965         0.4966         0.4967         0.4968         0.4969         0.4970         0.4971         0.4972         0.4973         0.4974           2.8         0.4974         0.4975         0.4976         0.4977         0.4977         0.4978         0.4979         0.4979         0.4980         0.4980         0.4981           2.9         0.4981         0.4982         0.4982         0.4983         0.4984         0.4984         0.4985         0.4985         0.4986         0.4986           3.0         0.4987         0.4987         0.4988         0.9888         0.4989         0.4989         0.4990         0.4990           3.1         0.4990         0.4991         0.4991         0.4991         0.4992         0.4992         0.4992         0.4992         0.4993         0.4993         0.4993           3.2         0.4993         0.4995         0.4995         0.4996         0.4996         0.4996         0.4996         0.4996         0.4996         0.4996         0.4996         0.4997         0.4997         0.4997 <td>2.4</td> <td>0.4918</td> <td>0.4920</td> <td>0.4922</td> <td>0.4925</td> <td>0.4927</td> <td>0.4929</td> <td>0.4931</td> <td>0.4932</td> <td>0.4934</td> <td>0.4936</td>   | 2.4 | 0.4918 | 0.4920   | 0.4922       | 0.4925   | 0.4927         | 0.4929   | 0.4931   | 0.4932   | 0.4934   | 0.4936   |
| 2.7         0.4965         0.4966         0.4967         0.4968         0.4969         0.4970         0.4971         0.4972         0.4973         0.4974           2.8         0.4974         0.4975         0.4976         0.4977         0.4977         0.4978         0.4979         0.4979         0.4980         0.4981           2.9         0.4981         0.4982         0.4982         0.4983         0.4984         0.4984         0.4985         0.4995         0.4986         0.4986           3.0         0.4987         0.4987         0.4987         0.4988         0.9983         0.4983         0.4989         0.4989         0.4990         0.4990           3.1         0.4990         0.4991         0.4991         0.4991         0.4991         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4993         0.4993         0.4993         0.4993         0.4994         0.4994         0.4994         0.4994         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4996         0.4996         0.4996         0.4996         0.4996         0.4996         0.4997         0.4997         0.4997   | 2.5 | 0.4938 | 0.4940   | 0.4941       | 0.4943   | 0.4945         | 0.4946   | 0.4948   | 0.4949   | 0.4951   | 0.4952   |
| 2.8         0.4974         0.4975         0.4976         0.4977         0.4977         0.4978         0.4979         0.4979         0.4980         0.4981           2.9         0.4981         0.4982         0.4982         0.4983         0.4984         0.4984         0.4985         0.4965         0.4986         0.4986           3.0         0.4987         0.4987         0.4988         0.4988         0.4989         0.4989         0.4989         0.4989         0.4990         0.4990         0.4990           3.1         0.4990         0.4991         0.4991         0.4991         0.4991         0.4992         0.4993         0.4993         0.4993         0.4993         0.4993         0.4993         0.4994         0.4994         0.4994         0.4994         0.4995         0.4996         0.4996         0.4996         0.4996         0.4996 <td>2.6</td> <td>0.4953</td> <td>0.4955</td> <td>0.4956</td> <td>0.4957</td> <td>0.4959</td> <td>0.4960</td> <td>0.4961</td> <td>0.4962</td> <td>0.4963</td> <td>0.4964</td>                                  | 2.6 | 0.4953 | 0.4955   | 0.4956       | 0.4957   | 0.4959         | 0.4960   | 0.4961   | 0.4962   | 0.4963   | 0.4964   |
| 2.9         0.4981         0.4982         0.4982         0.4983         0.4984         0.4984         0.4985         0.4965         0.4986         0.4986           3.0         0.4987         0.4987         0.4987         0.4988         0.988         0.4989         0.4989         0.4989         0.4989         0.4989         0.4989         0.4989         0.4980         0.4990         0.4990         0.4990         0.4991         0.4991         0.4991         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4993         0.4993         0.4993         0.4993         0.4993         0.4993         0.4993         0.4993         0.4993         0.4994         0.4994         0.4994         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4996         0.4996         0.4996         0.4996         0.4996         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997   | 2.7 | 0.4965 | 0.4966   | 0.4967       | 0.4968   | 0:4959         | 0.4970   | 0.4971   | 0.4972   | 0.4973   | 0.4974   |
| 3.0         0.4987         0.4987         0.4987         0.4988         0.4988         0.4989         0.4989         0.4989         0.4990         0.4990           3.1         0.4990         0.4991         0.4991         0.4991         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4993         0.4993         0.4993         0.4993         0.4993         0.4993         0.4993         0.4993         0.4995         0.4995         0.4994         0.4994         0.4994         0.4994         0.4994         0.4994         0.4994         0.4994         0.4994         0.4994         0.4994         0.4994         0.4994         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4996         0.4996         0.4996         0.4996         0.4996         0.4996         0.4996         0.4996         0.4996         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998  | 2.8 | 0.4974 | 0.4975   | 0.4976       | 0.4977   | 0.4977         | 0.4978   | 0.4979   | 0.4979   | 0.4980   | 0.4981   |
| 3.1         0.4990         0.4991         0.4991         0.4991         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4992         0.4993         0.4993         0.4993         0.4994         0.4994         0.4994         0.4994         0.4994         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4995         0.4996         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4999         0.4999         0.4999         0.4999         0.4999         0.4999         0.4999         0.4999         0.4999 <td>2.9</td> <td>0.4981</td> <td>0.4982</td> <td>0.4982</td> <td>0.4983</td> <td>0.4984</td> <td>0.4984</td> <td>0.4985</td> <td>0.4985</td> <td>0.4986</td> <td>0.4986</td> | 2.9 | 0.4981 | 0.4982   | 0.4982       | 0.4983   | 0.4984         | 0.4984   | 0.4985   | 0.4985   | 0.4986   | 0.4986   |
| 3.2       0.4993       0.4994       0.4994       0.4994       0.4994       0.4994       0.4994       0.4995       0.4995       0.4995       0.4995       0.4996       0.4997       0.4997       0.4997       0.4997       0.4997       0.4997       0.4997       0.4997       0.4997       0.4997       0.4997       0.4997       0.4998       0.4998       0.4998       0.4998       0.4998       0.4998       0.4998       0.4998       0.4998       0.4998       0.4998       0.4998       0.4998       0.4998       0.4999   | 3.0 | 0.4987 | 0.4987   | 0.4987       | 0.4988   | 011983         | 0.4989   | 0.4989   | 0.4989   | 0.4990   | 0.4990   |
| 3.3         0.4995         0.4995         0.4996         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4997         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4999 <td>3.1</td> <td>0.4990</td> <td>0.4991</td> <td>0.4991</td> <td>0.4991</td> <td>0 4992</td> <td>0.4992</td> <td>0.4992</td> <td>0.4992</td> <td>0.4993</td> <td>0.4993</td> | 3.1 | 0.4990 | 0.4991   | 0.4991       | 0.4991   | 0 4992         | 0.4992   | 0.4992   | 0.4992   | 0.4993   | 0.4993   |
| 3.4         0.4997         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4999 <td>3.2</td> <td>0.4993</td> <td>0.4993</td> <td>0.4994</td> <td>0.4994</td> <td>0.4994</td> <td>0.4994</td> <td>0.4994</td> <td>0.4995</td> <td>0.4995</td> <td>0.4995</td> | 3.2 | 0.4993 | 0.4993   | 0.4994       | 0.4994   | 0.4994         | 0.4994   | 0.4994   | 0.4995   | 0.4995   | 0.4995   |
| 3.5         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4998         0.4999 <td>3.3</td> <td>0.4995</td> <td>0.4995</td> <td>0.4995</td> <td>0.4996</td> <td>0.4996</td> <td>0.4996</td> <td>0.4996</td> <td>0.4996</td> <td>0.4996</td> <td>0.4997</td> | 3.3 | 0.4995 | 0.4995   | 0.4995       | 0.4996   | 0.4996         | 0.4996   | 0.4996   | 0.4996   | 0.4996   | 0.4997   |
| 3.6       0.4998       0.4998       0.4999   | 3.4 | 0.4997 | 0.4997   | 0.4997       | 0.4997   | 0,4997         | 0.4997   | 0.4997   | 0.4997   | 0.4997   | 0.4998   |
| 3.7     0.4999   | 3.5 | 0.4998 | 0.4998   | 0.4998       | 0.4998   | 0.4998         | 0.4998   | 0.4998   | 0.4998   | 0.4998   | 0.4998   |
| 3.8       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.4999       0.5000       0.5000       0.5000       0.5000       0.5000       0.5000       0.5000       0.5000       0.5000       0.5000  | 3.6 | 0.4998 | 0.4998   | 0.4999       | 0.4999   | 0.4999         | 0.4999   | 0.4999   | 0.4999   |  |  |
| <b>3.9</b> 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000   | 3.7 | 0.4999 | 0.4999   | 0.4999       | 0.4999   | ú.4999         | -  | 0.4999   | -  | -  |  |
| 3.3  | 3.8 | 0.4999 | 0.4999   | 0.4999       |  |                |  |  |  |  |  |
|  | 3.9 | 0.5000 | 0.5000   | 0.5000       | 0.5000   | 0,5000         | 0.5000   | 0.5000   | 0.5000   | 0.5000   | 0.5000   |