

**SULIT**



BAHAGIAN PEPERIKSAAN DAN PENILAIAN  
JABATAN PENDIDIKAN POLITEKNIK  
KEMENTERIAN PENDIDIKAN TINGGI

JABATAN PERDAGANGAN

PEPERIKSAAN AKHIR

**SESI JUN 2017**

**DPD5033 : ISLAMIC INVESTMENT**

**TARIKH : 25 OKTOBER 2017**

**MASA : 8.30 PAGI - 10.30 PAGI (2 JAM)**

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Kertas ini mengandungi **SEBELAS (11)** halaman bercetak.  
Esei (4 soalan)  
Dokumen sokongan yang disertakan : Jadual PVIFA dan PVIF

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**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN**

(CLO yang tertera hanya sebagai rujukan)

**SULIT**

**INSTRUCTION:**

This section consists of **FOUR (4)** essay questions. Answer **ALL** questions.

**ARAHAN:**

*Bahagian ini mengandungi EMPAT (4) soalan esei. Jawab SEMUA soalan.*

**QUESTION 1****SOALAN 1**

CLO1  
C1

- (a) i. List **FOUR (4)** concepts of investment according to Islamic perspective.

*Senaraikan EMPAT (4) konsep pelaburan yang mengikut perspektif Islam.*

[4 marks]

[4 markah]

- ii. Explain **FOUR (4)** roles of Islamic Financial Services Board (IFSB)

*Terangkan EMPAT (4) peranan Badan Perkhidmatan Kewangan Islam. (IFSB).*

[4 marks]

[4 markah]

CLO1  
C3

- (b) i. Ariq is a risk-taker investor. He is considering two possible investments. Based on the below information, choose which investment should Ariq can consider.

*Ariq merupakan seorang pelabur yang suka mengambil risiko. Beliau sedang mempertimbangkan dua jenis pelaburan. Berdasarkan maklumat di bawah, pilih pelaburan yang perlu dipertimbangkan oleh Ariq.*

| Stock<br><i>Saham</i> | Expected Return<br><i>Kadar Pulangan</i> | Variance<br><i>Varian</i> |
|-----------------------|------------------------------------------|---------------------------|
| Stock Que             | 5.6%                                     | 44.94%                    |
| Stock Zie             | 5.875%                                   | 39.22%                    |

[6 marks]

[6 markah]

- ii. Based on the information below, calculate the arithmetic mean.

*Berdasarkan maklumat dibawah, kira min aritmetik.*

| Year<br><i>Tahun</i> | Price (RM)<br><i>Harga (RM)</i> | Dividend (RM)<br><i>Dividen (RM)</i> |
|----------------------|---------------------------------|--------------------------------------|
| 2010                 | 7.50                            | -                                    |
| 2011                 | 7.65                            | 1.15                                 |
| 2012                 | 7.75                            | 1.15                                 |
| 2013                 | 7.70                            | 1.00                                 |
| 2014                 | 7.50                            | 1.00                                 |
| 2015                 | 7.25                            | 0.50                                 |

[7 marks]

[7 markah]

iii.

**Brexit Raises Risk of Global Recession in Financial Markets**

NEW YORK — Stocks are plunging in the U.S. and worldwide Friday after Britain voted to leave the European Union. The result stunned investors, who reacted by rushing to the safety of gold and U.S. government bonds as they wondered what will come next for Britain, Europe and the global economy.

International policy-makers have long warned that the sluggish recovery from the Great Recession has left the world economy more vulnerable to another downturn. Recurring crisis over government debt in Europe, the bumpy slowdown China and the collapse in oil prices have already battered prospects for global growth. Britain's exit from the EU — popularly known as "Brexit" — could prove to be the final straw, experts said.

"We think the time has come to consider that a financial market crash today may push a world economy teetering on the verge of a contraction over the edge," said Carl Weinberg, chief economist at High Frequency Economics.

By Marley Jay

The Associated Press

June 24, 2016

***Brexit Meningkatkan Risiko Kemelesetan Global dalam  
Pasaran Kewangan***

*NEW YORK — Saham menjunam di Amerika Syarikat dan di seluruh dunia hari ini selepas Britain mengundi untuk meninggalkan Kesatuan Eropah. Hasilnya mengejutkan pelabur, yang bertindak balas dengan pantas untuk keselamatan emas dan bon kerajaan Amerika Syarikat. Ini kerana mereka tertanya-tanya dengan apa yang akan berlaku seterusnya kepada Britain, Eropah dan ekonomi global.*

*Pembuat dasar antarabangsa telah lama memberi amaran bahawa pemulihan yang perlahan daripada Kegawatan Besar telah menyebabkan ekonomi dunia yang lebih terdedah kepada kejatuhan yang lain. Krisis hutang kerajaan Eropah, keadaan ekonomi China yang tidak menentu dan kejatuhan harga minyak telah memberi tekanan terhadap prospek pertumbuhan global. Penarikan keluar Britain dari EU - lebih dikenali sebagai "Brexit" - boleh menjadi pilihan akhir, menurut pakar.*

*"Kami rasa sudah tiba masanya untuk mempertimbangkan bahawa kejatuhan pasaran kewangan hari ini mungkin menolak ekonomi dunia di ambang penguncupan." kata Carl Weinberg, Ketua Ekonomi di Ekonomi Frekuensi Tinggi.*

*Oleh Marley Jay*

*The Associated Press*

*Jun 24, 2016*

Based on the article, Identify **ONE (1)** of the types of risk and list **THREE (3)** symptoms of global recession.

Berdasarkan artikel, kenalpasti **SATU (1)** jenis risiko dan senaraikan **TIGA (3)** simptom-simptom kemelesetan global.

[4 marks]

[4 markah]

**QUESTION 2**  
**SOALAN 2**CLO1  
C1

- (a) i. Identify
- TWO (2)**
- types of investment analysis.

*Kenalpasti DUA (2) jenis analisa pelaburan.*

[ 3 marks ]

[ 3 markah ]

- ii. Describe briefly definition of Efficient Market Hypothesis.

*Jelaskan secara ringkas pengertian Hipotesis Kecekapan Pasaran*

[ 2 marks ]

[ 2 markah ]

CLO1  
C2

- (b) i. State
- FIVE (5)**
- characteristics of Sukuk.

*Nyatakan LIMA (5) ciri-ciri Sukuk*

[ 5 marks ]

[ 5 markah ]

- ii. Identify
- FIVE (5)**
- types of Sukuk.

*Kenalpasti LIMA (5) jenis Sukuk.*

[ 5 marks ]

[ 5 markah ]

CLO1  
C3

- (c) Ahmad owns ABC Islamic Bond . Its face value is at RM1,000 and has a coupon rate of 10% with Semi Annually Profit Payment and will mature within 10 years. This sukuk is being traded with a market price of RM 960 and the required rate of return is 12 percent.

*Ahmad memiliki Bon Islam (Sukuk) ABC, bernilai muka RM1,000 dan mempunyai kadar kupon 10% dengan Pembayaran Keuntungan secara dua kali setahun dan akan matang dalam tempoh 10 tahun . Sukuk ini diniagakan pada harga pasaran RM 960 dan kadar pulangan yang diperlukan ialah 12 peratus.*

- i. Calculate the expected rate of return for this Sukuk.

*Kirakan kadar pulangan dijangka bagi Sukuk ini.*

[ 5 marks ]

[ 5 markah ]

- ii. Calculate the value of the Sukuk.

*Kirakan nilai intrinsik Sukuk.*

[ 5 marks ]

[ 5 markah ]

## QUESTION 3

## SOALAN 3

CLO1  
C1

- (a) Distinguish between common share and preferred share.

*Bezakan antara saham biasa dan saham keutamaan.*

[5 marks]

[5 markah]

CLO1  
C2

- (b) Identify
- FIVE (5)**
- types of instruments in Islamic Interbank Money Market.

*Tentukan LIMA (5) jenis insrumen Pasaran Wang Islam Antara Bank.*

[5 marks]

[5 markah]

CLO1  
C4

- (c)

In 2012, ABC Berhad will be listed on the Bursa Malaysia. ABC Berhad allocated some units and offering to retail investor to purchase the shares. In 2013, share price of ABC Berhad dropped by 30%. Ali as a shareholder of ABC Berhad did not understand why the share price have gone down excessively.

*Pada tahun 2012, ABC Berhad telah disenaraikan di Bursa Malaysia. ABC Berhad telah memperuntukkan sebahagian unit saham untuk ditawarkan kepada pelabur runcit untuk membeli saham.. Pada 2013, harga saham ABC Berhad telah jatuh sebanyak 30%. Ali, sebagai pemegang saham ABC Berhad tidak faham mengapa harga saham tersebut jatuh secara mendadak.*

Advice Ali on the situation about by evaluating **FIVE (5)** factors affecting of the ABC Berhad's share price.

*Nasihati Ali berkenaan masalah di atas dengan mengenalpasti LIMA (5) faktor-faktor yang mempengaruhi harga saham ABC Berhad.*

[15 marks]

[15 markah]

## QUESTION 4

## SOALAN 4

CLO2  
C1

- (a) Describe **FIVE (5)** types of Sukuk  
*Terangkan LIMA (5) jenis Sukuk*

[10 marks]

[10 markah]

CLO3  
C2

- (b) i. Explain **FIVE (5)** objective securitize asset  
*Jelaskan LIMA (5) objektif mensekuritikan asset*

[5 marks]

[5 markah]

- ii. Explain **FIVE (5)** participants involved in securitization.  
*Jelaskan LIMA (5) peserta yang terlibat dalam pensekuritian.*

[10 marks]

[10 markah]

## SOALAN TAMAT

Present value interest factor of \$1 per period at i% for n periods, PVIF(i,n).

| Period | 1%    | 2%    | 3%    | 4%    | 5%    | 6%    | 7%    | 8%    | 9%    | 10%   | 11%   | 12%   | 13%   | 14%   | 15%   | 16%   | 17%   | 18%   | 19%   | 20%   |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1      | 0.990 | 0.980 | 0.971 | 0.962 | 0.952 | 0.943 | 0.935 | 0.926 | 0.917 | 0.909 | 0.901 | 0.893 | 0.885 | 0.877 | 0.870 | 0.862 | 0.855 | 0.847 | 0.840 | 0.833 |
| 2      | 0.980 | 0.961 | 0.943 | 0.925 | 0.907 | 0.890 | 0.873 | 0.857 | 0.842 | 0.826 | 0.812 | 0.797 | 0.783 | 0.769 | 0.756 | 0.743 | 0.731 | 0.718 | 0.706 | 0.694 |
| 3      | 0.971 | 0.942 | 0.915 | 0.889 | 0.864 | 0.840 | 0.816 | 0.794 | 0.772 | 0.751 | 0.731 | 0.712 | 0.693 | 0.675 | 0.658 | 0.641 | 0.624 | 0.609 | 0.593 | 0.579 |
| 4      | 0.961 | 0.924 | 0.898 | 0.855 | 0.823 | 0.792 | 0.763 | 0.735 | 0.708 | 0.683 | 0.659 | 0.636 | 0.613 | 0.592 | 0.572 | 0.552 | 0.534 | 0.516 | 0.499 | 0.482 |
| 5      | 0.951 | 0.906 | 0.863 | 0.822 | 0.784 | 0.747 | 0.713 | 0.681 | 0.650 | 0.621 | 0.593 | 0.567 | 0.543 | 0.519 | 0.497 | 0.476 | 0.456 | 0.437 | 0.419 | 0.402 |
| 6      | 0.942 | 0.888 | 0.837 | 0.790 | 0.746 | 0.705 | 0.666 | 0.630 | 0.596 | 0.564 | 0.535 | 0.507 | 0.480 | 0.456 | 0.432 | 0.410 | 0.390 | 0.370 | 0.352 | 0.335 |
| 7      | 0.933 | 0.871 | 0.813 | 0.760 | 0.711 | 0.665 | 0.623 | 0.583 | 0.547 | 0.513 | 0.482 | 0.452 | 0.425 | 0.400 | 0.376 | 0.354 | 0.333 | 0.314 | 0.296 | 0.279 |
| 8      | 0.923 | 0.853 | 0.789 | 0.731 | 0.677 | 0.627 | 0.582 | 0.540 | 0.500 | 0.460 | 0.424 | 0.391 | 0.361 | 0.333 | 0.308 | 0.284 | 0.263 | 0.243 | 0.225 | 0.209 |
| 9      | 0.914 | 0.837 | 0.766 | 0.703 | 0.645 | 0.592 | 0.544 | 0.500 | 0.457 | 0.416 | 0.379 | 0.345 | 0.313 | 0.284 | 0.257 | 0.232 | 0.208 | 0.187 | 0.166 | 0.146 |
| 10     | 0.905 | 0.820 | 0.744 | 0.676 | 0.614 | 0.558 | 0.508 | 0.463 | 0.422 | 0.386 | 0.352 | 0.322 | 0.295 | 0.270 | 0.247 | 0.227 | 0.208 | 0.191 | 0.176 | 0.162 |
| 11     | 0.896 | 0.804 | 0.728 | 0.655 | 0.585 | 0.527 | 0.475 | 0.429 | 0.388 | 0.350 | 0.317 | 0.287 | 0.261 | 0.237 | 0.215 | 0.195 | 0.178 | 0.162 | 0.148 | 0.135 |
| 12     | 0.887 | 0.788 | 0.711 | 0.635 | 0.561 | 0.497 | 0.441 | 0.397 | 0.356 | 0.319 | 0.286 | 0.257 | 0.231 | 0.208 | 0.187 | 0.168 | 0.152 | 0.137 | 0.124 | 0.112 |
| 13     | 0.879 | 0.773 | 0.695 | 0.617 | 0.540 | 0.473 | 0.415 | 0.368 | 0.326 | 0.290 | 0.258 | 0.229 | 0.204 | 0.182 | 0.163 | 0.145 | 0.130 | 0.116 | 0.104 | 0.093 |
| 14     | 0.870 | 0.758 | 0.679 | 0.600 | 0.521 | 0.451 | 0.391 | 0.342 | 0.299 | 0.263 | 0.232 | 0.205 | 0.181 | 0.160 | 0.141 | 0.125 | 0.111 | 0.099 | 0.088 | 0.078 |
| 15     | 0.861 | 0.743 | 0.662 | 0.582 | 0.501 | 0.429 | 0.367 | 0.315 | 0.275 | 0.239 | 0.209 | 0.183 | 0.160 | 0.140 | 0.123 | 0.108 | 0.095 | 0.084 | 0.074 | 0.065 |
| 16     | 0.853 | 0.728 | 0.645 | 0.563 | 0.480 | 0.406 | 0.342 | 0.289 | 0.252 | 0.218 | 0.188 | 0.163 | 0.141 | 0.123 | 0.107 | 0.093 | 0.081 | 0.071 | 0.062 | 0.054 |
| 17     | 0.844 | 0.714 | 0.630 | 0.547 | 0.463 | 0.387 | 0.321 | 0.266 | 0.229 | 0.194 | 0.164 | 0.138 | 0.116 | 0.098 | 0.083 | 0.070 | 0.060 | 0.051 | 0.043 | 0.037 |
| 18     | 0.836 | 0.700 | 0.587 | 0.494 | 0.416 | 0.350 | 0.317 | 0.270 | 0.231 | 0.198 | 0.170 | 0.146 | 0.125 | 0.108 | 0.093 | 0.080 | 0.069 | 0.059 | 0.051 | 0.044 |
| 19     | 0.828 | 0.686 | 0.570 | 0.475 | 0.396 | 0.331 | 0.277 | 0.232 | 0.194 | 0.164 | 0.138 | 0.116 | 0.098 | 0.083 | 0.070 | 0.060 | 0.051 | 0.043 | 0.037 | 0.031 |
| 20     | 0.820 | 0.673 | 0.554 | 0.456 | 0.377 | 0.312 | 0.258 | 0.215 | 0.178 | 0.149 | 0.124 | 0.104 | 0.087 | 0.073 | 0.061 | 0.051 | 0.043 | 0.037 | 0.031 | 0.026 |
| 21     | 0.811 | 0.660 | 0.538 | 0.439 | 0.359 | 0.294 | 0.240 | 0.199 | 0.164 | 0.135 | 0.112 | 0.093 | 0.077 | 0.064 | 0.054 | 0.044 | 0.037 | 0.031 | 0.026 | 0.022 |
| 22     | 0.803 | 0.647 | 0.522 | 0.422 | 0.342 | 0.278 | 0.226 | 0.184 | 0.150 | 0.123 | 0.101 | 0.083 | 0.068 | 0.056 | 0.046 | 0.036 | 0.032 | 0.026 | 0.022 | 0.018 |
| 23     | 0.795 | 0.634 | 0.507 | 0.406 | 0.326 | 0.262 | 0.211 | 0.170 | 0.138 | 0.112 | 0.091 | 0.074 | 0.060 | 0.049 | 0.040 | 0.033 | 0.027 | 0.022 | 0.018 | 0.015 |
| 24     | 0.788 | 0.622 | 0.492 | 0.390 | 0.310 | 0.247 | 0.197 | 0.156 | 0.126 | 0.102 | 0.082 | 0.066 | 0.053 | 0.043 | 0.035 | 0.028 | 0.023 | 0.019 | 0.015 | 0.013 |
| 25     | 0.780 | 0.610 | 0.478 | 0.375 | 0.295 | 0.233 | 0.184 | 0.146 | 0.116 | 0.092 | 0.074 | 0.059 | 0.047 | 0.038 | 0.030 | 0.024 | 0.020 | 0.016 | 0.013 | 0.010 |
| 26     | 0.772 | 0.598 | 0.464 | 0.361 | 0.281 | 0.220 | 0.172 | 0.135 | 0.106 | 0.084 | 0.066 | 0.053 | 0.042 | 0.033 | 0.026 | 0.021 | 0.017 | 0.014 | 0.011 | 0.009 |
| 27     | 0.764 | 0.586 | 0.450 | 0.347 | 0.268 | 0.207 | 0.161 | 0.125 | 0.098 | 0.076 | 0.060 | 0.047 | 0.037 | 0.029 | 0.023 | 0.018 | 0.014 | 0.011 | 0.009 | 0.007 |
| 28     | 0.757 | 0.574 | 0.437 | 0.333 | 0.255 | 0.196 | 0.150 | 0.116 | 0.090 | 0.069 | 0.054 | 0.042 | 0.033 | 0.026 | 0.020 | 0.016 | 0.012 | 0.010 | 0.008 | 0.006 |
| 29     | 0.749 | 0.563 | 0.424 | 0.321 | 0.243 | 0.185 | 0.141 | 0.107 | 0.082 | 0.063 | 0.048 | 0.037 | 0.029 | 0.022 | 0.017 | 0.014 | 0.011 | 0.008 | 0.006 | 0.005 |
| 30     | 0.742 | 0.552 | 0.412 | 0.308 | 0.231 | 0.174 | 0.131 | 0.099 | 0.075 | 0.057 | 0.044 | 0.033 | 0.026 | 0.020 | 0.015 | 0.012 | 0.009 | 0.007 | 0.005 | 0.004 |
| 31     | 0.735 | 0.541 | 0.400 | 0.296 | 0.220 | 0.164 | 0.123 | 0.092 | 0.069 | 0.052 | 0.039 | 0.030 | 0.023 | 0.017 | 0.013 | 0.010 | 0.008 | 0.006 | 0.005 | 0.004 |
| 32     | 0.727 | 0.531 | 0.388 | 0.285 | 0.210 | 0.155 | 0.115 | 0.085 | 0.063 | 0.047 | 0.035 | 0.027 | 0.020 | 0.015 | 0.011 | 0.009 | 0.007 | 0.005 | 0.004 | 0.003 |
| 33     | 0.720 | 0.520 | 0.377 | 0.274 | 0.200 | 0.146 | 0.107 | 0.079 | 0.058 | 0.043 | 0.032 | 0.024 | 0.018 | 0.013 | 0.010 | 0.008 | 0.006 | 0.004 | 0.003 | 0.002 |
| 34     | 0.713 | 0.510 | 0.366 | 0.264 | 0.190 | 0.138 | 0.100 | 0.073 | 0.053 | 0.039 | 0.029 | 0.021 | 0.016 | 0.012 | 0.009 | 0.006 | 0.005 | 0.004 | 0.003 | 0.002 |
| 35     | 0.706 | 0.500 | 0.355 | 0.253 | 0.181 | 0.130 | 0.094 | 0.068 | 0.049 | 0.036 | 0.026 | 0.019 | 0.014 | 0.010 | 0.008 | 0.006 | 0.004 | 0.003 | 0.002 | 0.002 |
| 36     | 0.699 | 0.490 | 0.345 | 0.244 | 0.173 | 0.123 | 0.088 | 0.063 | 0.045 | 0.032 | 0.022 | 0.015 | 0.011 | 0.008 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |
| 37     | 0.692 | 0.481 | 0.335 | 0.234 | 0.164 | 0.116 | 0.082 | 0.058 | 0.041 | 0.029 | 0.021 | 0.015 | 0.011 | 0.008 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |
| 38     | 0.685 | 0.471 | 0.325 | 0.225 | 0.157 | 0.109 | 0.076 | 0.054 | 0.038 | 0.027 | 0.019 | 0.013 | 0.010 | 0.007 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |
| 39     | 0.678 | 0.462 | 0.316 | 0.217 | 0.149 | 0.103 | 0.071 | 0.050 | 0.035 | 0.024 | 0.017 | 0.012 | 0.009 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 |
| 40     | 0.672 | 0.453 | 0.307 | 0.208 | 0.142 | 0.097 | 0.067 | 0.046 | 0.032 | 0.022 | 0.015 | 0.011 | 0.008 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 |
| 41     | 0.665 | 0.444 | 0.298 | 0.200 | 0.135 | 0.092 | 0.062 | 0.043 | 0.029 | 0.020 | 0.014 | 0.010 | 0.007 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 |
| 42     | 0.658 | 0.435 | 0.289 | 0.193 | 0.129 | 0.087 | 0.058 | 0.039 | 0.027 | 0.018 | 0.012 | 0.009 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 |
| 43     | 0.652 | 0.427 | 0.281 | 0.185 | 0.123 | 0.082 | 0.055 | 0.037 | 0.025 | 0.017 | 0.011 | 0.008 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 |
| 44     | 0.645 | 0.418 | 0.272 | 0.178 | 0.117 | 0.077 | 0.051 | 0.034 | 0.023 | 0.015 | 0.010 | 0.007 | 0.005 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| 45     | 0.639 | 0.410 | 0.264 | 0.171 | 0.111 | 0.073 | 0.048 | 0.031 | 0.021 | 0.014 | 0.009 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| 46     | 0.633 | 0.402 | 0.257 | 0.165 | 0.106 | 0.069 | 0.044 | 0.029 | 0.019 | 0.012 | 0.008 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| 47     | 0.626 | 0.394 | 0.249 | 0.158 | 0.101 | 0.065 | 0.042 | 0.027 | 0.017 | 0.011 | 0.007 | 0.005 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 48     | 0.620 | 0.387 | 0.242 | 0.152 | 0.096 | 0.061 | 0.039 | 0.025 | 0.016 | 0.010 | 0.007 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 49     | 0.614 | 0.379 | 0.235 | 0.146 | 0.092 | 0.058 | 0.036 | 0.023 | 0.015 | 0.009 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 50     | 0.608 | 0.372 | 0.228 | 0.141 | 0.087 | 0.054 | 0.034 | 0.021 | 0.013 | 0.009 | 0.005 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |

Present value interest factor of an (ordinary) annuity of \$1 per period at i% for n periods, PVIFA(i,n).

| Period | 1%     | 2%     | 3%     | 4%     | 5%     | 6%     | 7%     | 8%     | 9%     | 10%   | 11%   | 12%   | 13%   | 14%   | 15%   | 16%   | 17%   | 18%   | 19%   | 20%   |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1      | 0.990  | 0.980  | 0.971  | 0.962  | 0.952  | 0.943  | 0.935  | 0.926  | 0.917  | 0.909 | 0.901 | 0.893 | 0.885 | 0.877 | 0.870 | 0.862 | 0.855 | 0.847 | 0.840 | 0.833 |
| 2      | 1.970  | 1.942  | 1.913  | 1.886  | 1.859  | 1.833  | 1.808  | 1.783  | 1.759  | 1.736 | 1.713 | 1.690 | 1.668 | 1.647 | 1.626 | 1.605 | 1.585 | 1.566 | 1.547 | 1.528 |
| 3      | 2.941  | 2.884  | 2.829  | 2.775  | 2.723  | 2.673  | 2.624  | 2.577  | 2.531  | 2.487 | 2.444 | 2.402 | 2.361 | 2.322 | 2.283 | 2.246 | 2.210 | 2.174 | 2.140 | 2.106 |
| 4      | 3.902  | 3.808  | 3.717  | 3.630  | 3.546  | 3.465  | 3.387  | 3.312  | 3.240  | 3.170 | 3.102 | 3.037 | 2.974 | 2.914 | 2.855 | 2.798 | 2.743 | 2.690 | 2.639 | 2.589 |
| 5      | 4.853  | 4.713  | 4.580  | 4.452  | 4.329  | 4.212  | 4.100  | 3.993  | 3.890  | 3.791 | 3.696 | 3.605 | 3.517 | 3.433 | 3.352 | 3.274 | 3.199 | 3.127 | 3.058 | 2.991 |
| 6      | 5.795  | 5.601  | 5.417  | 5.242  | 5.076  | 4.917  | 4.767  | 4.623  | 4.486  | 4.355 | 4.231 | 4.111 | 3.998 | 3.889 | 3.784 | 3.685 | 3.589 | 3.498 | 3.410 | 3.326 |
| 7      | 6.728  | 6.472  | 6.230  | 6.002  | 5.786  | 5.582  | 5.389  | 5.206  | 5.033  | 4.868 | 4.712 | 4.564 | 4.423 | 4.288 | 4.160 | 4.039 | 3.922 | 3.812 | 3.706 | 3.605 |
| 8      | 7.652  | 7.325  | 7.020  | 6.733  | 6.463  | 6.210  | 5.971  | 5.747  | 5.535  | 5.335 | 5.146 | 4.968 | 4.799 | 4.639 | 4.487 | 4.344 | 4.207 | 4.078 | 3.954 | 3.837 |
| 9      | 8.566  | 8.162  | 7.786  | 7.435  | 7.108  | 6.802  | 6.515  | 6.247  | 5.995  | 5.759 | 5.537 | 5.328 | 5.132 | 4.946 | 4.772 | 4.607 | 4.451 | 4.303 | 4.163 | 4.031 |
| 10     | 9.471  | 8.983  | 8.530  | 8.111  | 7.722  | 7.360  | 7.024  | 6.710  | 6.418  | 6.145 | 5.889 | 5.650 | 5.426 | 5.216 | 5.019 | 4.833 | 4.659 | 4.494 | 4.339 | 4.192 |
| 11     | 10.368 | 9.787  | 9.253  | 8.760  | 8.306  | 7.887  | 7.499  | 7.139  | 6.805  | 6.495 | 6.207 | 5.938 | 5.687 | 5.453 | 5.234 | 5.029 | 4.836 | 4.656 | 4.486 | 4.327 |
| 12     | 11.255 | 10.575 | 9.954  | 9.385  | 8.863  | 8.384  | 7.943  | 7.536  | 7.161  | 6.814 | 6.492 | 6.194 | 5.918 | 5.660 | 5.421 | 5.197 | 4.988 | 4.793 | 4.611 | 4.439 |
| 13     | 12.134 | 11.348 | 10.635 | 9.966  | 9.394  | 8.853  | 8.358  | 7.904  | 7.487  | 7.103 | 6.750 | 6.424 | 6.122 | 5.842 | 5.583 | 5.342 | 5.118 | 4.910 | 4.715 | 4.533 |
| 14     | 13.004 | 12.106 | 11.296 | 10.563 | 9.899  | 9.295  | 8.745  | 8.244  | 7.786  | 7.367 | 6.982 | 6.628 | 6.302 | 6.002 | 5.724 | 5.468 | 5.229 | 5.008 | 4.802 | 4.611 |
| 15     | 13.865 | 12.849 | 11.938 | 11.118 | 10.380 | 9.712  | 9.108  | 8.559  | 8.061  | 7.606 | 7.191 | 6.811 | 6.462 | 6.142 | 5.847 | 5.575 | 5.324 | 5.092 | 4.876 | 4.675 |
| 16     | 14.718 | 13.578 | 12.561 | 11.652 | 10.838 | 10.106 | 9.447  | 8.851  | 8.313  | 7.824 | 7.379 | 6.974 | 6.604 | 6.265 | 5.954 | 5.668 | 5.405 | 5.162 | 4.936 | 4.730 |
| 17     | 15.562 | 14.292 | 13.166 | 12.166 | 11.274 | 10.477 | 9.763  | 9.122  | 8.544  | 8.022 | 7.549 | 7.120 | 6.729 | 6.373 | 6.047 | 5.749 | 5.475 | 5.222 | 4.993 | 4.775 |
| 18     | 16.398 | 14.992 | 13.754 | 12.659 | 11.690 | 10.826 | 10.059 | 9.372  | 8.756  | 8.201 | 7.702 | 7.250 | 6.840 | 6.467 | 6.128 | 5.818 | 5.534 | 5.273 | 5.033 | 4.812 |
| 19     | 17.226 | 15.678 | 14.324 | 13.134 | 12.085 | 11.158 | 10.336 | 9.604  | 8.950  | 8.365 | 7.839 | 7.366 | 6.938 | 6.550 | 6.198 | 5.877 | 5.584 | 5.316 | 5.070 | 4.843 |
| 20     | 18.046 | 16.351 | 14.877 | 13.590 | 12.462 | 11.470 | 10.594 | 9.818  | 9.129  | 8.514 | 7.963 | 7.469 | 7.025 | 6.623 | 6.259 | 5.929 | 5.628 | 5.353 | 5.101 | 4.870 |
| 21     | 18.857 | 17.011 | 15.415 | 14.029 | 12.821 | 11.764 | 10.836 | 10.017 | 9.292  | 8.649 | 8.075 | 7.562 | 7.102 | 6.687 | 6.312 | 5.973 | 5.665 | 5.384 | 5.127 | 4.891 |
| 22     | 19.660 | 17.658 | 15.937 | 14.451 | 13.163 | 12.042 | 11.061 | 10.201 | 9.442  | 8.772 | 8.176 | 7.645 | 7.170 | 6.743 | 6.359 | 6.011 | 5.696 | 5.410 | 5.149 | 4.909 |
| 23     | 20.456 | 18.292 | 16.444 | 14.857 | 13.489 | 12.303 | 11.272 | 10.371 | 9.580  | 8.883 | 8.266 | 7.718 | 7.230 | 6.792 | 6.399 | 6.044 | 5.723 | 5.432 | 5.167 | 4.925 |
| 24     | 21.243 | 18.914 | 16.936 | 15.247 | 13.799 | 12.550 | 11.469 | 10.529 | 9.707  | 8.985 | 8.348 | 7.784 | 7.283 | 6.835 | 6.434 | 6.073 | 5.766 | 5.480 | 5.206 | 4.956 |
| 25     | 22.023 | 19.523 | 17.413 | 15.622 | 14.094 | 12.783 | 11.654 | 10.675 | 9.823  | 9.077 | 8.422 | 7.843 | 7.330 | 6.873 | 6.464 | 6.097 | 5.788 | 5.492 | 5.215 | 4.964 |
| 26     | 22.795 | 20.121 | 17.877 | 15.963 | 14.375 | 13.003 | 11.826 | 10.810 | 9.929  | 9.161 | 8.488 | 7.896 | 7.372 | 6.906 | 6.491 | 6.118 | 5.783 | 5.480 | 5.206 | 4.956 |
| 27     | 23.560 | 20.707 | 18.327 | 16.330 | 14.643 | 13.211 | 11.987 | 10.935 | 10.027 | 9.237 | 8.548 | 7.943 | 7.409 | 6.935 | 6.514 | 6.136 | 5.798 | 5.492 | 5.215 | 4.964 |
| 28     | 24.316 | 21.281 | 18.764 | 16.663 | 14.898 | 13.406 | 12.137 | 11.051 | 10.116 | 9.307 | 8.602 | 7.994 | 7.441 | 6.961 | 6.534 | 6.152 | 5.810 | 5.502 | 5.223 | 4.970 |
| 29     | 25.066 | 21.844 | 19.188 | 16.984 | 15.141 | 13.591 | 12.278 | 11.158 | 10.198 | 9.370 | 8.650 | 8.022 | 7.470 | 6.983 | 6.551 | 6.166 | 5.820 | 5.510 | 5.229 | 4.975 |
| 30     | 25.808 | 22.396 | 19.600 | 17.292 | 15.372 | 13.765 | 12.409 | 11.258 | 10.274 | 9.427 | 8.694 | 8.055 | 7.496 | 7.003 | 6.566 | 6.177 | 5.829 | 5.517 | 5.235 | 4.979 |
| 31     | 26.542 | 22.938 | 20.000 | 17.588 | 15.593 | 13.929 | 12.532 | 11.350 | 10.343 | 9.479 | 8.733 | 8.085 | 7.518 | 7.020 | 6.579 | 6.187 | 5.837 | 5.523 | 5.239 | 4.982 |
| 32     | 27.270 | 23.468 | 20.389 | 17.874 | 15.803 | 14.084 | 12.647 | 11.435 | 10.406 | 9.526 | 8.769 | 8.112 | 7.538 | 7.035 | 6.591 | 6.196 | 5.844 | 5.528 | 5.243 | 4.985 |
| 33     | 27.990 | 23.989 | 20.766 | 18.148 | 16.003 | 14.230 | 12.764 | 11.514 | 10.464 | 9.569 | 8.801 | 8.135 | 7.556 | 7.048 | 6.600 | 6.203 | 5.849 | 5.532 | 5.246 | 4.988 |
| 34     | 28.703 | 24.499 | 21.132 | 18.411 | 16.193 | 14.368 | 12.854 | 11.587 | 10.518 | 9.609 | 8.829 | 8.157 | 7.572 | 7.060 | 6.609 | 6.210 | 5.854 | 5.536 | 5.249 | 4.990 |
| 35     | 29.409 | 24.999 | 21.487 | 18.665 | 16.374 | 14.498 | 12.948 | 11.665 | 10.567 | 9.644 | 8.855 | 8.176 | 7.586 | 7.070 | 6.617 | 6.215 | 5.858 | 5.539 | 5.251 | 4.992 |
| 36     | 30.108 | 25.489 | 21.832 | 18.908 | 16.547 | 14.621 | 13.035 | 11.717 | 10.612 | 9.677 | 8.879 | 8.192 | 7.598 | 7.079 | 6.623 | 6.220 | 5.862 | 5.541 | 5.253 | 4.993 |
| 37     | 30.800 | 25.969 | 22.167 | 19.147 | 16.711 | 14.737 | 13.117 | 11.775 | 10.653 | 9.706 | 8.900 | 8.208 | 7.609 | 7.087 | 6.629 | 6.224 | 5.865 | 5.543 | 5.255 | 4.994 |
| 38     | 31.485 | 26.441 | 22.492 | 19.368 | 16.868 | 14.846 | 13.193 | 11.829 | 10.691 | 9.733 | 8.919 | 8.221 | 7.618 | 7.094 | 6.634 | 6.228 | 5.867 | 5.545 | 5.256 | 4.995 |
| 39     | 32.163 | 26.903 | 22.808 | 19.584 | 17.017 | 14.949 | 13.265 | 11.879 | 10.726 | 9.757 | 8.936 | 8.233 | 7.627 | 7.100 | 6.638 | 6.231 | 5.869 | 5.547 | 5.257 | 4.996 |
| 40     | 32.835 | 27.355 | 23.115 | 19.793 | 17.159 | 15.046 | 13.332 | 11.925 | 10.757 | 9.779 | 8.951 | 8.244 | 7.634 | 7.105 | 6.642 | 6.233 | 5.871 | 5.548 | 5.258 | 4.997 |
| 41     | 33.500 | 27.799 | 23.412 | 19.993 | 17.294 | 15.136 | 13.394 | 11.967 | 10.787 | 9.799 | 8.965 | 8.253 | 7.641 | 7.110 | 6.645 | 6.236 | 5.873 | 5.549 | 5.259 | 4.997 |
| 42     | 34.158 | 28.235 | 23.701 | 20.186 | 17.423 | 15.225 | 13.452 | 12.007 | 10.813 | 9.817 | 8.977 | 8.262 | 7.647 | 7.114 | 6.648 | 6.238 | 5.874 | 5.550 | 5.260 | 4.998 |
| 43     | 34.810 | 28.662 | 23.982 | 20.371 | 17.546 | 15.306 | 13.507 | 12.043 | 10.838 | 9.834 | 8.989 | 8.270 | 7.652 | 7.117 | 6.650 | 6.239 | 5.875 | 5.551 | 5.260 | 4.998 |
| 44     | 35.455 | 29.080 | 24.254 | 20.549 | 17.663 | 15.383 | 13.558 | 12.077 | 10.861 | 9.849 | 8.999 | 8.276 | 7.657 | 7.120 | 6.652 | 6.241 | 5.876 | 5.552 | 5.261 | 4.999 |
| 45     | 36.095 | 29.490 | 24.519 | 20.720 | 17.774 | 15.456 | 13.608 | 12.108 | 10.881 | 9.863 | 9.008 | 8.283 | 7.661 | 7.123 | 6.654 | 6.242 | 5.877 | 5.552 | 5.261 | 4.999 |
| 46     | 36.727 | 29.892 | 24.775 | 20.885 | 17.880 | 15.524 | 13.650 | 12.137 | 10.900 | 9.875 | 9.016 | 8.288 | 7.664 | 7.126 | 6.656 | 6.243 | 5.878 | 5.553 | 5.261 | 4.999 |
| 47     | 37.354 | 30.287 | 25.025 | 21.043 | 17.981 | 15.589 | 13.692 | 12.169 | 10.918 | 9.887 | 9.024 | 8.293 | 7.668 | 7.128 | 6.657 | 6.244 | 5.879 | 5.553 | 5.262 | 4.999 |
| 48     | 37.974 | 30.673 | 25.267 | 21.195 | 18.077 | 15.650 | 13.730 | 12.189 | 10.934 | 9.897 | 9.030 | 8.297 | 7.671 | 7.130 | 6.659 | 6.245 | 5.879 | 5.554 | 5.262 | 4.999 |
| 49     | 38.588 | 31.052 | 25.502 | 21.341 | 18.169 | 15.708 | 13.767 | 12.212 | 10.948 | 9.906 | 9.036 | 8.301 | 7.673 | 7.131 | 6.660 | 6.246 | 5.880 | 5.554 | 5.262 | 4.999 |
| 50     | 39.196 | 31.424 | 25.730 | 21.482 | 18.256 | 15.762 | 13.801 | 12.233 | 10.962 | 9.915 | 9.042 | 8.304 | 7.675 | 7.133 | 6.661 | 6.246 | 5.880 | 5.554 | 5.262 | 4.999 |