

CUET Mathematics Test

Unit VII: Financial Mathematics (Intermediate to Advanced)

General Instructions

1. Total Questions: **15**
2. Duration: **60 Minutes**
3. All questions are compulsory.
4. Each question carries **5 marks**.
5. For each correct answer: **+5 marks**.
6. For each incorrect answer: **-1 mark**.
7. No negative marking for unanswered questions.
8. Use of calculator or electronic devices is strictly prohibited.
9. Choose the most appropriate answer from the given options.

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1. A university wants to establish a scholarship of 10,000 to be awarded annually. If the first scholarship is to be awarded one year from now and the fund earns 8% p.a., the amount to be invested today is:
 - (A) 80,000
 - (B) 1,25,000
 - (C) 1,00,000
 - (D) 1,50,000
2. If a perpetuity pays 500 at the end of every 6 months and the interest rate is 10% per annum compounded semi-annually, the present value is:
 - (A) 5,000
 - (B) 10,000
 - (C) 15,000
 - (D) 20,000
3. A company requires 2,00,000 in 4 years. How much should be deposited at the end of each year in a sinking fund earning 12% interest p.a.? (Given $(1.12)^4 = 1.5735$)
 - (A) 34,813.92
 - (B) 40,500.00
 - (C) 42,610.25
 - (D) 50,000.00
4. In a growing perpetuity, if the growth rate g is equal to the interest rate i , the present value is:
 - (A) Infinite
 - (B) Zero
 - (C) R/i
 - (D) $R/(1 + i)$
5. An asset worth 1,50,000 has a useful life of 10 years and a scrap value of 30,000. The book value of the asset after 4 years using linear depreciation is:
 - (A) 1,02,000
 - (B) 1,20,000
 - (C) 90,000
 - (D) 1,08,000
6. The CAGR of an investment that triples in 5 years is approximately: (Given $3^{0.2} = 1.2457$)
 - (A) 20.00%
 - (B) 24.57%
 - (C) 30.15%
 - (D) 15.50%
7. A loan of 5,00,000 is to be paid back in EMI over 10 years at 9% p.a. The interest part of the very first EMI is:
 - (A) 3,750
 - (B) 4,500
 - (C) 3,000
 - (D) 45,000
8. Which method of depreciation results in a constant amount being charged every year?
 - (A) Written Down Value Method
 - (B) Sum of Years Digits Method
 - (C) Linear Method
 - (D) Annuity Method

9. The present value of a perpetuity due of 1,200 per year at 6% p.a. is:
(A) 20,000
(B) 21,200
(C) 18,800
(D) 22,000
10. If the CAGR for 3 years is 10%, what is the total percentage growth of the investment over the 3-year period?
(A) 30%
(B) 33.1%
(C) 31%
(D) 30.3%
11. A sinking fund payment R to accumulate an amount A in n years at rate i is given by:
(A) $R = A \times \frac{i}{(1+i)^n - 1}$
(B) $R = A \times \frac{(1+i)^n - 1}{i}$
(C) $R = A / (1+i)^n$
(D) $R = A \times (1+i)^n$
12. For a loan repaid via EMI, the principal component of the EMI:
(A) Remains constant
(B) Decreases over time
(C) Increases over time
(D) Is always zero
13. The rate of return which makes the Present Value of all cash inflows equal to the initial investment is called:
(A) CAGR
(B) Internal Rate of Return (IRR)
(C) Nominal Rate
(D) Effective Rate
14. A perpetuity paying 10,000 annually has a PV of 2,00,000. What is the annual interest rate?
(A) 4%
(B) 5%
(C) 6%
(D) 8%
15. A machine costs 50,000 and is depreciated at 4,000 per year. If the scrap value is 2,000, the useful life is:
(A) 12 years
(B) 10.5 years
(C) 12.5 years
(D) 11.5 years

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