

CUET Mathematics Test

Chapter: Unit VII: Financial Mathematics

SOLUTIONS

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Solutions

- Solution:** $PV = R/i = 1500/0.06 = 150000/6 = 25000$. **Correct Option: (B)**
- Solution:** For a growing perpetuity, $PV = R/(i - g) = 1000/(0.09 - 0.04) = 1000/0.05 = 20000$. **Correct Option: (A)**
- Solution:** $A = R \frac{(1+i)^n - 1}{i} \implies 500000 = R \frac{(1.1)^5 - 1}{0.1} \implies 500000 = R \frac{0.61051}{0.1} \implies 500000 = R \times 6.1051 \implies R = 81898.74$. **Correct Option: (A)**
- Solution:** Perpetuity due includes the first payment immediately. $PV = R + R/i$. **Correct Option: (B)**
- Solution:** $D = (C - S)/n = (80000 - 10000)/7 = 70000/7 = 10000$. **Correct Option: (B)**
- Solution:** $CAGR = (EV/BV)^{1/n} - 1 = (144/100)^{1/2} - 1 = 1.2 - 1 = 0.2$ or 20%. **Correct Option: (A)**
- Solution:** 12% p.a. compounded monthly means $i = 12/(12 \times 100) = 0.01$. **Correct Option: (B)**
- Solution:** Book value = Cost - (Annual Depreciation \times number of years) = $C - Dt$. **Correct Option: (B)**
- Solution:** Real rate \approx Nominal Rate - Inflation Rate = $15.5\% - 5\% = 10.5\%$. (Exact calculation: $(1.155/1.05) - 1 = 0.1 = 10\%$). **Correct Option: (C)**
- Solution:** Total payments = $18000 \times 5 = 90000$. Interest = $100000 - 90000 = 10000$. **Correct Option: (A)**
- Solution:** $R = 500$, quarterly $i = 0.08/4 = 0.02$. $PV = 500/0.02 = 25000$. **Correct Option: (B)**
- Solution:** This is the standard Reducing Balance Method formula for Equated Monthly Installments. **Correct Option: (A)**
- Solution:** $D = (C - S)/n \implies 4500 = (50000 - S)/10 \implies 45000 = 50000 - S \implies S = 5000$. **Correct Option: (A)**
- Solution:** $CAGR = (13310/10000)^{1/3} - 1 = (1.331)^{1/3} - 1 = 1.1 - 1 = 0.1$ or 10%. **Correct Option: (A)**
- Solution:** Sinking fund payments are considered an ordinary annuity, paid at the end of each period. **Correct Option: (A)**
- Solution:** Periodic $i = 0.10/2 = 0.05$. $PV = 600/0.05 = 12000$. **Correct Option: (B)**
- Solution:** EMI = Principal Repayment + Interest Payment. $5000 = P + 1200 \implies P = 3800$. **Correct Option: (B)**
- Solution:** Increasing the Ending Value (EV) directly increases the growth factor (EV/BV). **Correct Option: (A)**
- Solution:** $D = (C - S)/n \implies 2500 = (30000 - 5000)/n \implies 2500 = 25000/n \implies n = 10$. **Correct Option: (A)**
- Solution:** $PV = R/i = 2000/0.05 = 40000$. **Correct Option: (A)**