Université d'Ottawa • University of Ottawa

Faculté des sciences sociales
Science Économique

Faculty of Social Sciences
Economics

Engineering Economics
ECO 1192

First Partial Examination (PE1)

C.Théoret

1. The baseline for the acceptance or rejection of a project using the External Rate of Return method is
   a) MARR
   b) Recovery period less than the industry threshold
   c) $0
   d) 1
   e) None of the above answers.

2. If the rate of interest is 8% compounded quarterly, the nominal rate of interest (annual) is
   a) 2%
   b) 8%
   c) 8.16%
   d) None of the above answers.

3. A common period of analysis is required to determine the economic validity of two projects, A and B, when using the Present Worth method.
a) True
b) False

4. If the rate of interest is 16% compounded quarterly, the effective rate of interest (annual) is
a) 16%
b) 16.99%
c) 4%
d) None of the above answers.

5. A project with a Net Present Worth of $-300 (negative) must have a negative external rate of return.
a) True
b) False

6. A project with a $0 Net Present Worth must have a lower rate of return than the MARR.
a) True
b) False.

7. The nominal rate of interest will exceed the effective rate of interest when
a) simple interest is used
b) compounding tends to infinity
c) the nominal rate exceeds MARR
d) None of the above answers.

8. Which effective rate of interest compounded semi-annually is equivalent to an actual monthly rate of 2%?
a) 6%
b) 2%
c) 6.12%
d) None of the above answers. [= 12.616%]

INFORMATION FOR QUESTIONS 9 to 12

Projects A to F

- **are ranked in ascending order of their first cost**
- **have identical lives (N)**
- **have negligible salvage values (SV=0).**

PROJECTS	RATES OF RETURN					
	A	B	C	D	E	F
A	22	-	-	-	-	-
B	23	25	-	-	-	-
C	21	20	20	-	-	-
D	20	19	18	16	-	-
E	19	18	17	15	14	-
F	15	14	13	12	15	9

9. If MARR = 15% and projects A, B, C, D, E and F are independent, valid projects, in the absence of no capital rationing, are:
   a) A and B
   b) A, B and C
   c) D
   d) E
   e) None of the above answers. [A, B,C and D]

10. If MARR = 21% and projects A, B, C, D, E and F are independent, valid projects, in the absence of no capital rationing, are:
   a) A and B
   b) B, C and D
   c) B and D
   d) E
   e) None of the above answers.

11. If MARR = 17% and projects A, B, C, D, E and F are mutually exclusive, the best project is:
   a) A
   b) C
   c) D
   d) E
   e) None of the above answers.

12. If MARR = 10% and projects A, B, C, D, E and F are mutually exclusive, the best

project is:
a) A
b) C
c) D
d) E
e) F

13. The External Rate of Return (ERR) method assumes that cash inflows generated by a project will be reinvested at the MARR.
a) True
b) False

INFORMATION FOR QUESTIONS 14 TO 22		
DETAILS	***PROJECT A***	***PROJECT B***
First Cost($)	50,000	90,000
Economic Life (years)	5	10
Annual Revenues ($)	25,000	30,000
Annual operating cost ($)	10,000	9,000 in the first year followed by annual decreases of $500 (e.g., 8,500 in year 2; 8,000 in year 3, etc.)
Salvage Value ($)	0	-2,000
MARR (%)	10	10

14. Project A's Annual Equivalent Worth can be calculated from answer
a) -50,000(A/P,10%,5) + 25,000 -10,000
b) -50,000(A/P,i*,5) + 15,000
c) -50,000 -10,000(A/P,10%,5) + 25,000(A/P,10%,5)
d) -50,000(A/P,10%,5) +15,000(F/A,10%,5)
e) None of the above answers.

15. Project A's Present Worth can be calculated from answer

a) -50,000(P/A,10%,5) + (25,000 -10,000)(P/A,10%,5)
b) -50,000(F/P,i*,5) + 15,000(P/A,i*,5)
c) -50,000(F/P,10%,10) + 15,000(F/A,10%,10)
d) -50,000 + (25,000-10,000)(P/F,10%,5)
e) None of the above answers.

16. Project A's Internal Rate of Return (i*) CANNOT be calculated from answer
a) -50,000 + 15,000(A/P,i*,5) = 0
b) -50,000(F/P,i*,5) + 15,000(F/A,i*,5) = 0
c) -50,000 + 15,000(P/A,i*,5) = 0
d) -50,000(A/P,i*,5) + 15,000 = 0
e) None of the above answers.

17. You are contemplating investing $1 million in project A or project B. After a thorough analysis, you opt for the "Do Nothing" alternative. The rate of return on your investment will be
a) = 0%
b) = MARR
c) Greater than MARR
d) Less than MARR

18. Project A's External Rate of Return (i*) can be calculated from answer
a) -50,000(F/P,10%,5) + 15,000(F/P,10%,5) = 0
b) -50,000(F/P,i*,5) + 15,000 = 0
c) -50,000(F/P,10%,5) + 15,000(A/F,i*,5) = 0
d) -50,000(F/P,i*,5) + 15,000(F/A,10%,5) = 0
e) None of the above answers.

19. Project B's Net Present Worth can be calculated from answer
a) -90,000(P/A,10%,10) + 21,000-2,000(P/F,10%,10) + 500(P/G,10%,10)
b) -90,000+2,000(P/F,10%,10) + 21,000(P/A,10%,10) - 500(F/G,10%10)
c) -90,000-2,000(P/F,10%,10) + 21,000(P/A,10%,10) - 500(P/G,10%10)
d) -90,000-2,000(P/F,10%,10) + 21,000(P/A,10%,10) + 500(P/G,10%,10)
e) None of the above answers.

20. Project B's External Rate of Return can be calculated from answer
a) -90,000(F/P,i*,10)+21,000-2,000(A/F,10%,10)+500(P/G,10%,10) = 0
b) -90,000-2,000+21,000(F/A,10%,10)-500(F/G,10%10) = 0
c) -90,000(F/P,i*,10)-2,000+{21,000+500(A/G,10%10)}(F/A,10%,10) = 0

d) -90,000(F/P,10%,10)-2,000+21,000 -500(P/G,10%10) = 0
e) None of the above answers.

21. The incremental internal rate of return between projects A and B can be calculated from answer
a) -50,000(A/P,i*,5)+20,000 - 10,000
= -90,000(A/P,i*,10) + 21,000 - 2,000(A/F,10%,10) + 500(A/G,i*,10)
b) -50,000(A/P,i*,5)+10,000
= -90,000(A/P,i*,10)+21,000-2,000(A/F,i*,10)-500(A/G,i*,10)
c) {-50,000+10,000(P/A,i*,5)}[1+(P/F,i*,5)]
= -90,000+21,000(P/A,i*,10)-2,000(P/F,i*,10)-500(F/G,i*,10)
d) {-50,000+10,000(P/A,i*,5)}[1+(F/P,i*,5)]
= -90,000(F/P,i*,10)+21,000(F/A,i*,10)-2,000(P/F,i*,10) -500(F/G,10%,10)
e) None of the above answers

22. The incremental external rate of return between projects A and B can be calculated from answer
a) -50,000(F/P,i*,5)+10,000
= -90,000(F/P,i*,10)+21,000-2,000(A/F,10%,10)+500(A/G,i*,10)
b) -50,000(F/P,i*,5)+10,000
= -90,000(F/P,i*,10)+21,000-2,000(A/F,i*,10)-500(A/G,i*,10)
c) {-50,000+10,000(P/A,i*,5)}[1+(P/F,i*,5)]
= -90,000+21,000(P/A,i*,10)-2,000(P/F,i*,10)+500(A/G,i*,10)
d) -50,000{1+(P/F,10%,5)}(F/P,i*,10)+10,000(F/A,10%,10)
= -90,000(F/P,i*,10)+21,000(F/A,10%,10)-2,000+500(F/G,10%,10)
e) None of the above answers

INFORMATION FOR QUESTIONS 23 to 27

P ≡ initial cost of a project

N ≡ project life or duration

23. Given two mutually exclusive projects A and B: $P_A = P_B$; $N_A = N_B$ and $NPW_A = NPW_B = \$1{,}000$. Which project is better?
a) A
b) B
c) A and B

d) Either A or B
e) Need more information.

24. Given two mutually exclusive projects A and B: $P_A > P_B$; $N_A = N_B$ and $IRR_A < IRR_B$. Which project is better if A and B are valid?
a) A
b) B
c) A and B
d) Neither A nor B
e) Need more information.

25. Given two mutually exclusive projects A and B: $P_A > P_B$; $N_A > N_B$ and $NPW_A < NPW_B$. Which project is better if A and B are valid?
a) A
b) B
c) A and B
d) Neither A nor B
e) Need more information.

26. Given two mutually exclusive projects A and B: $P_A > P_B$; $N_A > N_B$ and $AEW_B > AEW_A > \$0$. Which project is better?
a) A
b) B
c) A and B
d) Neither A nor B
e) Need more information.

27. Given two mutually exclusive projects A and B: $P_A < P_B$; $N_A > N_B$ and $NFW_A < NFW_B$. Which project is better if A and B are valid?
a) A
b) B
c) A and B
d) Neither A nor B
e) Need more information.

28. If the rate of interest is 12% compounded continuously, the effective rate of interest is
a) 12%
b) 12.55%

c) 12.75%
d) None of the above answers.

29. If a project has a negative NPW, its individual external rate of return (ERR) must be less than MARR.
a) True
b) False

30. The Internal Rate of Return (IRR) method assumes that a project's cash inflows will be reinvested at a predetermined rate of return (e.g., MARR).
a) True
b) False

31. You must select the best of 10 mutually exclusive projects using the internal rate of return method. Before performing pair-wise comparisons, you
a) are required to determine the validity of all (ten) projects
b) must ensure that at least one of the projects is valid
c) need not bother verifying the validity of any of the projects.

32. The nominal rate of interest increases as the frequency of within-year compounding increases.
a) True
b) False

33. If the rate of interest is 12% compounded continuously, the actual rate of interest is
a) 12%
b) 12.55%
c) 12.75%
d) None of the above answers. [tends to 0]

34. Is a common period of analysis necessary to select the better of two mutually exclusive projects A and B using the Annual Equivalent Method (AEW)?
a) Yes
b) No

35. A project's external rate of return (ERR) is the same whether calculated using the NPW or the AEW method.
a) True
b) False

*** END ***