FIN3701 - Oct/Nov 2012 solutions

Section A

1. Book value = $8000 - 5\left(\frac{8000}{10}\right)$

$= 4000$

Gain = Selling price - BV
= 5000 - 4000
= 1000

Tax = 1000 × 0,4
= 400 → Because we made a gain on the sale, this is a tax liability

∴ (3)

2. Installed cost = Cost of asset + Inst. costs + Transport costs

= 10' + 2' + 3'
= 15 000

∴ (4)

3. Initial investment = Cost of new asset (total)
- A.T proceeds from sale of old asset
± ΔNWC

= 15' − (5000 − 400) + 2000

= 12 400

∴ (2)

4. $CF_0 = -50\,000$
$CF_1 = -20\,000$
$CF_2 = -20\,000$
$CF_3 = -20\,000$
$CF_4 = +8000$
$i = 8\%$

NPV = −95 661,70

∴ (1)

5. $CF_0 = -20\,000$
$CF_1 = -60\,000$
$CF_2 = -35\,000$
$CF_3 = -40\,000$
$CF_4 = -10\,000$
$i = 8\%$

NPV = −144 666.00

∴ (1)

6. Both projects have NPV < 0, so they should both be rejected

∴ (2)

7. I would argue that since both projects have NPV < 0 they should both be rejected (like above). Although the Gold project has the higher NPV and is therefore the preferred choice under an NPV ranking, it is still not an acceptable project since NPV < 0

∴ (2)

8. $OCF_t = NOPAT_t + Depreciation_t$

↘ Incremental

The machine leads to an increase in revenue every year of 2200 ~~per year~~ and an increase in depreciation of $\left(\frac{9000}{5}\right) = 1800$ per year

∴ Thus NOPAT will increase by $(2200 - 1800)(1 - 0,3)$ (Income, Expense, (1 - t)) ~~per~~ per year (i.e. R280)

$\therefore OCF_{1-5} = NOPAT + Depreciation$
$= 280 + 1800$
$= 2080$

∴ (4)

9. $CF_0 = -20000$

$CF_{1-4} = +4000$ → OCF w/adjustment for depreciation already included

$\lambda = 9\%$

$NPV = -7041,12$

∴ (2)

10. Technically, (1) and (3) are both most definitely methods of adjusting for risk when evaluating investments (Refer to study guide pg. 27-29)

But (3) (certainty equivalents) are directly applied to capital budgeting cash flows to adjust ~~them~~ their future levels for risk; so (3) is probably the best option here

11. $r_e = \frac{D_1}{P_0 - F} + g$ $\quad g = \frac{6,60}{5,99} - 1$ $= 10,18\%$

Since all earnings are paid as dividends, $D_1 = E_1$ ~~- 0~~ Also, we are calculating the cost of existing shares (not new shares), so we do not take flotation costs into account (i.e. $F=0$)

$\therefore r_e = \frac{6,60}{50 - 0} + 0,1018$

$= 23,38\%$ ⇒ (2)

12. $r_e = \frac{D_1}{P_0} + g$

$= \frac{3.00}{30.00} + 0.05$

$= 15\%$

∴ (3)

13. $E_1 = 4.86$

$D_1 = 0.45(4.86) = 2.19$ $\quad g = \frac{4.86}{4.40} - 1 = 10.45\%$

$\therefore r_e = \frac{D_1}{P_0 - F} + g$

$= \frac{2.19}{42 - [0.1 \times 42]} + 0.1045$

$= 16.24\%$ → This should be the correct answer

14. (1) → Refer to pg. 459 in the textbook

15. $WACC = \left(\frac{D}{D+E}\right) r_d (1-t) + \left(\frac{F}{D+E}\right) r_e$

$0.078 = 0.3(0.08)(1-0.3) + 0.7(r_e)$

Solving for r_e, you should get $r_e = 8.74\%$

16. $r_d = 8,48\% \rightarrow YTM$

$r_d(1-t) = 0,0848\ (1-0,29)$

$\therefore$ (2)

17. $WACC = \left(\frac{D}{A}\right) r_d(1-t) + \left(\frac{E}{A}\right) r_e + \left(\frac{PS}{A}\right) r_p$

$= 0,25(0,0764) + 0,6(0,12) + 0,15(0,1053)$

↳ Assume they are referring to the after-tax cost of debt

$= 0,1069$

$= 10,69\%$

$\therefore$ (4)

18. $r_d = \dfrac{I + \frac{1000 - Nd}{n}}{\frac{Nd + 1000}{2}}$

$I = 0,07 \times 1000 = 70$

$Nd = 985,56$

$n = 20$

$\therefore r_d = \dfrac{70 + \frac{1000 - 985,56}{20}}{\frac{985,56 + 1000}{2}}$

$= 0,0712$

In the WACC formula we use the after-tax cost of debt: $r_d(1-t) = 0,0712(1-0,3)$

$= 4,99\%$

Closest to ~~5.10%~~ 5.00% $\Rightarrow$ (2)

19. $WACC = \left(\frac{D}{D+E}\right) r_d(1-t) + \left(\frac{E}{D+E}\right) r_e$

$= 0,75(0,065) + 0,75(0,07)$

Assume 6.50% after-tax C.o.D

$= 0,06875$

$\approx 6,88\%$

$\therefore$ (1)

20. ~~BEP~~ $BP = \frac{1\,250\,000}{0,5}$

$= 2\,500\,000$

$\therefore$ (4)

21. $BP = \frac{500\,000}{0,35}$

$= 1\,428\,571,43$

$\therefore$ (2)

22. $WACC = \left(\frac{D}{D+E}\right) i_d(1-t) + \left(\frac{E}{D+E}\right) r_e$

$= 0.33(0.08) + 0.67(0.14)$

↓ Assume this is the after-tax cost of debt

$= 12.02\%$

Only for Project A → IRR > WACC
For all the others, IRR < WACC

∴ Choose Project A

∴ (1)

23. $DOL = \frac{(P-V)X}{(P-V)X - FC}$

$= \frac{(195-102)2000}{(195-102)2000 - 120000}$

$= 2.82$

∴ (2)

24. $DFL = \frac{(P-V)X - FC}{(P-V)X - FC - IC}$

$(P-V)X - FC = EBIT = 450\,000$

$IC = Int.\ exp. + \frac{PD}{1-t}$

$= 40000 + \frac{6000}{1-0,29}$

$= 48\,450,70$

$\therefore DFL = \frac{450\,000}{450\,000 - 48450,70}$

$= 1,12$

$\therefore$ (2)

25.

Sales	= 125 000
VC	= (90 000)
FC	= (15 000)
EBIT	= 20 000
Int. exp.	= (5 000)
EBT	= 15000
Tax @ 30%	= (4500)

EAT (i.e. Net Income) = 10500

$EPS = \frac{NI}{No.\ Shares\ Outstanding} = \frac{10500}{9000} = R1,17$

$\therefore$ (1)

26. NOPAT = EBIT(1-t)
= 20 000(1-0,3)
= 14 000

(3)

27. Firm value = $\frac{EBIT(1-t)}{WACC}$ = $\frac{NOPAT}{WACC}$

= $\frac{14000}{0,17}$

= 82 352,94

(4)

28. 60% equity ⇒ Equity value = 0,6(380000)
= 228000

At R30 per share, this implies:

$\frac{228\,000}{30}$ = 7600 shares outstanding

(2)

29. After raising R20000 in new capital, company value is 380' + 20' = 400 000

60% equity ⇒ Equity value at 0,6(400') = 240 000

At R30 per share, this implies $\frac{240000}{30}$

= 8000 shares in total

∴ (4)

30 (2)

31. I will go through this in the exam session

32. $A = \frac{\text{Amount of loan}}{PVIFA_{i,n}}$ → Question should read 'calculate the annual instalments'

$= \frac{10\,000}{PVIFA_{10\%,10}}$

$= \frac{10\,000}{6,145}$

$= 1627,33$

∴ (3)

33. (1) Textbook pg. 539

34. (4) Textbook pg. 541

35. 60% equity ⇒ 60% of the capital budget comes from equity financing

With a budget of R1253890, this implies that 0,6 (1253890) comes from equity (retained earnings)
= 752 334

Because a zero dividend has been announced, and given the fact that the firm follows a residual dividend policy, earnings must have been less than this amount of 752 334 (if earnings were more than 752 334, there would be an excess available to pay out as dividends)

∴ (4)

36. (3)

37. 100 shares at R35 per share
⇒ 100 × 35
= R3500 total value

∴ (4)

38. It will decrease from the current price of R35

∴ (2)

39. (1) Refer to textbook pg 695

40. (2) Refer to textbook pg 684

Section B

1.1. The company has R51 000 available for investment in 2012

∴ Project C is the only affordable project

Is it acceptable?

$CF_0 = -50\,000$
$CF_1 = 22\,000$
$CF_2 = 22\,000$
$CF_3 = 22\,000$

$i/WACC = w_D r_B(1-t) + w_E r_E$

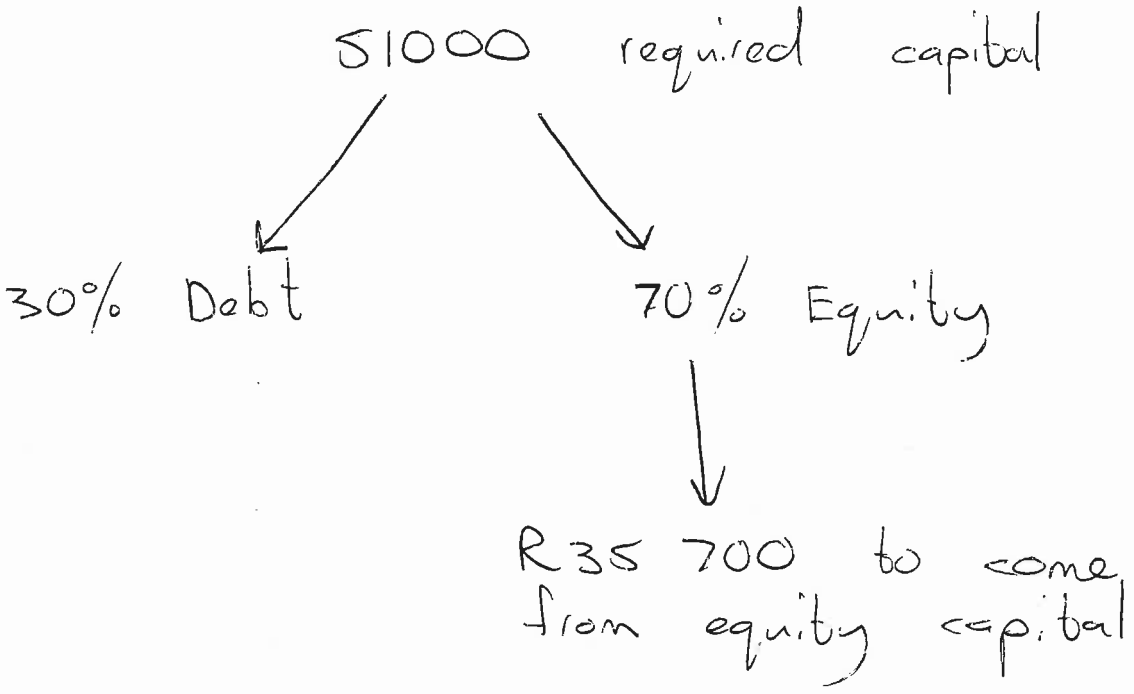
$= 0,3(0,085) + 0,7(0,1636)$

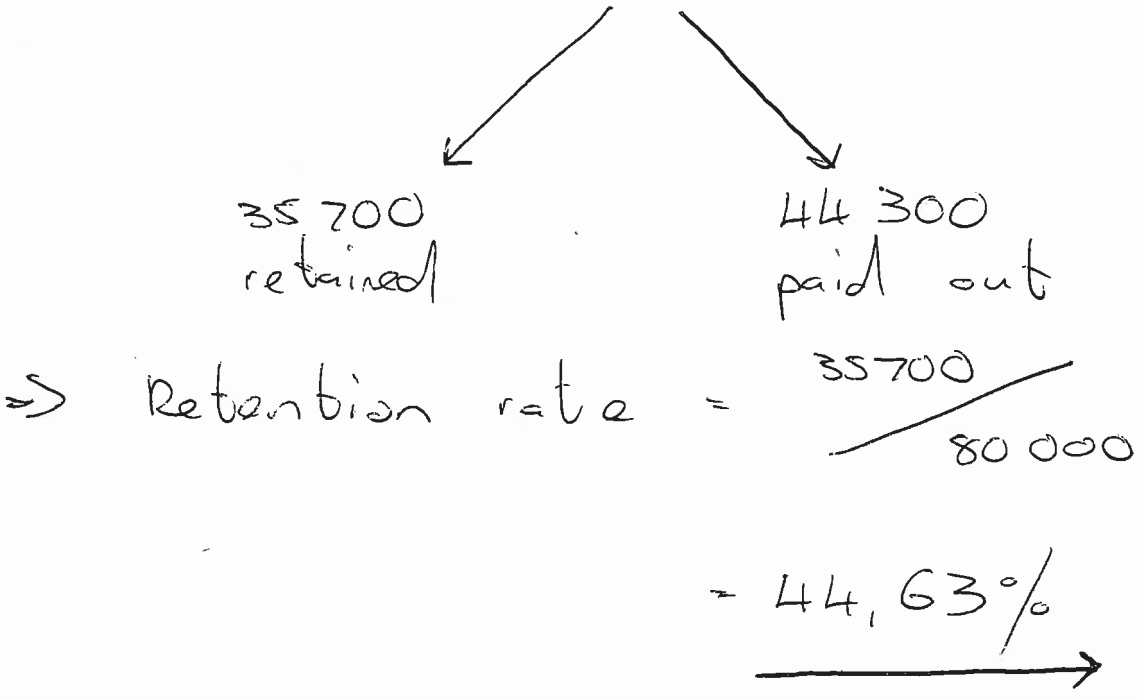
$= 14\%$

$\Rightarrow NPV_C = 1\,075,90 > 0$

$\Rightarrow$ Accept C

1.2.





$\Rightarrow$ Retention rate $= \frac{35700}{80\,000}$

$= 44,63\%$

2.1

	25000	30000
Sales	243 750	292500
VC	(168 750)	(202500)
FC	(72000)	(72000)
EBIT	3000	18000
Interest	(1200)	(1200)
Net profit before tax	1800	16800
Taxes	(540)	(5040)
Net profit after tax	1260	11 760
Preferred dividends	0	0
Earnings	1260	11 760
EPS	14c	131c

2.2. $$BEP = \frac{FC}{SP - VC}$$

$$= \frac{72000}{9,75 - 6,75}$$

$$= 24000$$

2.3. DTL (at 30000 units sold)

$$= \left[\frac{(P-V)X}{(P-V)X - FC}\right] \times \left[\frac{(P-V)X - FC}{(P-V)X - FC - IC}\right]$$

$$= \left[\frac{(9,75-6,75)30' }{(9,75-6,75)30' - 72'}\right] \times \left[\frac{(9,75-6,75)30' - 72'}{(9,75-6,75)30' - 72' - 1200}\right]$$

$$= 5 \times 1,07 = 5,36$$