MODULE 5: DIVIDEND POLICY

QUESTION 1

ARB Inc. had 750,000 outstanding common shares, and paid $5 per share in dividends last year. The current share price is $30. For the past 5 years, the company has maintained a policy of paying out 80% of earnings as cash dividends. The Exhibit below contains the projected balance sheet for ARB for the upcoming year end, assuming no dividends. Earnings after tax are projected at $4,500,000.

EXHIBIT

<table>
<thead>
<tr>
<th></th>
<th>Projection Balance Sheet (Assuming no Dividends)</th>
<th>ARB INC.</th>
<th>Projected Balance Sheet</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>December 31, 2007</td>
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</table>

**Assets**

**Current assets**

- Cash $ 6,000,000
- Accounts receivable $ 1,200,000
- Inventories $ 1,750,000
  - Total Current Assets $ 8,950,000

- Equipment $ 2,570,000
- Land $ 1,580,000
  - Total Assets $ 13,100,000

**Liabilities and shareholders’ equity**

**Current liabilities**

- Accounts payable $ 1,700,000
- Notes payable $ 650,000
  - Total Current Liabilities $ 2,350,000

- Long-term debt $ 2,500,000

**Equity**

- Common shares $ 750,000
- Retained earnings $ 7,500,000
  - Total Shareholders’ Equity $ 8,250,000

  **Total Liabilities and Shareholders’ Equity**

  $ 13,100,000
Required

a. If ARB maintains its steady 80% cash dividend payout policy, what will be the total cash dividend payout and the total-debt-to-total-equity ratio following the payout? What dividend payment will a holder of 100 common shares receive? Show your calculations.

b. Suppose that ARB retains all of its cash in order to finance a purchase of a large piece of real estate that will be used for future development of a new manufacturing plant. Instead of a cash dividend, a 20% stock dividend will be paid. Assess the impact of a stock dividend as follows:

i) What will the holder of 100 common shares receive?

ii) How will the balance sheet change, given the stock dividend, and what will the total-debt-to-total equity ratio be if earnings are projected to be unchanged after the real estate purchase?

iii) What can this same shareholder expect to receive in cash dividends next year if ARB returns to its steady 80% cash dividend payout policy?

c. Suppose that ARB has no investment plans and would like to pay out 80% of its earnings to shareholders in the form of a share repurchase this year, and then will return to its policy of paying cash dividends in future years. Earnings are projected to be unchanged. Assess the impact of a share repurchase as follows:

i) Calculate the number of shares ARB can repurchase if the share price remains at $30.

ii) Calculate the number of shares that will remain outstanding.

iii) In the next year, when cash dividends are resumed, calculate the per share dividend and the amount of dividends to be received by the original or former holder of 100 shares.

d. Referring to your analysis in parts (a) to (c), briefly explain which of the three policies would be most attractive to shareholders.
**QUESTION 1 SOLUTION**

a. Under the cash dividend policy, ARB Inc. will pay out 80% of earnings as dividends. Earnings are projected to be $4,500,000, and there are 750,000 shares outstanding.

Total cash dividends = 0.80 ($4,500,000) = $3,600,000

Dividend per share = $3,600,000 / 750,000 = $4.80

Therefore, a holder of 100 shares will receive $480.00.

The cash dividends will reduce retained earnings to $7,500,000 – $3,600,000 = $3,900,000

Total-debt-to-total-equity = (2,350,000 + 2,500,000) / (750,000 + 3,900,000) = 1.043

b. i) If all cash is retained and a 20% stock dividend is paid, then the number of common shares outstanding will increase to 750,000 (1.2) = 900,000 shares.

A holder of 100 shares will receive 20 additional common shares.

ii) There will be a transfer from the retained earnings account to the common shares account, equal to 20% of the market value of all outstanding shares:

0.20 ($30) (750,000) = $4,500,000

The new balance of common shares = 750,000 + 4,500,000 = $5,250,000

The new balance of retained earnings = 7,500,000 – 4,500,000 = $3,000,000

The total-debt-to-total-equity ratio = (2,350,000 + 2,500,000) / (5,250,000 + 3,000,000)

= 4,850,000 / 8,250,000 = 0.5878

iii) Next year, if earnings remain at $4,500,000 and the payout remains at 80%, the firm will pay out cash dividends of $3,600,000 to holders of the 900,000 shares:

Dividend per share = $3,600,000 / 900,000 = $4

For 120 shares = $480

c. i) If the firm opts for a share repurchase, with a payout of $3,600,000, and if the share price remains at $30, the firm can repurchase $3,600,000 / $30 = 120,000 shares.

ii) Remaining shares outstanding = 750,000 – 120,000 = 630,000 shares
iii) If earnings and payout remain unchanged in the following year, the per share dividend will be:

Earnings (0.8) / new number of shares = $4,500,000 (0.8) / 630,000
= $3,600,000 / 630,000 = $5.7143

For 84 shares = $480

\[ \frac{100}{750} = \frac{X}{630} \]

Solving for X = 84 shares

d. The policies differ on a variety of dimensions. If tax differences are not present, a cash dividend is equivalent to a share repurchase. The capital structure of the firm, as measured by the debt-to-equity ratio, is affected by dividend payout policy. Also, if there is a link between investment opportunities and dividend payout policies, firms should restrict cash dividends so as to enable them to undertake positive NPV projects, as implied in part (b).
QUESTION 2

It is now August 2007 and Ajax Corp. is reviewing its financial strategies as it prepares a 5-year plan to be implemented in the year 2008. Several large investment proposals have been assessed and investment priorities have been established and publicly announced. Total investment outlays will be $16 million. In the current year of 2007, net earnings are $5 million and are all paid out as dividends to common shareholders. Assume that new financing arrangements for the $16 million of investments are in place and that projects commence operations on January 1, 2008.

Before considering additional financing costs, with new projects in place, beginning at the start of the year 2008, net earnings after taxes are forecast to be $7.5 million per annum, from 2008 to perpetuity. Ajax currently has 2 million shares outstanding, with a current market price of $20 per share and $10 million of 10% debt. The typical debt/equity ratio in Ajax’s industry is 50%.

Any new debt issued by Ajax will have an interest cost of 8% per annum. The corporate tax rate is 40%. If equity is issued or retired, assume a $20 share price.

Several independent financing and dividend strategies are under consideration:

i) Issue $16 million in new debt to finance the new investment projects. All net earnings will continue to be paid out as dividends.

ii) Follow a residual dividend policy. When external financing is needed, maintain the existing capital structure weights.

iii) Pay out 50% of earnings as dividends and retain any funds in excess of funds required for good investments. Issue shares if external funds are required.

Required

For each strategy, summarize the results for Ajax in terms of:

1) EPS in the year 2008.
2) dividend per share (DPS) in the year 2008.
3) debt to equity ratio at end of the year 2008.
QUESTION 2 SOLUTION

For this question, because you need to show the EPS, you need NIAT and you need the number of shares outstanding.

At present, the Debt = 10,000,000
Equity = 40,000,000
(2,000,000 shares x $20)
50,000,000

Therefore,
Debt = 10/50 = 20%
Equity = 40/50 = 80%

\[
\text{[ NIBIT - (10,000 X 10\%)]} (1-.40) = 7,500,000
\]
NIBIT - 1,000,000 = 7,500,000/.60
NIBIT-1,000,000 = 12,500,000
NIBIT = 13,500,000

Strategy 1:
All earnings are paid out, so we need $16 million for new investment. Issue new debt.

| Net income before interest and tax | 13,500,000 |
| Interest (existing) 10,000,000 x 10\% | (1,000,000) |
| Interest (new) | (1,280,000) |
| NIBIT | 11,220,000 |
| Tax (40\%) | |
| NIAT(60\%) | 6,732,000 |
| # of shares outstanding | 2,000,000 |
| EPS | $3.37 |
| DPS | $3.37 |
| Debt/Equity | 0.650 |

New interest = 16,000,000 x .08 = 1,280,000

Debt/Equity = \frac{10,000,000 + 16,000,000}{40,000,000} = 0.650
Strategy 2:

Retain the 2007 earnings of $5 million, so we need additional $11 million for new investment. Maintain the existing capital structure weights.

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<tbody>
<tr>
<td>Net income before interest and tax</td>
<td>$13,500,000</td>
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<tr>
<td>Interest (existing) 10,000,000 x 10%</td>
<td>$(1,000,000)</td>
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<tr>
<td>Interest (new)</td>
<td>$(256,000)</td>
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<tr>
<td>NIBIT</td>
<td>$12,244,000</td>
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<tr>
<td>Tax (40%)</td>
<td></td>
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<tr>
<td>NIAT(60%)</td>
<td>$7,346,400</td>
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<tr>
<td># of shares outstanding</td>
<td>2,390,000</td>
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<tr>
<td>EPS</td>
<td>3.07</td>
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<td>DPS</td>
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<td>Debt/Equity</td>
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Financing analysis:

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<th>Total</th>
<th>Debt</th>
<th>Equity</th>
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</thead>
<tbody>
<tr>
<td>Currently</td>
<td>55,000,000</td>
<td>10,000,000</td>
<td>45,000,000</td>
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<tr>
<td>Need</td>
<td>11,000,000</td>
<td>3,200,000</td>
<td>7,800,000</td>
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<tr>
<td></td>
<td>66,000,000</td>
<td>13,200,000</td>
<td>52,800,000</td>
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Current Equity = 40,000,000 + 5,000,000 retained = 45,000,000

Debt @ 20% = 66,000,000 x 20% = 13,200,000
Equity @ 80% = 66,000,000 x 80% = 52,800,000

Interest = 3,200,000 x .08 = 256,000
Shares = 2,000,000 + 7,800,000/20 = 2,390,000

Debt/Equity = 13,200,000 / 52,800,000 = 25%
Strategy 3

Retain 1/2 of the 2007 earnings of $5 million ($2.5 million), so we need additional $13.5 million for new investment. Issue shares for financing.

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<thead>
<tr>
<th></th>
<th>Total</th>
<th>Debt</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net income before interest and tax</td>
<td>13,500,000</td>
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<td></td>
</tr>
<tr>
<td>Interest (existing) 10,000,000 x 10%</td>
<td>(1,000,000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIBIT</td>
<td>12,500,000</td>
<td></td>
<td></td>
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<tr>
<td>Tax (40%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIAT(60%)</td>
<td>7,500,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of shares outstanding</td>
<td>2,675,000</td>
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<td></td>
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<tr>
<td>EPS</td>
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<tr>
<td>DPS</td>
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<tr>
<td>Debt/Equity</td>
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Financing analysis:

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<th>Total</th>
<th>Debt</th>
<th>Equity</th>
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</thead>
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<tr>
<td>Currently</td>
<td>52,500,000</td>
<td>10,000,000</td>
<td>42,500,000</td>
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<tr>
<td>Need</td>
<td>13,500,000</td>
<td>13,500,000</td>
<td></td>
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<tr>
<td>2007 retained</td>
<td>3,750,000</td>
<td></td>
<td>3,750,000</td>
</tr>
<tr>
<td></td>
<td>69,750,000</td>
<td>10,000,000</td>
<td>59,750,000</td>
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Shares = 2,000,000 + 13,500,000/20 = 2.675,000

Debt/Equity = 10,000,000 / 59,750,000 = 16.7%

DPS = 1/2 (2.80) = 1.40 since 50% payout policy
QUESTION 3

This is a continuation of Question 2 regarding Ajax Corp.

a. Explain the signalling hypothesis of dividend policy and how investors might interpret each strategy. Consider dividend and earnings patterns over time, and in comparison with the current 100% payout policy.

b. Suppose an investor owns 10,000 Ajax shares and desires an annual cash flow of $3.37 per share. How can this investor achieve the desired cash flow if Ajax pursues strategy (ii) or (iii)? Assume that there are no transaction costs.

c. Explain the clientele effects that might draw particular investors to firms with particular dividend policies. Identify the types of investors, in terms of their personal income and taxes, that would likely prefer each of strategies (i) through (iii).

d. Suppose that at the end of the year 2008, Ajax pays a 15% stock dividend and distributes no cash dividend to shareholders at all. Any excess cash is used to retire outstanding debt, and additional debt financing will be obtained for any shortfall. What EPS will Ajax have in the year 2008 and what will the debt/equity ratio be after the debt retirement?
QUESTION 3 SOLUTION

a. The signalling hypothesis is that changes in dividends are considered to be useful information to investors concerning a firm’s future prospects. Managers are reluctant to reduce dividends, and tend to increase dividends only if the increase is sustainable. Most firms tend to pay constant dividends as dividend changes may signal an improvement or a decline in future earnings prospects.

Strategy (i) involves 100% payout so dividends will fluctuate directly with earnings. Earnings are expected to be constant.

Strategy (ii) involves dividend payouts as residual, so no dividend would be paid in the year 2007 by Ajax, and then all earnings would be paid out in future years. The lack of a dividend in the year 2007 may not create a negative signal, however, as all earnings are reinvested.

Strategy (iii) is a 50% payout in all years. Dividends will fluctuate directly with earnings.

b. To maintain a desired cash dividend level, an investor can sell or purchase Ajax shares. No transaction costs are assumed.

At the end of the current year, rather than pay out the usual $5,000,000 in dividends, the firm is considering paying no dividend at all (strategy (ii)), or paying only $2,500,000 in dividends (strategy (iii)).

As strategy (ii) pays no dividends, an owner of 10,000 shares wishing to receive his/her usual $33,700 in cash dividends must sell $33,700/$20 = 1,685 shares in order to get the desired amount of cash.

As strategy (iii) pays only $1.25 in dividends ($2,500,000 for 2,000,000 shares), an owner of 10,000 shares wishing to receive $33,700 in cash will receive $12,500 in dividends from the firm and must sell $21,200/$20 = 1,060 shares in order to get the remaining desired cash.

c. Asymmetries in the personal tax system make a high dividend policy more or less attractive to individuals, depending on their tax situation. High-income investors tend to prefer capital gains while low-income investors prefer high dividend payout strategies.

Hence 100% payout under strategy (i) will likely be attractive to lower income investors. Since Ajax earnings are perpetual, the 50% payout under strategy (iii) will be similar and will be attractive to lower income investors who rely on dividend income for regular living expense payments.

Strategy (ii) will pay dividends only as a residual, so dividend levels are not easily predictable. Dividends depend on both earnings and investment opportunities. It is not clear that any particular tax clientele would be attracted to such a payout policy.
d. This is a stand-alone scenario in which all investment at January 1, 2008 is debt financed and all earnings at the 2008 year end are retained and used to pay down additional debt. Shareholders receive only a stock dividend of 15%.

Additional borrowing at the start of year 2008 will be $16,000,000, and earnings for the year incorporating the additional interest charges on this financing will be $6,732,000 as calculated for strategy (i) in part (a). At year end all earnings are retained and are used to reduce debt.

Year end Equity = $40,000,000 + $6,732,000 retained = $46,732,000

Year end Debt = $10,000,000 + $16,000,000 – $6,732,000 = $19,268,000

After the stock dividend, 2,300,000 shares will be outstanding. The stock dividend does not affect equity value as there are no transaction costs and no cash has been distributed to shareholders.

EPS = $6,732,000/2,300,000 = $2.93

Debt/Equity = $19,268,000/$46,732,000 = 0.412
QUESTION 4

A firm has 2,000,000 shares of common stock outstanding with a $10 par value and market price of $25 per share. If the firm pays a 5% stock dividend, calculate the effect to:

a. common share capital
b. contributed surplus
c. retained earnings
d. total shareholders equity
**QUESTION 4 SOLUTION**

a. 2,000,000 x .05 = 100,000 more shares
Increase in common shares = 100,000 x 10 = 1,000,000

b. Increase in contributed surplus = 100,000 (25-10) = 1,500,000

c. Decrease to retained earnings = 1,000,000 + 1,500,000 = 2,500,000.

d. Total shareholders equity has no change. The total increase in common shares and contributed surplus is offset by the decrease in retained earnings.
QUESTION 5

In 2006, Insect Ltd. paid dividends totalling $3.6 million on net income of $10.8 million. The year 2006 was a typical year, and for the past 10 years, earnings have grown at a constant annual rate of 10%. However, in 2007, earnings are expected to increase to $14.4 million because of an exceptionally profitable new product line being introduced, and the firm expects to have profitable investment opportunities of $8.4 million.

After 2007, the company will likely return to its previous 10% growth rate. Insect Ltd.’s target capital structure is 40% debt and 60% equity.

Required:

a. Calculate Insect Ltd.’s total dividends for 2007 if it follows each of the following policies:

(i) Its 2007 dividend payment is set to force dividends to grow at the long-run growth rate in earnings.

(ii) It continues the 2006 dividend payout ratio.

(iii) It uses a pure residual dividend policy (40% of the $8.4 million investment is financed with debt and 60% with common equity)

(iv) It employs a regular-dividend-plus-extra policy, with the regular dividend being based on the long-run growth rate and the extra dividend being set according to the residual policy. Also calculate the extra dividend for 2007.

b. Which of the preceding four policies would you recommend? Explain briefly.

c. Suppose that investors expect Insect Ltd. to pay total dividends of $9 million in 2007 and to have the dividend grow at 10% after 2007. The share’s total market value is $180 million. Calculate the firm’s cost of equity.

d. In addition to cash dividends, identify other possible forms of shareholder remuneration that can be used.
QUESTION 5 SOLUTION

a.

(i) 2007 dividends = (1.10) (2005 dividends) = (1.10) ($3,600,000) = $3,960,000

(ii) 2006 payout ratio = $3,600,000 / $10,800,000 = 33 1/3%
   2007 dividends = (33 1/3%) ($14,400,000) = $4,800,000

(iii) Equity financing = $8,400,000 (0.6) = $5,040,000

2007 dividends = Net income – Equity financing
= $14,400,000 - $5,040,000
= $9,360,000

All of the equity financing is done with earnings as long as they are available.

(iv) The regular dividends would be the 2006 dividends plus a 10% growth:

Regular dividends = (1.10) ($3,600,000) = $3,960,000

The residual policy calls for dividends of $9,360,000. Therefore, the extra dividend would be: $9,360,000 - $3,960,000 = $5,400,000.

b. Policy (iv), based on the regular dividend with an extra dividend, seems most logical. If implemented properly, it would lead to correct capital budgeting and correct financing decisions, and it would convey correct signals to investors.

c. The cost of equity = \( \frac{D_1}{P_0} + g = \frac{\$9,000,000}{\$180,000,000} + 10\% = 15\% \)

d. Other possible forms of remuneration are stock dividends, stock splits and share repurchases.
QUESTION 6

Q1. Which of the following types of dividend is *not* taxed as income?
1) Regular cash dividends.
2) Extra dividends.
3) Quarterly dividends.
4) Special dividends
5) Liquidating dividends

Q2. Which one of the following events does not increase nor decrease the book value of owner’s equity?
i) A stock split.
ii) A repurchase of shares for cancellation.
iii) A rights issue.
iv) A payment of dividends from past earnings.
v) A conversion of bonds to equity.

Q3. Which one of the following events increase(s) the book value of the net worth of a firm?
1) A 10 for 1 stock split.
2) A 20% stock dividend.
3) A successful rights offering.
i) 1 only
ii) 1 and 2 only
iii) 1 and 3 only
iv) 3 only
v) 1, 2 and 3

Q4. Which of the following events does not increase or decrease the book value of net worth?
i) Changing the par value of the common stock from $10 to $5.
ii) Repurchase of shares for cancellation.
iii) Rights issue.
iv) Payment of dividends from past earnings.
v) Conversion of bonds to equity.

Q5. Which of the following financial market condition(s) would favour the payment of cash dividends to shareholders?
i) Flotation costs for issuing new securities to raise funds are high.
ii) Transaction costs to investors for selling shares to get cash are high.
iii) Institutional investors are restricted to holding dividend-paying stocks.
1) i) only
2) iii) only
3) i) and ii) only
4) ii) and iii) only
5) i), ii), and iii)
Q6. Stock dividends and stock splits differ in which of the following ways?
1) Stock splits increase the number of shares outstanding while stock dividends decrease the number of shares outstanding.
2) Stock dividends involve a distribution of cash to shareholders while stock splits do not.
3) Stock dividends involve an accounting transfer from the retained earnings account to the common shares account while stock splits only increase the number of shares outstanding.
4) Stock dividends involve an increase in total common shareholders’ equity while stock splits do not.

Q7. Which of the following are advantages for firms engaging in equity financing of share repurchases as an alternative to cash dividends?
i) Repurchase announcements are viewed as a strong management signal that the shares are undervalued.
ii) Repurchase give shareholders a choice of whether to tender their shares.
iii) Repurchasing by the firm may bid up the share price.
1) i) only
2) i) and ii)
3) ii) and iii)
4) i), ii), and iii)

Q8. Miller and Modigliani argued that in perfect financial markets, dividend policy has no effect on share price or on cost of capital. Which of the following is not a condition of perfect financial markets?
1) The absence of personal and corporate taxes.
2) Zero flotation costs and transaction costs.
3) Investors and managers have the same set of information regarding the future investment opportunities of the firm.
4) Dividend policy is linked only to investment policies.

Q9. Which of the following statements is not considered an advantage of tender offers, when compared to the other methods corporations can use to repurchase shares?
1) Tender offers are a convenient way to repurchase a large number of shares in a short period of time.
2) Tender offers provide the opportunity for all shareholders to tender their shares.
3) Tender offers are more effective than open market repurchase in eliminating small shareholdings.
4) Tender offers involve direct negotiations with target management, thus avoiding transaction costs of buying from individual shareholders.

Q10. When a firm is paying a dividend to its common shareholders, which of the following dates occurs last?
1) The announcement date.
2) The record date.
3) The ex-dividend date.
4) The dividend payment date.
QUESTION 6 SOLUTIONS

1  (5)
2  (i)
3  (iv)
4  (i)
5  (4)
6  (3)
7  (2)
8  (4)
9  (4)
10 (4)