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**University Examinations 2015/2016**

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE

OF

 BACHELOR OF COMMERCE

**BFC 3431: FINANCIAL MODELING AND FORECASTING**

**DATE: APRIL 2016 TIME: 2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two***questions.

**QUESTION ONE (30 MARKS)**

The following information relates to the demand of a leading juice in katheri town since the year 2001.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year | 2001 | 2002 | 2003 | 2004 | 2005 |
| Inflation rate | 8.0% | 8.5% | 12.0% | 9.0% | 11.0% |
| Actual Demand | 12,844 | 13,394 | 13,988 | 13,485 | 13,770 |
| Forecast Demand  | 12,830.00 | 13,393.00 | 13,972.00 | 13,489.00 |  |

Required:

Forecast the demand for the year 2005 (actual demand is provided) using the following Models

1. Three period Moving average. (3 marks)
2. Weighted moving average. (use the weights of 0.5, 0.3) (3 marks)
3. Exponential smoothing (use  (4 marks)
4. Naïve method (2 marks)
5. Regression analysis (7 marks)
6. Trend equation (5 marks)
7.  rule (3 marks)
8. Distinguish between a forecast from a projection (3 marks)
9. Explain any FIVE variations that may be observed in a Time series Data (5 marks)

**QUESTION TWO (20 MARKS)**

Jakong’o presented the following income statement for its period ending December 2014

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Sales | Variable cost | Fixed cost  | Depreciation | EBIT | Interest | PBT  | Tax | PAT | dividend | Retained earning  |
| Shs.”000” | 21,600 | 12,960 | 4,320 | 2,400 | 1,920 | 420 | 1,500 | 525 | 975 | 1,620 | 1,080 |

Additional Information

1. The sales are expected to grow at 20%,
2. Variable costs are always 60% of the sales
3. Fixed costs are expected to grow at 5%.
4. Depreciation is charged at 5% on the book value
5. Current assets are based on 75% of gross assets.
6. Interest is charged at 10% non-reducing
7. Debt repayment will be suspended to finance growth and additional capital injected.
8. Tax rate is 35%.
9. Dividend payout ratio is 80%
10. Current ratio is 2:1:11. Total assets turnover ratio is expected to improve by 25%.

Prepare a proforma income statement and balance sheet for 2015. (20 marks)

**QUESTION THREE (20 MARKS)**

Muizimiwa consultants were hired by Nkubu County Government to establish the relationship between sales and profits of an income generating unity of the County Education Ministry. The consultants collected the information indicated below and analyzed it using Ms Excel Data Analysis tool. Super Mazembe, the lead consultant has approached you to assist him in the successful completion of the research project.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SUMMARY OUTPUT  |  |  |  |  |
|  |  |  |  |  |  |  |
| Regression Statistics  |  |  |  |  |  |
| Multiple R | 0.9118 |  |  |  |  |  |
| R Square  | 0.8314 |  |  |  |  |  |
| Adjusted R Square | 0.8145 |  |  |  |  |  |
| Standard Error  | 17.0822 |  |  |  |  |  |
| Observations  | 12 |  |  |  |  |  |
|  |  |  |  |  |  |  |
| ANOVA |  |  |  |  |  |  |
|  |  |  |  |  | *Significance F* |  |
| Regression  | 1 | 14,386.18 | 14,386.18 | 49.30 | *0.00* |  |
| Residual  | 10 | 2,918.01 | 291.80 |  |  |  |
| Total  | 11 | 17,304.19 |  |  |  |  |
|  |  |  |  |  |  |  |
|  | *Coefficients* | *Standard Error*  | *T Stat*  | *P-value*  | *Lower 95%* | *Upper 95%* |
| Intercept  | 24.9979 | 11.2675 | 2.2186 | 0.0508 | (0.1076) | 50.1034 |
| Sales  | 0.0308 | 0.0044 | 7.0215 | 0.0000 | 0.0210 | 0.0406 |
|  |  |  |  |  |  |  |

Required:

1. Sketch the data using a suitable graph (4 marks)
2. Indicate the linear regression equation obtained from the regression statistics (2 marks)
3. Interpret the overall performance of the model as well as the parameters (4 marks)
4. Using the information provided, estimate the profit when sales are Ksh. 360 million (3 marks)
5. Does a good association between two variables prove cause and effect? (3 marks)
6. Is extrapolation more reliable than interpolation (4 marks)

**QUESTION FOUR (20 MARKS)**

1. Baba Ite group of companies deal in sale of guns in the past, it sold an average of 4, 000 pistols each year. On the average each year it sold 800 units in quarter one, 1,400 in quarter two, 1,200 in quarter three and 600 in quarter four. What will be the forecast for next year sale (6 marks)
2. The demand and forecast information of Live Wire Company over a 12 month period is shown in the following table

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Period | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Demand | 200 | 275 | 250 | 200 | 313 | 438 | 413 | 400 | 488 | 588 | 538 | 550 |
| Forecast  | 190 | 226 | 262 | 298 | 328 | 370 | 405 | 441 | 477 | 513 | 549 | 585 |

Calculate:

1. Mean absolute deviation (MAD) (4 marks)
2. Mean absolute percentage error (MAPE) (4 marks)
3. Mean square error (MSE) (4 marks)
4. Running sum forecast errors (RSFE) (4 marks)
5. Tracking signal (4 marks)
6. Assuming that the control limits for the tracking signal are , what can be concluded about the quality forecast? (4 marks)

**QUESTION FIVE (20 MARKS)**

The following information relates to Wazeia Traders for the year 2015.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1st July 2015 cash at bank | 342,000 |  |  |  |
| Salaries and wages estimated  | 72,000 |  |  |  |
| Interest payable on 31st August 2015 | 42,000 |  |  |  |
|  |  |  |  |  |
|  | June  | July  | August  | September  |
| Estimated Cash sales  | 612,000 | 852,000 | 924,000 | 738,000 |
| Credit sales  | 612,000 | 492,000 | 852,000 | 732,000 |
| Purchases  | 972,000 | 1,032,000 | 1,452,000 | 1,092,000 |
| Other expenses payable in month  |  | 132,000 | 144,000 | 138,000 |

Notes:

1. All amounts are state in Kshs.
2. Credit sales are collected 40% in the month the sales are made, balance in the month following the sales.

Collection form credit sales are subject to 4% discount if, payment is received in the month of sales and 2% if payment is received in the following month. 12% of the creditors are paid in the month of purchase while the rest are paid the following month.

**Required:**

1. Prepare a cash budget clearly showing the cash inflows, cash outflows and net cash flows

(9 marks)

1. Explain briefly the coefficients of correlations (5 marks)
2. Explain briefly any SIX Limitations of Budgeting (6 marks)