GL BAJAJ
Institute of Management & Research. PGDM Institute
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GL BAJAJ GREATER NOIDA (Approved by A.I.C.T.E., Ministry of HRD, Govt. of India)

Plot No. 2, Knowledge Park-III, Greater Noida (U.P.) –201306

POST GRADUATE DIPLOMA IN MANAGEMENT (2021-23)
MID TERM QUIZ EXAMINATION (TERM -III)

Subject Name: Business Modelling	Time: **1 Hour**
Sub. Code: PGIT31	Max Marks: **20**

Note:
1. Writing anything except Roll Number on Quiz paper will be deemed as an act of indulging in unfair means and action shall be taken as per rules.
2. There is no negative marking for wrong answer.
3. Tick marks the correct answer.

Attempt all questions. All questions are compulsory.   **40×0.5 = 20 Marks**

Q1. The time series component which reflects a regular, multi-year pattern of being above and below the trend line is
  a. a trend
  b. Seasonal
  c. Cyclical
  d. Irregular

Q2. If the data have excessive skewness, a better measure of central location is:
  a. Mean
  b. Median
  c. Mode
  d. None of the above

Q3. Which of the following is not present in a time series?

  a. Seasonality
  b. **Operational variations**
  c. Trend
  d. Cycles

Below you are given a partial computer output based on a sample of 25 observations.

	Coefficient	Standard Error
Constant	145	29
X_1	20	5
X_2	-18	6
X_3	4	4

Q4. Refer to the data given above and answer the question:
The estimated regression equation is:
  a. Y = 145 + 20X1 -18X2 + 4X3
  b. Y = 29 + 5X1 +6X2 + 4X3
  c. Y = 20 + 20X1 -18X2 + 4X3
  d. Y = 145 + 20X1 +18X2 + 4X3

Q5. The variable that analyst try to predict is called the _____variable
  a) Independent
  b) Dependent
  c) Associated
  d) None of the above

Q6. The time series component that reflects variability during a single year is called

    a. A trend
    b. Seasonal
    c. Cyclical
    d. Irregular

Q7. Below you are given the first four values of a time series.

Time Period	Time Series Value
1	18
2	20
3	25
4	17

Compute the 4-period moving average.

    a. 2.5
    b. 17
    c. 20
    d. 10

Q8. The following linear trend expression was estimated using a time series with 17 time periods.
$T_t = 129.2 + 3.8t$. The trend projection for time period 18 is:

    a. 68.4
    b. 193.8
    c. 197.6
    d. 6.84

Q9. A method of smoothing a time series that can be used to identify the combined trend/cyclical component is

    a. The moving average
    b. The percent of trend
    c. Regression Equation
    d. Correlation

Q10. In the linear trend equation, $T = b_0 + b_1 t$, b_1 represents the

    a. Trend value in period t
    B. Intercept of the trend line
    C. Slope of the trend line
    D. Point in time

The results from the 3-forecasting method and actual time series is summarized below:

	Actual	Forecast		
Year	Time Series	Method 1	Method 2	Method 3
2018	131	138	120	132
2019	144	149	143	143
2020	157	151	143	145
2021	175	169	160	178

Answer Q11-15 using the data above:

Q11. What is the Mean Absolute Deviation (MAD) value for method 1?

    a) 7
    b) 10
    c) 6
    d) 4.5

Q12. What is the Mean Absolute Deviation (MAD) value for method 3?
   a) 7
   b) 4.3
   c) 6
   d) 4.5

Q13. Based on the MAD criteria, which method has the greatest forecast accuracy.
   a) Method 1
   b) Method 2
   c) Method 3
   d) None of the above

Q14. What is the Sum of Squares for Forecast Error (SSE) value for method 2
   a) 560
   b) 543
   c) 643
   d) 254

Q15. Based on the SSE criteria, which method has the greatest forecast accuracy.
   a) Method 1
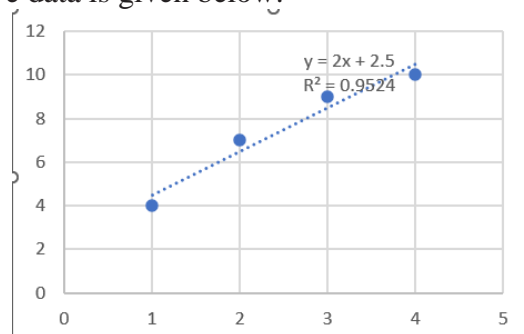   b) Method 2
   c) Method 3
   d) None of the above

Q16. _____ kurtosis means data set is more peaked than the normal curve
   a) Zero
   b) Negative
   c) Positive
   d) All the above

Refer to the data given below and answer Q17-Q20:

Time Series	
1	4
2	7
3	9
4	10

The trend line using the above data is given below:

$y = 2x + 2.5$
$R^2 = 0.9524$

Q17. The slope of linear trend equation, b1, is
   a. 2.5
   b. 2.0
   c. 1.0
   d. 1.25

Q18. The intercept, b0, is

    a. **2.5**
    b. 2.0
    c. 1.0
    d. 1.25

Q19. The forecast for period 5 is
    a. 10.0
    b. 2.5
    c. 12.5
    d. 4.5

Q20. The forecast for period 10 is
    a. 10.0
    b. 25.0
    c. 30.0
    d. 22.5

Refer to the summary output of a multiple regression analysis given below and answer Q21-Q22:

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.820891774
R Square	0.673863305
Adjusted R Square	0.60397687
Standard Error	1243.047718
Observations	18

ANOVA

	df	SS	MS	F	Significance F
Regression	3	44696732.79	14898910.93	9.642261877	0.001042135
Residual	14	21632346.82	1545167.63		
Total	17	66329079.61			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	34454.9211	2002.782094	17.20352964	8.19654E-11	30159.38073	38750.46148	30159.38073	38750.46148
Product B	6.035561666	1.518080017	3.975786255	0.001380076	2.779603854	9.291519478	2.779603854	9.291519478
Product C	1.886545025	10.05731453	0.1875794	0.853897845	-19.6842493	23.45733935	-19.6842493	23.45733935
Product D	3.846098895	10.91135675	0.352485853	0.729723999	-19.55643382	27.24863161	-19.55643382	27.24863161

Q21. The estimated regression equation is:
  a) Y = 34454.9211 + 6.0355*Product C Value + 1.8865* Product B Value + 3.8460* Product D Value
  b) Y = 34454.9211 + 6.0355*Product B Value + 1.8865* Product C Value + 3.8460* Product D Value
  c) Y = 6.0355 + 34454.9211 *Product B Value + 1.8865* Product C Value + 3.8460* Product D Value
  d) Y = 34454.9211 + 6.0355*Product B Value + 1.8865* Product C Value + 1.8865* Product D Value

Q22. What percentage of the Y variable is explained by the sales of Product B, Product C and Product D?
  a) 67.38%
  b) 72.43%
  c) 18%
  d) 69.93%

Power curve is defined by the equation $Y=ax^b$. Referring to the equation answer Q23-25

Q23. If value of a is positive slope depends on b value.
    a. **True**
    b. False

Q24. For _____, y increases as x increases and slope of power curve increases as x increases:

      a) $b < 1$
      b) $b > 1$
      c) $0 < b < 1$
      d) None of the above

Q25. For _____,y increases as x increases and the slope of the power curve decreases as x increases.:

      a) $b < 0$
      b) $b > 1$
      c) $0 < b < 1$
      d) None of the above

Q26. The equation $Y = ae^{bx}$ defines:

      (a) Linear Trend Line
      (b) Power Curve
      (c) Exponential trendline
      (d) Logarithmic trend line

Q27 The following model $Y = \beta_0 + \beta_1 X_1 + \varepsilon$ is referred to as a

      a. curvilinear model
      b. curvilinear model with one predictor variable
      c. simple second-order model with one predictor variable
      d. simple first-order model with one predictor variable

Q28. A multiple regression model has

      a. only one independent variable
      b. more than one dependent variable
      c. more than one independent variable
      d. at least 2 dependent variables

Q29. A multiple regression model has the form

$$\hat{y} = 7 + 2x_1 + 9x_2$$

As x1 increases by 1 unit (holding x2 constant), y is expected to

      a. increase by 9 units
      b. decrease by 9 units
      c. increase by 2 units
      d. decrease by 2 units

Q30. In regression analysis, if the independent variable is measured in pounds, the dependent variable

      a. must also be in pounds
      b. must be in some unit of weight
      c. cannot be in pounds
      d. can be any units

Q.31. In a regression analysis, the variable that is being predicted

      a. must have the same units as the variable doing the predicting
      b. is the independent variable
      c. is the dependent variable
      d. usually is denoted by x

Q32. Which among the following is a part of What If Analysis?

      a. Scenario Manager
      b. Goal Seek
      c. Data Table

d. All the above

Q33. Which cell must contain a formula for Goal Seek to work:
    a. The cell chosen under "Set Cell" option
    b. The cell chosen under "By Changing Cell" option
    c. Both of the above
    d. None of the above

Q34. Which of the formulas below contain the correct syntax for the VLOOKUP function?
    a) =VLOOKUP(lookup_value, table_array, col_index_num, row_lookup)
    b) =VLOOKUP(table_array, lookup_value, col_index_num, range_lookup)
    c) =VLOOKUP(lookup_value, table_array, col_index_num, value)
    d) =VLOOKUP(lookup_value, table_array, col_index_num, range_lookup)

Q35. Formula to calculate seasonally adjusted time series values is:
    (a) Actual Time Series divided by Season Index
    (b) Season Index divided by Actual Time Series
    (c) Actual Time Series Multiplied by Season Index
    (d) None of the above

Q36. Damping Factor as one of the inputs in Excel's: Data analysis- Exponential Smoothing is:
(a) The smoothing constant
(b) One minus the smoothing constant
(c) One plus the smoothing constant
(d) None of the above

Q37. Which function locates the relative position of a lookup value in a row or column?
    a) INDEX
    b) MATCH
    c) VLOOKUP
    d) HLOOKUP

Q38. The value of smoothing constant in an exponentially smoothed time series lies between:
    a. -1 and +1
    b. -1 and 0
    c. 0 and + 1
    d. It can take any value

Q39. Which of the following is NOT possible with VLOOKUP?
    a) You can lookup values located in a different worksheet
    b) You can lookup values located in a column to the right of the column that contains the lookup value
    c) You can lookup values located in a column to the left of the column that contains the lookup value
    d) You can lookup values such as text, numbers or characters

Q40. A regression analysis between sales (Y in $1000) and advertising (X in dollars) resulted in the following equation
        $\hat{Y} = 30{,}000 + 4\ X$
The above equation implies that an
    a. increase of $4 in advertising is associated with an increase of $4,000 in sales
    b. increase of $1 in advertising is associated with an increase of $4 in sales
    c. increase of $1 in advertising is associated with an increase of $34,000 in sales
    d. increase of $1 in advertising is associated with an increase of $4,000 in sales