CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Matheatics
Course CODE: BSc 562

Year 2 Semester I
SEMESTER END EXAMINATION
Differential Equation I – BBIM 2301

- This paper consists of EIGHT (08) questions on FIVE (05) pages.
- Answer FIVE (05) questions including question 01.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Non programmable calculators are allowed.
- Write legibly.

Date: 2022.09.21 Pass mark: 40% Time: 03 Hours

Question 01 (Compulsory)

(a) Find the general solution of $\frac{dy}{dx} = 3x^2e^{-y}$ and the particular solution that satisfies the condition $y(0) = 1$. (04 Marks)

(b) (i) Comment whether the given differential equation is homogeneous or not. Give reasons to your answer. (02 Marks)

$$2y'' + y' - y = 0$$

(ii) Find the general solution to the above differential equation mentioned in (i). (02 Marks)

(c) (i) What is the principal part of $3U_{xx} - 76U_x + 6U_{xt} + 4U_{tt} - 6U_t = 0$? (02 Marks)

(ii) Classify the given PDE in (i) as elliptic, parabolic or hyperbolic. (02 Marks)

(d) Consider $ty' + 2y = t^2 - t + 1$.

(i) Find the integrating factor. (02 Marks)

(ii) Solve the differential using your answer in (i). (02 Marks)

(e) Name two real world applications of differential equations and briefly explain them

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Matheatics
Course CODE: BSc 552

using your own words. (04 Marks)

Question 02

(a) (i) Show that the substitution $z = \frac{y}{x}$ transforms the differential equation

$$\frac{dy}{dx} = \frac{y(x+y)}{x(y-x)} \quad (1)$$

into the differential equation

$$x\frac{dz}{dx} = \frac{2z}{z-1} \quad (2)$$ (06 Marks)

(ii) Solve equation (2) and hence obtain the general solution to equation (1). (06 Marks)

(b) A tank contains 1000 gal of fresh water. At time t = 0 min, a liquid containing 6g of a pollutant substance per gallon is poured into the tank at a rate of 8 gal/min, and the mixed solution is drained from the tank at the same rate.

(i) How much of the substance is in the tank at an arbitrary time t? (05 Marks)

(ii) How much of the substance is in the tank after 1 hour and 30 minutes? (03 Marks)

Question 03

(a) y satisfies the differential equation $\frac{dy}{dx} + 2y = x$. Find y in terms of x. (07 Marks)

(b) The differential equation $\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 4y = 4e^{2x}$ is to be solved.

(i) Find the complementary function. (03 Marks)

(ii) Explain why neither λe^{2x} nor $\lambda x e^{2x}$ can be a particular integral for this equation. (03 Marks)

(iii) Obtain the general solution by taking the form of particular integral as $\lambda x^2 e^{2x}$. (07 Marks)

Question 04

(a) x satisfies the differential equation $\frac{d^2x}{dt^2} + 8\frac{dx}{dt} + 16x = \cos 4t, t \geq 0$.

(i) Find the general solution of the differential equation. (08 Marks)

(ii) Find the particular solution of this differential equation for which, at $t = 0, x = \frac{1}{2}$ and $\frac{dx}{dt} = 0$. (06 Marks)

(iii) Describe the behavior of the function for large values of t. (02 Marks)

(b) Classify the given linear partial differential equations as elliptic, parabolic or hyperbolic.

(i) $2U_{xx} + 6U_{xt} + 4U_{tt} - 6U_t = 0$ (02 Marks)

(ii) $2L_{xt} - 4L_{yy} - L_t = 0$ (02 Marks)

Question 05

(a) Find y in terms of k and x, given that $\frac{d^2y}{dx^2} + k^2y = 0$ where k is a constant, $y = 1$ and $\frac{dy}{dx} = 1$ at $x = 0$. (07 Marks)

(b) A population is modelled by the differential equation

$$\frac{dP}{dt} = 0.08P\left(1 - \frac{P}{1500}\right) \qquad P(0) = 100$$

(i) Write the solution of the given initial-value problem. (03 Marks)

(ii) Use the answer in (i) to find the population sizes $P(50)$. (02 marks)

(c) Use Euler's method with step size 0.25 to construct a table of approximate values for the solution of the initial-value problem over the interval $0 \leq x \leq 1$. (08 Marks)

$$y' = x + 2y$$
$$y(0) = 1$$

Question 06

(a) The motion of a small ball bearing dropped into viscous oil can be modelled by the differential equation

$$m\ddot{x} + r\dot{x} - mg = 0$$

where m is the mass of the ball, r is a constant related to the viscosity of the oil, g is magnitude of the acceleration due to gravity, and x is the vertical distance from the point

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Matheatics
Course CODE: BSc 552

of release. ($\ddot{x}$ and $\dot{x}$ refers to the second and first derivative of x, with respect to t)

(i) Find the general solution $x(t)$ of this differential equation.

Hint: Take the particular integral as $x = \lambda t$. (06 Marks)

(ii) Use your answer to part (a) to show that the velocity of the ball approaches the limiting value mg/r as t becomes very large. (05 Marks)

(b) Consider the market model

$$Q_S = 4P - 3$$

$$Q_D = -2P + 13$$

$$\frac{dP}{dt} = 0.4(Q_D - Q_S)$$

Solve the system and find an expression for $Q_D(t)$ when $P(0) = 2$. (09 Marks)

Question 07

(a) (i) Find the general solution to the differential equation

$$\ln x \frac{dy}{dx} + \frac{y}{x} = \frac{2x+3}{(x+1)(x+2)} \qquad x > 1$$

(05 Marks)

(ii) Find the particular solution which passes through the point $(2, 2)$. (05 Marks)

(b) Given that $x = e^u$, show that;

(i) $x\frac{dy}{dx} = \frac{dy}{du}$ (02 Marks)

(ii) $x^2\frac{d^2y}{dx^2} = \frac{d^2y}{du^2} - \frac{dy}{du}$ (03 Marks)

(iii) Hence find the general solution to the differential equation $x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} + y = 0$. (05 Marks)

Question 08

(a) The quasi-linear partial differential equation of order one is of the form

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Matheatics
Course CODE: BSc 552

$P(x,y,z)\frac{\partial z}{\partial x} + Q(x,y,z)\frac{\partial z}{\partial y} = R(x,y,z)$ or equivalently $Pp + Qq = R$

Solve the partial differential equation of the above form given below, using Lagrange's Method,

$$(x^2 + 2y^2)p - xyq = xz$$

(10 Marks)

(b) Initially, a tank contains 1000 L of pure water. Brine that contains 0.05 kg of salt per liter of water enters the tank at a rate of 5 L/min. The solution is kept thoroughly mixed and drains from the tank at a rate of 15 L/min. How much salt is in the tank,

(i) after t minutes (07 Marks)

(ii) after one hour? (03 Marks)

----------*END OF THE QUESTION PAPER*----------

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 562

Year 2 Semester I
SEMESTER END EXAMINATION
Computing for Business – BBIM 2305

- This paper consists of EIGHT (08) questions on SEVEN (07) pages.
- Answer FIVE (05) questions including question 01.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.
- All the commands and outputs should be added to the answer script.
- Save the script files with a name relevant to the question number when there is not any special file name mentioned in the question.
- Do not use the command window except for the help command.
- Attach all the script files (m-files) as a zip file and send the zip file to the respective lecturer in an email.
- Additional 10 minutes will be given to email the zip-file, after handing over the answer scripts.

Date: 2022.09.19 | Pass mark: 40% | Time: 03 Hours

Question 01 (Compulsory)

(a) Use the 'help' command to find out how to substitute a value for an algebraic expression. Use an example to describe the syntax. (02 Marks)

(b) Julia wants to write a for loop to print the square root of integers from 20 to 30. The following code is what she has used. Correct all the mistakes and write the correct code. (02 Marks)

```
for i=20:30
Square root=sqrt(i);
disp(i)
end
```

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 562

(c) Suppose you need to display the command to input a number until the user enters a positive even integer less than 50. Modify the given code to get the intended output by adding the condition of the while loop. (03 Marks)

```
x=input('Enter an integer:')
while Condition
x=input('Enter an integer:')
end
```

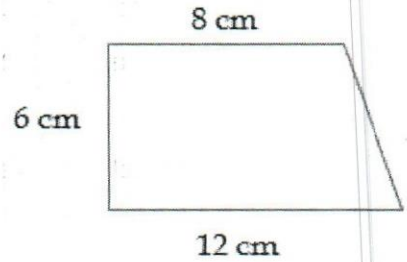
(d) Suppose the case that a player guesses an integer as an input. If he guesses an even integer below 100, he can go to the next step. Otherwise, it shows 'Better luck next time'. You need to perform this using a MATLAB code. Modify the given code by filling the blanks to get the intended output. (03 Marks)

```
Guess=input('Guess a number:')
if .....
disp('You can go to the next step');
else
.....
end
```

(e) Write the code with the least requirements to get the plot of $f(x) = x^2 + 5x + 7$ in the interval [-10, 10]. (03 Marks)

(f) Evaluate $\sqrt[3]{\frac{36\,e^2}{\pi}}$ in the command window. (02 Marks)

(g) Write the output of the following code. Mention how to call the function in the command window to evaluate the area of the following trapezoid.



CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 562

```
function [Area]=Trapezoid_Area(length_1,length_2,height)
Area=(height/2)*(length_1+length_2);
disp('Area of the Trapesoid is:');disp(Area);
end
```

(03 Marks)

(h) Explain what each command does. Use a number to illustrate your idea.

```
format long
format short
format rat
format bank
```

(02 Marks)

Question 02

(a) Write a script file to calculate the sum of the first 15 terms of the series $k^3 + 2k + 1$ for $k = 1, 2, 3$ .... and display the output. (08 Marks)

(b) Write a program in a M-File that finds the smallest positive even integer that is divisible by 13 and 16 whose square root is greater than 150. Use a suitable loop in the program. The loop should start from 1 and stop when the number is found.

The program prints the message "The required number is:" and then prints the number.

(12 Marks)

Question 03

(a) Create a script file using a while loop to determine how many terms in the series 2^k, k = 1,2, 3, . . . , are required for the sum of the terms to exceed 1000. Further, display the sum for this number of terms. (08 Marks)

(b) Write a function file named "Quadratic_Solver" to find solutions for any quadratic function. You can decide the inputs as you wish. Hint: You can use the 'solve' command or the formula for finding solutions to a quadratic function. Check the output for the function

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 562

$f(x) = 2x^2 + 4x + 8.$

Display roots in two sentences as "The first root is ....."

"The second root is ....." (12 Marks)

Question 04

(a) Create a function file and save the file as "Log_Calculator.m". The function should perform the following calculations.

- Input an array of 10 positive numbers.
- Calculate the natural logarithm of those 10 numbers and load them in an array.
- Plot the 10 numbers and their natural logarithms in a graph.
- Give labels for the x-axis, y-axis and a title to the graph.
- Check your answer for the array [1 3.5 4.9 6.5 8 9.5 12 14.5 17 19.5].

(10 Marks)

(b) Use MATLAB to solve the given system of linear equations.

$$5x + 3y - 2z = 5$$
$$3x + 5y + 6z = 7$$
$$2x + 4y + 3z = 8$$

Use the 'fprintf' or 'disp' command to display your answers in a sentence. (10 Marks)

Question 05

(a) Create a script file that perform the following calculations/ obtain plots.

(i) $\lim_{x \to 2^+} \frac{x^3+8x+9}{x+9}$ (03 Marks)

(ii) $\lim_{x \to 2^-} \frac{x^3+8x+9}{x+9}$ (03 Marks)

(iii) Use ezplot command to plot the function $f(x) = \frac{x^3+8x+9}{x+9}$ in the domain [-15 to 15].

(03 Marks)

(iv) Use the graph you obtained in (iii) to explain the limit of the function as x approaches to -9. (03 Marks)

(iv) Use MATLAB to compute the limit of $f(x)$ as $x \to -9$. (02 Marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 562

(b) Create a script file to

(i) expand the function $sin(x + y)$. (02 Marks)

(ii) solve the equation $x^2 + 7x - 9 = 0$ and show the answers in decimals. (02 Marks)

(iii) factorize $x^3 - y^3$. (02 Marks)

Note: Use a single script file for all three parts (i), (ii), (iii).

Question 06

(a) Create a script file which perform following tasks.

- Input any 6 positive integers below 20 in an array.
- Find the maximum value of the array and name it as Max_Val.
- Print out the square of integers from 1 up to Max_Val.
- Calculate the summation of the squares of integers calculated in the previous step.
- Check your answers for the array [5 8 12 6 4 9].

(12 Marks)

(b) Observe the given output in Figure 1 below.

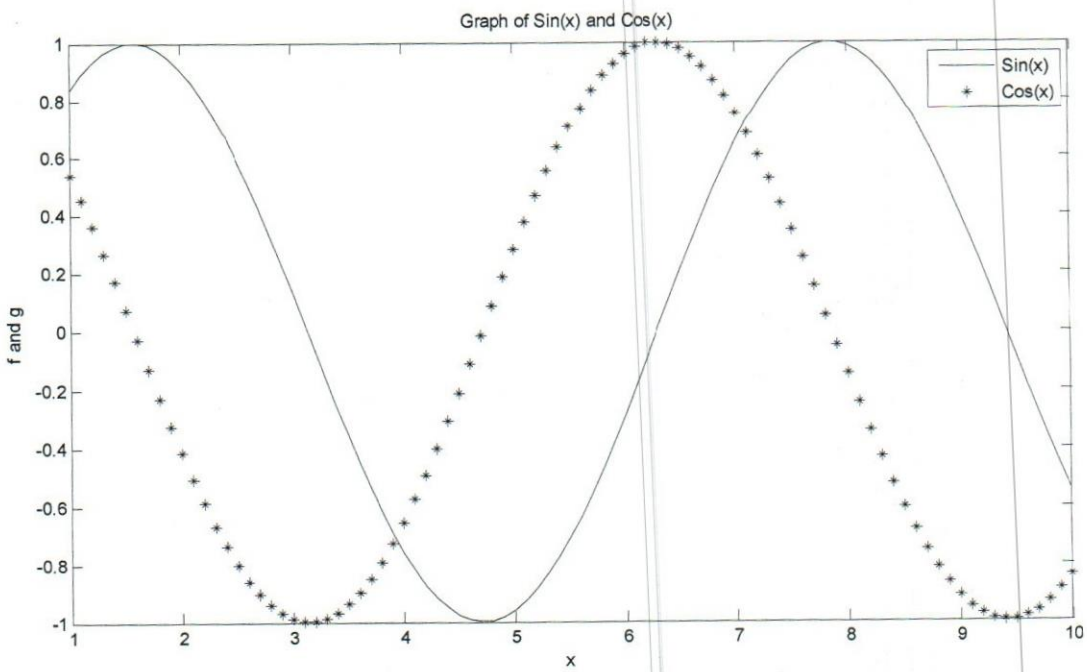


Figure 1

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 562

Write a script file to obtain the given output. Consider the given domain in the output with a step size of 0.1 to obtain the plot. (08 Marks)

Question 07

The overall grade in a course is determined from the grades of 4 quizzes, 2 midterms, and a final exam, using the following scheme:

Quizzes: Quizzes are graded on a scale from 0 to 10. The average of the 4 quizzes constitutes 30% of the course grade.

Midterms and final exam: Midterms and final exams are graded on a scale from 0 to 100. If the average of the midterm scores is higher than the score on the final exam, the average of the midterms constitutes 40% of the course grade and the grade of the final exam constitutes 30% of the course grade.

If the final grade is higher than the average of the midterms, the average of the midterms constitutes 30% of the course grade and the grade of the final exam constitutes 40% of the course grade.

Read the relevant criteria and write a computer program in a script file that determines the course grade for a student.

The program first asks the user to enter the four quiz grades (in a vector), the two midterm grades (in a vector), and the grade of the final. Then the program calculates a numerical course grade (a number between 0 and 100). Finally, the program assigns a letter grade according to the following key: A for $Grade \geq 90$, B for $80 \leq Grade < 90$, C for $70 \leq Grade < 80$, D for $60 \leq Grade < 70$, and E for a grade lower than 60. Execute the program for the following case:

(a) Quiz grades: 6, 10, 6, 8. Midterm grades: 82, 95. Final exam: 81.

(20 Marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 562

Question 08

(a) (i) Type this array into a MATLAB Script File to carry out the following instructions:

$$A = \begin{pmatrix} 2 & -3 & 5 \\ -1 & 6 & 4 \\ 1 & 5 & 0 \end{pmatrix}$$ (03 Marks)

(ii) Create an array B by extracting the elements from the second and third columns of matrix A. (02 Marks)

(iii) Create an array C by extracting the elements from the first and second rows of matrix A. (02 Marks)

(iv) Calculate $D = B * C$. (02 Marks)

(v) Use MATLAB's **max** function to create a vector that contains the maximum values of each column of D. Hint: You may use a for loop. (04 Marks)

(vi)Calculate the determinant of matrix A. (02 Marks)

(b) Consider the function $f(x) = x^4 + 3x^2 - 9$.

(i) Use MATLAB to find the second derivative of $f(x)$. (03 Marks)

(ii) Evaluate $\int_2^6 f(x)\ dx$ using MATLAB. (02 Marks)

----------END OF THE QUESTION PAPER----------

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Matheatics
Course CODE: BSc 562

Year 2 Semester I
SEMESTER END EXAMINATION
Linear Programming with Computer Application - BBIM 2302

- This paper consists of Eight (08) questions on FIVE(05) pages.
- Answer All Five (05) Questions. Question 01 is compulsory
- Nonprogrammable Calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2022.09.17 Pass mark: 40% Time: 03 Hours

Question 01 (Compulsory)

Diamond Match Company produces Match Boxes at five different plants at Galle, Katharagama, Anuradhapura, Rathnapura and Valachanna. The capacity of each plant is given in Table 1. These Match Boxes are stored in one of three warehouses at Kandy, Colombo or Ampara. The cost in producing Match Boxes at each plant and shipping it to each warehouse is given in Table 2. Diamond Match Company has four main customers. They are satosa, Arpico, Keells Super and Petta Market. The cost of shipping a ton of Matches from each warehouse to each main customer is given in Table 3. Each customer must be delivered the amount (in tons) of Match Boxes given in the Table 4.

Table 1

	Plant				
	Galle Plant	Katharagama Plant	Anuradapura Plant	Rathnapura Plant	Valachanna
Tons	300	200	300	200	400

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Matheatics
Course CODE: BSc 562

Table 2

From	Kandy Warehouse	Colombo Warehouse	Ampara Warehouse
Galle Plant	8	10	12
Katharagama Plant	7	5	7
Anuradapura Plant	8	6	5
Rathnapura Plant	5	6	7
Valachanna Plant	7	6	5

Table 3

From	Customer 1: Satosa	Customer 2: Arpico	Customer 3: Keells Super	Customer 4: Petta Market
Kandy Warehouse	40	80	90	50
Colombo Warehouse	70	70	60	80
Ampara Warehouse	80	30	50	60

Table 4

	Customer 1 : Satosa	Customer 2 : Arpico	Customer 1 : Keells Super	Customer 1 : Petta Market
Demand	200	300	150	250

(i) Draw a graph (Consisting of 3 layers) to represent the problem. The layers should be plants, warehouses and customers.

(ii) Formulate a transportation problem(LP) whose solutions will tell us how to minimize the cost of meeting the customer demands. (20 Marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Matheatics
Course CODE: BSc 562

Question 02

Transport company has two types of trucks, Type A and Type B. Type A has a refrigerated capacity of 20 m3 and a non-refrigerated capacity of 40 m3 while Type B has the same overall volume with equal sections for refrigerated and non-refrigerated stock. A grocer needs to hire trucks for the transport of 3,000 m3 of refrigerated stock and 4 000 m3 of non-refrigerated stock. The cost per kilometer of a Type A is $30, and $40 for Type B. Build **Linear Programming Model** to calculate how many trucks of each type should the grocer rent to achieve the minimum total cost? Use Graphical method to solve the above Linear Programming model. (20 Marks)

Question 03

A carpenter makes tables and chairs. Each table can be sold for a profit of Rs. 30 and each chair for a profit of Rs. 10. The carpenter takes 6 hours to make a table and 3 hours to make a chair and spends up to 40 hours per week, working. According to the customer demand, he should make at least three times as many chairs as tables. Tables take up 4 times as much storage space as chairs and there is space for at most 4 tables each week.

(a) Build Linear Programming Model for this problem. (05 Marks)

(b) Use Graphical method to solve the above Linear Programming model. (15 Marks)

Question 04

A farmer has recently acquired 110 hectares of land. He has decided to grow Wheat and Barley on that land. Due to the quality of the sun and the region's excellent climate, the entire production of Wheat and Barley can be sold. He wants to know how to plant each variety in the 110 hectares, given the costs, net profits and labor requirements according to the data shown below:

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Matheatics
Course CODE: BSc 562

Variety	Cost (Price/Hec)	Net Profit (Price/Hec)	Man-days/Hec
Wheat	200	80	10
Barley	300	110	30

The farmer has a budget of Rs. 8,000 and an availability of 1,400 man-days. Formulate a Linear Programming model for this problem. (20 Marks)

Question 05

Use the graphical method to find all optimal solutions for the following model:

$$\text{Maximize } Z = 500x_1 + 300x_2,$$

subject to

$$15x_1 + 5x_2 \leq 300$$

$$10x_1 + 6x_2 \leq 240$$

$$8x_1 + 12x_2 \leq 450$$

and

$$x_1 \geq 0, x_2 \geq 0$$

(20 Marks)

Question 06

Use the graphical method to solve this problem:

$$\text{Maximize } Z = 15x_1 + 20x_2,$$

subject to

$$x_1 + 2x_2 \geq 10$$

$$2x_1 - 3x_2 \leq 6$$

$$x_1 + x_2 \geq 6$$

and

$$x_1 \geq 0, x_2 \geq 0$$

(20 Marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Matheatics
Course CODE: BSc 562

Question 07

Leather Limited manufactures two types of belts: the deluxe model and the regular model. Each type requires 1 *sq yd* of leather. A regular belt requires 1 hour of skilled labor, and a deluxe belt requires 2 hours. Each week, 40 *sq yd* of leather and 60 hours of skilled labor are available. Each regular belt contributes \$3 to profit and each deluxe belt, \$4. Formulate the LP Model to maximize the profit. (20 Marks)

Question 08

A building supply has two locations in town. The office receives orders from two customers, each requiring 3/4-inch plywood. Customer A needs fifty sheets and Customer B needs seventy sheets. The warehouse on the east side of town has eighty sheets in stock; the west-side warehouse has forty-five sheets in stock. Delivery costs per sheet are as follows: \$0.50 from the eastern warehouse to Customer A, \$0.60 from the eastern warehouse to Customer B, \$0.40 from the western warehouse to Customer A, and \$0.55 from the western warehouse to Customer B.

Use LP Model to find the shipping arrangement which minimizes costs. (20 Marks)

----------END OF THE QUESTION PAPER----------

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 562

Year 2 Semester I
SEMESTER END EXAMINATION
Business Communication – BBIM 2304

- This paper consists of NINE (09) questions on THIRTEEN (13) pages.
- Answer ALL questions including.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.

Date: 2022.09.23 Pass mark: 40% Time: 03 Hours

Part A: Vocabulary

Question 01

Fill in the blanks with the most suitable word given in the box.

(01 Markx10=10 Marks)

~~cognitive~~ / ***perception*** / ***formative*** / ***affective*** / ***taxonomy*** / ***spectrum*** / ***benchmark*** / ***summative*** / ***brainstorming*** / ***alternative*** /

Example: Educationists research on the links between ***cognitive*** and linguistic development in young children.

a. Tests at the age of seven provide a/an ………………… against which the child's progress at school can be measured.

b. A distinction or A grade is awarded only after achieving a/an ……………………….. of learning objectives.

c. Proficiency-based learning is generally seen as a/an ………………………….. to more traditional educational approaches.

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 552

d. Bloom's ..... is a classification system used to define and distinguish different levels of human cognition.

e. A group creativity technique where all people think at the same time in order to solve a problem or create good ideas is called .....

f. The goal of ..... assessment is to evaluate student learning at the end of an instructional unit.

g. The goal of ..... assessment is to monitor student learning to provide an ongoing feedback to improve learning-teaching process.

h. The objectives of ..... domain include self-awareness and feelings.

i. The objectives of ..... domain include muscle coordination.

j. The five stages of ..... are stimulation, organization, interpretation-evaluation, memory and recall.

Question 02

Guess the correct spelling with the suggested words and fill in the blanks.

(01 Markx5=05 Marks)

Gardener's Theory of Multiple Intelligences

When you hear the word intelligence, the concept of IQ Testing may immediately come to mind. Intelligence is often defined as our intellectual p _ _ _ _ _ _ _ _ (qualities that can be developed); something that we are born with, something that can be measured and a c

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 552

_ _ _ _ _ _ _ (ability to understand something) that is difficult to change. In recent years, however, other theories of intelligence have e _ _ _ _ _ _. One such conception is the theory of multiple intelligences proposed by Harvard psychologist Howard Gardener.

This theory suggests that traditional p _ _ _ _ _ _ _ _ _ _ _ (measuring mental abilities and processes) views of intelligence are too limited. Gardener first outlined his theory in his 1983 book "Frames of Mind: The theory of Multiple Intelligences," where he suggested that all people have d _ _ _ _ _ _ _ _ (not the same as somebody) kinds of intelligences.

Question 03

Complete the following paragraph with suitable words given in the box.

(01 Markx10=10 Marks)

~~activities~~ / correlated / integration / fundamental / multiple / committed / manifested / formulated / moulded / study / flowering

Aims of Education

Aims give direction to (1) ***activities.*** Aims of education are (2)..... keeping in view of the needs of situation. Human nature is multisided with (3)..... needs which are related to life. Educational aims are (4). ..... to ideals of life. The goal of education should be the full (5)..... of the human on this earth. According to a UNESCO (6)....."the physical, intellectual, emotional, and ethical (7)..... of the individual into a complete man/woman is the (8)..... aim of education" The other goals of education are to form children into persons (9)..... to work for the communities of human communities of love, fellowship, freedom, justice and harmony. Students are to be (10).....

only by making them experience the significance of these values in the school itself. Teachers can achieve this only by the lived examples of their lives (11) ..... in hundreds of small and big transactions with students in word and deed.

Part B : Grammar

Question 04

01. **There is an error in each of the following sentences. Correct the error and rewrite the sentences.** (01 Markx10=10 Marks)

Example: Children are going to school every day. ***Children go to school every day.***

a. Ruwan won't come to school now. .....

b. Your case will not be ended this year. .....

c. The child was fainted at the dreadful sight. .....

d. I shall go and come. .....

e. People of ill-will are never prospered .....

f. Nothing hindered him to gain his promotion.

.....

g. The farmer sawed the field last month.....

h. Father returned back home the following day. .....

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 552

i. I did not say like that. .....

j. The nurse made her to take the medicine. .....

Question 05

Write the function of the modal verbs in the following expressions choosing from the box. Look at the example. (01 Markx10=10 Marks)

~~**prohibition**~~ / suggestion / offer / request / no necessity / obligation / ability / assumption / possibility / advice /

Example: The registers must not be taken out of the office? *(prohibition)*

a. I'll take you to the library. (.....)

b. Could you help me with my translation? (.....)

c. You must have taught the wrong syllabus? (.....)

d. You shouldn't borrow books without permission. (.....)

e. The principal didn't have to carry out inspection. (.....)

f. The staff may take their break between 10.30 and 11.00 a.m. (.....)

g. The science teacher might have joined another school. (.....)

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 552

h. Some teachers can explain difficult concepts. (.....)

i. Shall we organize the Children's Day grandly? (.....)

j. The teachers must write notes of lessons. (.....)

Question 06

Rewrite the following sentences converting the underlined phrases into clauses. Look at the example. (01 Markx5=05 Marks)

Example: I attended to <u>their needs.</u> I attended to ***what they need.***

a. The principal did much good during his tenure.
.....

b. The driver drove the bus at the fastest speed. .....

c. Teachers favour the rich children. .....

d. I don't understand your teaching. .....

e. Some students are too lazy to work. .....

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 552

Part C: Comprehension

Question 07

Read the following short extract on education and write short answers to the questions given below. (02 Marksx5=10 Marks)

In this age of conflicting viewpoints in contemporary education, it behoves one to study carefully and analyze critically the leading philosophies of education. Only by this process it is possible to evaluate theories. Only by this process one can develop an individual workable philosophy of education, and today as perhaps never before one desperately needs a scale of values in the form of a definite, yet flexible, philosophy of life as well as education. Consider briefly the three outstanding, yet definitely conflicting, viewpoints in education. Examples of each of these are continuously before you in any of our public schools. Their exponents, each in his own way, are loyal and devoted to their own cause.

First, Traditional Education, said to be "subject-matter centered," looks to the past for its ideals and content. It maintains its identity through an effort to " conserve and transmit the heritage of the past." Its method is the logical organization and presentation of subject-matter. One learns the names of the bones of the body in hygiene, and the dates and battles in history. Though it may have fitted its followers to live in a static society, it is claimed that in the new social order it ineffectively prepares one for the solution of problems and continuous adjustment to change.

Secondly, Scientific Education, which is "adult " or "society-centered," made its entry half a century ago through the medium of psychology, tests and measurements, and experimentation. Preparation for life is its justification and it seeks to determine what is to be taught in the public schools through a careful consideration of the needs of the present. Job analysis is its favorite technic. Its most awkward task has been an attempt to measure the abilities of students and homogenously group them in Sections A, B, and C for instructional purposes-forgetting that these same youngsters

in life must hold their own in business and society that are heterogenous.

Thirdly, Progressive Education, which is called " child-centered," holds that the teacher should be a guide, whose duty it is to observe the spontaneous activities of children, and to study their mental and emotional reactions. Content and activities are selected to further the immediate purposes of children. Experience in meeting new situations prepares for future needs. Living fully and purposefully today gives practice in meeting situations later in life. Though relatively new in the American system of education, the progressive education movement is based upon the philosophy of Rousseau, Pestalozzi, Froebel, and Tolstoy. Its greatest liability is that all teachers are not artist teachers and all school situations are not ideal. Its emotional appeal is tremendous, and many converts have caught the spirit, but as yet few have developed the technique. A synthesis of the best in these three philosophies is gradually evolving. A new concept is emerging, characterized by the stability and ideals of the traditional; the accuracy and skills of the scientific, and the spontaneity and creativeness of the progressive.

a. According to passage, who is devoted to their own cause?

.....

.....

b. What is the salient feature of Traditional Education? .....

.....

c. What does Scientific Education aim? .....

d. Is it correct to say that many have developed techniques according to Progressive Education? .....

e. Find the word that means mixture of ideas in the last paragraph?

.....

Question 08

Study the following situations and write 'true , false or cannot decide' in the blanks provided. (02 Marks x 5 = 10 Marks)

a. There was a training program in school. Sixty-five teachers were expected to participate in the program. Except eight all the other teachers took part in the training. Therefore, only fifty-seven teachers were at the program? .....

b. Hardworking students usually perform well at exams. Ruwan always works hard and this term he became the second in the class. So, Ruwan has hardly worked during this term? .....

c. The average of English marks of Grade 10 A was 70.5. The range is the difference between the highest mark and the lowest mark. If the lowest mark is 20.5, the range is 50 marks? .....

d. The teacher asked the students to draw an alien. If students draw a certain number of ears, that number should be squared (two times) when they draw hands. The number of ears should be cubed (three times) when they draw fingers. If one student drew twenty-seven fingers, the alien had nine hands? .....

e. The manager of a school network assured teachers an annual 10% increase of salary with the intention of teacher retention. After many teachers left, he gave the salary increment citing a number of excuses. If the salary of a teacher who remained was Rs.10 000/- two years ago, her present salary is Rs.12 100/-. .....

Part D: Writing

Question 09

Read the following paragraph and write a summary in 50 words. Don't exceed the word limit. (15 Marks)

The transformation of the traditional teaching of nature and society into a more modern form requires the following key transformations: the prevailing teacher's lecturing should transform into the prevailing activity of students in discovering new knowledge; instead of the teachers solving problems there should be individual work of students; instead of single-mindedness there should be divergent, creative thinking and alike. Therefore, the way out of teaching nature and society that is regulated in such a manner could be if the teaching is organized so as to use active forms of learning that rely on modern educational systems which develop students intellectually. The question is how to transform traditional into contemporary teaching of nature and society. One of the critical points is the problem of teaching content and the coordination of this content and the process learning with the development of science.

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 552

Good lesson planning is essential to the process of teaching and learning. Write a short essay on lesson planning explaining the following points. (15 Marks)

- definition of lesson plan
- importance of lesson planning
- how teacher benefits
- how students benefit

.....

.....

.....

.....

.....

.....

.....

.....

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 552

CINEC CAMPUS
Beyond A Graduate

Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 552

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

----------END OF THE QUESTION PAPER----------