



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Second Semester – Spring 2023

Paper: Programming Fundamentals

Course Code: CC-112

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(5x6=30)

- 1) What is numeric overflow?
- 2) What happens in a while loop if the control condition is true initially?
- 3) What does the term "passing a parameter by value" mean in the context of a function?
- 4) Write the output produced by the following program.

```
bool x = false, y = true;
y = x || !y;
y = !x && !y || x && y;
x = !(x || y) && (x && y);
cout << x << "\t" << y << endl;
```

- 5) Write the output produced by the following program.

```
for (int i = 0; i < 6; i++)
    if (i % 2 == 0)
        cout << i * i << "\t";
    else if (i % 3 == 0)
        cout << i + 1 << "\t";
    else if (i % 5 == 0)
        cout << 2 * i - 2 << "\t";
    else
        cout << i << "\t";
```

Q.2. Answer the following questions:

(3x10=30)

- 1) Write a program that calculates a car's gas mileage. The program should ask the user to enter the number of gallons of gas the car can hold, and the number of miles it can be driven on a full tank. It should then display the number of miles that may be driven per gallon of gas.
- 2) Write a program that prompts the user to input a number between 1 and 10 (inclusive). The program should use a switch statement to display the corresponding Roman numeral for the entered number. If the user enters a number outside the specified range (less than 1 or greater than 10), the program should display an error message and prompt the user again for a valid input.
- 3) Write a program that prompts the user to enter the length of a number and the number itself. The program should then calculate and display the sum of all the digits in that number. The length of the number should be entered before entering the actual number.



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Second Semester – Spring 2023

Paper: Introduction to Economics

Course Code: UE-171

Roll No. 07989

Time: 3 Hrs. Marks

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- 1) Differentiate between Monopoly and Monopolistic competition.
- 2) Explain Unitary Elastic Demand and Perfect Elastic Demand with the help of example.
- 3) Contrast between Expansion and Contraction stages of an economy.
- 4) What will happen to Market Equilibrium in case of Price Ceiling?
- 5) Write a brief note on Technology as a factor of Supply.
- 6) List down Functions of Money.

Q.2. Answer the following questions.

(2x15=30)

- 1) Explain different types of Unemployment. Explain the role of Government in eradicating different types of unemployment.
- 2) Construct a sketch of FISCAL BUDGET. Write a note on FISCAL POLICY.



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Second Semester – Spring 2023

Paper: Communication & Presentation Skills

Course Code: GE-164

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(5x6=30)

- i. What is the definition of nonverbal communication?
- ii. Why meetings are important in decision making process?
- iii. How time acts an important nonverbal cue, explain with example.
- iv. What points should be kept in mind before writing a message or initiating communication with customer for the first time?
- v. How should we know that what visuals will work for a games application?

Q.2. Answer the following questions.

(3x10=30)

- i. Write a memo to your employees and inform them about the new policy for taking leaves. Give details of the policy.
- ii. How group meetings help everyone to discuss and decide a solution, explain with an example.
- iii. Write a letter to a client and inform him/her that the bank has extended their credit card limit.

- 5- يَا أَيُّهَا الَّذِينَ آمَنُوا لَا تَحْرِمُوا طَيِّبَاتِ مَا أَحَلَّ اللَّهُ لَكُمْ وَلَا تَعْتَدُوا، إِنَّ اللَّهَ لَا يُحِبُّ
 6- أَجَلَ لَكُمْ صَيْدَ الْبَحْرِ وَطَعَامَهُ مَتَاعًا لَكُمْ وَلِلسَّيَّارَةِ، وَحَرَّمَ عَلَيْكُمْ صَيْدَ الْبَرِّ مَا ذُمُّهُ
 7- قَالَ عِيسَى ابْنُ مَرْيَمَ اللَّهُمَّ رَبَّنَا أَنْزِلْ عَلَيْنَا مَائِدَةً مِنَ السَّمَاءِ تَكُونُ لَنَا عِيدًا لِأَوَّلِ
 وَأَنْتَ خَيْرُ الرَّازِقِينَ ۝

- 8- يَا أَيُّهَا النَّاسُ اتَّقُوا رَبَّكُمُ الَّذِي خَلَقَكُمْ مِنْ نَفْسٍ وَاحِدَةٍ وَخَلَقَ مِنْهَا زَوْجَهَا وَنَثَّ
 اللَّهُ الَّذِي تَسَاءَلُونَ بِهِ وَالْأَرْحَامَ، إِنَّ اللَّهَ كَانَ عَلَيْكُمْ رَقِيبًا ۝
 9- يَا أَيُّهَا الَّذِينَ آمَنُوا إِذَا قُمْتُمْ إِلَى الصَّلَاةِ فَاغْسِلُوا وُجُوهَكُمْ وَأَيْدِيَكُمْ إِلَى الْمَرَافِقِ
 وَأَرْجُلَكُمْ إِلَى الْكَعْبَيْنِ، وَإِنْ كُنْتُمْ جُنُبًا فَاطَّهَّرُوا ۝
 10- لِلَّهِ مُلْكُ السَّمَاوَاتِ وَالْأَرْضِ وَمَا فِيهِنَّ، وَهُوَ عَلَى كُلِّ شَيْءٍ قَدِيرٌ ۝

s of the Verb.

(10x1=10)

سوال نمبر 2: افعال کے معانی لکھیں۔

1- كَتَبَ	=	_____	6- كَتَبْتُمْ
2- كَتَبُوا	=	_____	7- كَتَبْتُمْ
3- كَتَبْتَ	=	_____	8- كَتَبْتُ
4- كَتَبْتِ	=	_____	9- كَتَبْنَا
5- كَتَبْتُمْ	=	_____	10- كَتَبْتُمْ

s of the following Qur'anic words.

(20x0.5=10)

سوال نمبر 3: مندرجہ ذیل قرآنی الفاظ کے اردو / انگریزی میں معانی لکھیں۔

1 میثاق	2	جُنَاح	3
4 خصیم	5	مفروض	6
7 الشَّح	8	نَصْر	9

قِرْدَةٌ 12
الِئْم 15
إِمْرَأَةٌ 18

أَخِي 11
قُلُوبٌ 14
مَوَالٍ 17
سُكْرَى 20

10 غَنَى
13 قَسَطَ
16 عَاشِرُوهُمْ
19 دِيَارَكُمْ

Q.4. Write the plural with the given words.

(20x0.5=10)

سوال نمبر 4: مندرجہ ذیل الفاظ کی مدد سے واحد کی جمع لکھیں۔
مشرکین - اولئک - أبواب - حسنات - آیات - اَعْمَال - آلہة - عباد - هُمْ - صالحون -
خبیثون - رُسُل - کتبنا - غَافِلُونَ - ابناء - یعرفون - یثی - مُؤْمِنُونَ - اَسْمَاء - اصحاب

إِلَهٌ	ذَلِكْ	صَالِحٌ	غَافِلٌ	حَسَنَةٌ
يَعْرِفُ	هُوَ	مَشْرُكٌ	كُتِبَتْ	بَابٌ
يَكْتُبُهُمْ	عَمَلٌ	رُسُلٌ	ابْنٌ	إِسْمٌ
عَبْدٌ	مُؤْمِنٌ	خَبِيثٌ	صَاحِبٌ	آيَةٌ

Q.5. Match the verses with lines to the translation.

(5x2=10)

سوال نمبر 5: آیات کو ان کے ترجمے سے لکیر کے ذریعے ملائیں۔

فرمادیجئے کہ تم زمین پر چلو پھرو، پھر (نگاہِ عبرت سے) دیکھو کہ (حق کو) جھٹلانے والوں کا انجام کیسا ہوا

1 هُوَ الَّذِي خَلَقَكُمْ مِنْ طِينٍ ثُمَّ قَضَى أَجَلًا وَأَجَلٌ مُسَمًّى عِنْدَهُ ثُمَّ أَنْتُمْ تَمُوتُونَ

اور جب تم نماز کے لئے (لوگوں کو بصورتِ اذان) پکارتے ہو تو یہ (لوگ) اسے ہنسی اور کھیل بنا لیتے ہیں۔ یہ اس لئے کہ وہ ایسے لوگ ہیں جو (بالکل) عقل ہی نہیں رکھتے،

2 قُلْ سِيرُوا فِي الْأَرْضِ ثُمَّ انظروا كيف كان عاقبة المكذبين

اور ہم اگر آپ پر کاغذ پہ لکھی ہوئی کتاب نازل فرمادیجئے پھر یہ لوگ اسے اپنے ہاتھوں سے چھو بھی لیتے تب (بھی) کافر لوگ (بھی) کہتے کہ یہ صرف جادو کے سوا (کچھ) نہیں

3 وَإِذَا كَادَنتُمْ إِلَى الصَّلَاةِ الْخُذُوا حُزْؤًا وَلَعْنًا ذَلِكَ بِأَنَّهُمْ قَوْمٌ لَا يَفْقَهُونَ

(اللہ) وہی ہے جس نے تمہیں مٹی کے گارے سے پیدا فرمایا (یعنی کڑا رُضی پر حیاتِ انسانی کی کیمیائی ابتداء اس سے کی)۔ پھر اس نے (تمہاری موت کی) میعاد مقرر فرمادی، اور (انقطاعِ قیامت کا) معینہ وقت اسی کے پاس (مقرر) ہے پھر (بھی) تم شک کرتے ہو،

4 وَإِذَا ضَرَبْتُمْ فِي الْأَرْضِ فَلَيْسَ عَلَيْكُمْ جُنَاحٌ أَنْ تَقْصُرُوا مِنَ الصَّلَاةِ

اور جب تم زمین میں سفر کرو تو تم پر کوئی سناہ نہیں کہ تم نماز میں قصر کرو،

5 وَلَوْ نَزَّلْنَا عَلَيْكَ كِتَابًا فِي قِرْطَاسٍ فَلَمَسُوهُ بِأَيْدِيهِمْ لَقَالِ الَّذِينَ كَفَرُوا إِنَّ هَذَا إِلَّا سِحْرٌ مُبِينٌ



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Second Semester – Spring 2023

Paper: Discrete Structures

Course Code: CC-111

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

1. Explain the different parts of propositional function with an example. [2]
2. How many edges does a graph have if its degree sequence is 5, 2, 2, 2, 2, 1? Draw such a graph. [3]
3. Determine whether the sentence "To enter the country you need a password or a voter registration card." is an exclusive-OR, or inclusive-OR or intended. explain your answer. [2]
4. Encrypt the cipher message "UNIVERSITY OF THE PUNJAB" using the shift cipher with shift K=7. [2]
5. What rules of inference are used in the given argument?
"If I will study discrete math, then I will study computer science. Therefore, if I will study discrete math, then I will study discrete mathematics and I will study computer science." [3]
6. Use a direct proof to show that the sum of two even integers is even. [2]
7. What will be the next term in the sequence 7, 11, 19, 35, ? [2]
8. Evaluate the following summation using $x=2$, $y=3$, $b=2.5$ and $c=3$. [4]

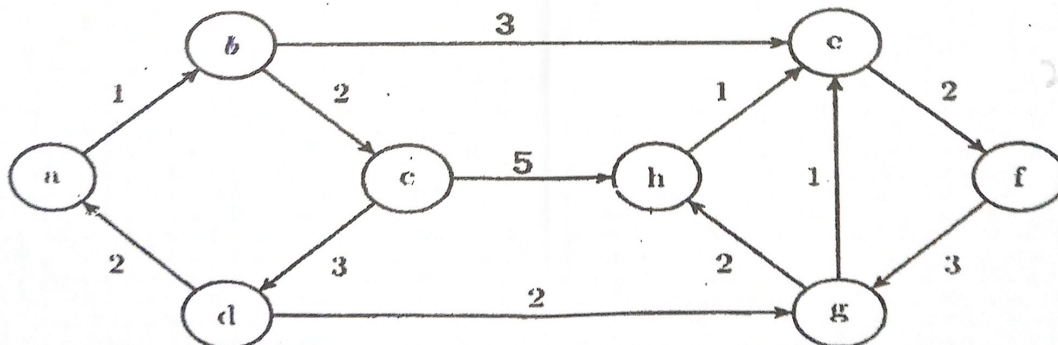
$$\frac{\sum_{j=0}^y \sum_{i=1}^c j^2 + i - [bc]}{\sum_{i=0}^x 2 + i^2}$$
9. Let A be the set {2,4,6,8,9}. in $A \times A$ which order pair in relation $R = \{(x,y) | x \geq y+1\}$. Determine whether the relation R on the set A is reflexive, symmetric or transitive. [3]
10. prove that the whether conditional statements $(p \rightarrow q) \wedge (q \rightarrow r) \rightarrow (p \rightarrow r)$ is a tautology or not using laws of equivalence [4]
11. How many different elements does A^n have when A has m elements and n is a positive integer? [3]

Q.2. Answer the following questions:

1. Use mathematical induction to prove that for any positive integer number n. [7]

$$2^2 + 5^2 + 8^2 + \dots + (3n-1)^2 = \frac{n(6n^2 + 3n - 1)}{2}$$

2. Determine the chromatic number, calculate the degree of each vertex and incidence matrix of a given Graph. Furthermore, find the minimum spanning tree using Kruskal's algorithm. [13 = 2+2+2+7]



3. Using counting and probability concepts, answer the following: [10 = 5*2]
 - a) A sequence of 10 bits is randomly generated. What is the probability that at least one of these bits is 0?
 - b) What is the coefficient of x^9 in $(2-x)^{19}$?
 - c) How many possibilities are there for the win, place, and show positions in a horse race with 20 horses if all orders of finish are possible?
 - d) A group contains n men and n women. How many ways are there to arrange these people in a row if the men and women alternate?
 - e) How many bit strings of length ten both begin and end with a 1?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

(6 × 5 = 30)

سوال نمبر 1: مندرجہ ذیل سوالات کے مختصر جوابات لکھیے:

- i. مرکب تو صیغی کی تعریف اور تین عربی مثالیں لکھیے۔
- ii. حروف جار کی تعریف کیجیے اور تین حروف جار کو عربی جملوں میں استعمال کریں۔
- iii. مندرجہ ذیل مذکر کے مؤنث اور مؤنث کے مذکر لکھیے۔
نَافِلَةٌ، نَوْرٌ، رَجُلٌ، حَصَانٌ، مُعَلِّمٌ
- iv. مندرجہ ذیل واحد کے جمع اور جمع کے واحد لکھیے۔
مَكَاتِبٌ، طِفْلٌ، مَسْرُورٌ، مَرَاوِجٌ، طَرِيقٌ
- v. مندرجہ ذیل افعال کو عربی جملوں میں استعمال کریں اور ان جملوں کا اردو ترجمہ بھی لکھیں۔
أَخَذَ، حَضَرَ، عَرَفَ، يَضْرِبُ، يَخْرُجُ
- vi. ضمیر متصل کے کوئی سے پانچ صیغے اسم کے ساتھ ملا کر لکھیں اور ترجمہ کریں۔

(3 × 10 = 30)

درج ذیل سوالات کے جوابات تحریر کیجیے۔

سوال نمبر 2: نکتے سے فعل ماضی کی گردان لکھیے۔

سوال نمبر 3: جملہ اسمیہ اور جملہ فعلیہ کی تعریف لکھیے اور تین عربی مثالیں لکھیے۔

سوال نمبر 4: اردو میں ترجمہ لکھیں۔

فَرْحَانَةٌ بِالنَّوْرِ	تُشْفِقُ الطُّيُورُ
وَالْجَدُّ الصَّغِيرُ	وَالْحَفْلُ وَالذُّهْرُ
وَالرَّجُلُ الْكَبِيرُ	وَالْوَلَدُ الصَّغِيرُ
مَا أَجْمَلَ الضِّيَاءَ	يَقُولُ فِي مَرْوَرٍ
يَشْرِقُ بِالنِّهَاءِ	فِي الْأَرْضِ وَالسَّمَاءِ



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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(5x6=30)

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