Test Booklet No. _____

This booklet consists of 100 questions and 16 printed pages.

RGUCET/2025/41

Series A

RGUCET 2025
Common Entrance Test, 2025
MASTER OF COMPUTER APPLICATION

Full Marks: 100 **Time: 2 Hours**

Roll No.

Day and | | | | | | | | | Date of Examination:

_____

Signature of Invigilator(s) _____

Signature of Candidate _____

General Instructions:

PLEASE READ ALL THE INSTRUCTIONS CAREFULLY BEFORE MAKING ANY ENTRY.

1. DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO.
2. Candidate must write his/her Roll Number on the space provided.
3. This Test Booklet contains 100 Multiple Choice Questions (MCQs) from the concerned subject. Each question carries 1 mark. There shall be negative marking of 0.25 against each wrong attempt.
4. Please check the Test Booklet to verify that the total pages and total number of questions contained in the test booklet are the same as those printed on the top of the first page. Also check whether the questions are in sequential order or not.
5. Candidates are not permitted to enter into the examination hall after the commencement of the entrance test or leave the examination hall before completion of Examination.
6. Making any identification mark in the OMR Answer Sheet or writing Roll Number anywhere other than the specified places will lead to disqualification of the candidate.
7. Candidates shall maintain silence inside and outside the examination hall. If candidates are found violating the instructions mentioned herein or announced in the examination hall, they will be summarily disqualified from the entrance test.
8. In case of any dispute, the decision of the Entrance Test Committee shall be final and binding.
9. The OMR Answer Sheet consists of two copies, the Original copy and the Student's copy

<table>
<tr><td>1</td><td colspan="4">Choose the most appropriate word from the options given below to complete the following sentence.

She could not understand the judges awarding her the first prize, because she thought that her performance was quite _____.</td><td>mediocre</td></tr>
<tr><td></td><td>a)bad</td><td>b) good</td><td>c) mediocre</td><td>d) excellent</td><td>c)</td></tr>
<tr><td>2</td><td colspan="4">Were you a fish, you would swim in the ocean. The statement is True or False?</td><td>True</td></tr>
<tr><td></td><td>a) True</td><td>b) False</td><td>c) Both</td><td>d) Statement is not sufficient to say it is True or False</td><td>a)</td></tr>
<tr><td>3</td><td colspan="4">Choose the most appropriate word from the options given below to complete the following sentence:
If we manage to _____ our natural resources, we would leave a better planet for our children.</td><td>conserve</td></tr>
<tr><td></td><td>a) uphold</td><td>b)conserve</td><td>c)cherish</td><td>d) invest</td><td>b)</td></tr>
<tr><td>4</td><td colspan="4">Match the columns.
<table><tr><th>Column 1</th><th>Column 2</th></tr><tr><td>A. Dry</td><td>i. Sleep</td></tr><tr><td>B. Fast</td><td>ii. Slow</td></tr><tr><td>C. Darkness</td><td>iii. Brightness</td></tr><tr><td>D. Rise</td><td>iv. Wet</td></tr></table></td><td>A-iv, B-ii, C-iii, D-i</td></tr>
<tr><td></td><td>a) A-iv, B-ii, C-iii, D-i</td><td>b) A-i, B-ii, C-iii, D-iv</td><td>c) A-ii, B-i, C-iii, D-iv</td><td>d) A-ii, B-i, C-iv, D-iii</td><td>a)</td></tr>
<tr><td>5</td><td colspan="4">Choose the correct meaning of the word “immaculate”</td><td>Extremely clean and neat</td></tr>
<tr><td></td><td>a) Dirty and untidy</td><td>b) Extremely clean and neat</td><td>c) Slightly weak</td><td>d) Old and dirty</td><td>b</td></tr>
<tr><td>6</td><td colspan="4">Choose the correct option that agrees with the subject:
Neither of the answers ___ correct.</td><td>is</td></tr>
<tr><td></td><td>a) are</td><td>b) were</td><td>c) is</td><td>d) be</td><td>c</td></tr>
<tr><td>7</td><td colspan="4">Identify the non-finite clause in the sentence below:
Running late, she skipped breakfast.</td><td>Running late</td></tr>
<tr><td></td><td>a) Running late</td><td>b) She skipped</td><td>c) Skipped breakfast</td><td>d) Breakfast</td><td>a</td></tr>
<tr><td>8</td><td colspan="4">Who invented the World Wide Web?</td><td>Tim Berners-Lee</td></tr>
</table>

	a) Bill Gates	b) Steve Jobs	c) Tim Berners-Lee	d) Larry Page	c)
9	**Which country hosted the 2020 Summer Olympics?**				Japan
	a) United States	b) China	c) Japan	d) France	c)
10	**Which of the following is/are true?** **A. The state of Sikkim is located in the northeastern part of India, bordering China, Nepal, and Bhutan.** **B. Assam is famous for its tea gardens and is one of the world's largest producers of tea.** **C. The Patkai Hills in Nagaland are known for being part of the Eastern Ghats.** D. **The Mishing tribe primarily resides in the state of Arunachal Pradesh.**				Statements 1 and 2 are true
	a) All statements are true	b) Statements 1 and 2 are true	c) Statements 3 and 4 are true	d) Only Statement 2 is true	b)
11	**Assertion (A):** The Indian Ocean is the third-largest ocean in the world. **Justification (J):** It covers about 20% of the Earth's total ocean area and is bordered by Asia, Africa, Australia, and the Southern Ocean.				**Both A and J are true, and J is the correct explanation of A.**
	a) Both A and J are true, and J is the correct explanation of A.	**b) Both A and J are true, but J is not the correct explanation of A.**	**c) A is true, but J is false.**	**d) A is false, but J is true.**	a)
12	Match the following : A. Subhas Chandra Bose — i. Indian National Army B. Bhagat Singh — ii. Jallianwala Bagh massacre C. Lala Lajpat Rai — iii. Martyrdom for the independence struggle D. Udham Singh — iv. Protest against Simon Commission				A-i, B-iii, C-iv, D-ii
	a) A-i, B-iii, C-ii, D-iv	b) A-i, B-ii, C-iv, D-iii	c) A-i, B-iii, C-iv, D-ii	d) A-i, B-iv, C-ii, D-iii	c)
13	Arunachal Pradesh shares its border with how many foreign countries?				3
	a)1	b)2	c)3	d)4	(c)
14	The NEFA (North-East Frontier Agency) was created in the year :				1954
	a)1954	b) 1956	c)1958	d)1962	(a)

<table>
<tr><td>15</td><td colspan="4">Which among the following matches of passes and the states are situated in are correct?
A. Bomdila - Arunachal Pradesh
B. Nathula - Sikkim
C. Shipki La - Himachal Pradesh
D. Niti pass - Uttarakhand
Choose the correct option from given bellow:</td><td>A, B, C, D</td></tr>
<tr><td></td><td>a) A, B</td><td>b) A, B, C</td><td>c)A, B, D</td><td>d) A, B, C, D</td><td>(d)</td></tr>
<tr><td>16</td><td colspan="4">In the light of the following statements A and B, choose the most appropriate answer from the options given bellow:

A: Chinese policy of theory of palm and five fingers.The concept of "Five Fingers" gained traction in the 1950s, with Chinese officials claiming it was Mao Zedong's perspective.
B:The "Five Fingers of Tibet" is a Chinese geopolitical strategy, sometimes attributed to Mao Zedong, that envisions Tibet as the palm of a hand, with Ladakh, Nepal, Sikkim, Bhutan, and the Northeast Frontier Agency (now Arunachal Pradesh) as the five fingers. However, it's important to note that this view is not officially recognized by the Chinese government.</td><td>Both A and B are true, and B is the correct explanation of A</td></tr>
<tr><td></td><td>a) Both A and B are true, and B is the correct explanation of A</td><td>b) Both A and B are true, but B is not the correct explanation of A</td><td>c) A is true, but B is not true</td><td>d) A is false, but B is true</td><td>(a)</td></tr>
<tr><td>17</td><td colspan="4">Match Days with their respective Date:

<table><tr><td>A. Lokpal Day</td><td>i. 15 October</td></tr><tr><td>B. World Teachers Day</td><td>ii. 26 November</td></tr><tr><td>C. Constitution Day</td><td>iii. 16 January</td></tr><tr><td>D. World Students Day</td><td>iv. 5 October</td></tr></table></td><td>A-iii, B-iv, C-ii, D-i</td></tr>
<tr><td></td><td>a) A-ii, B-iii, C-i, D-iv</td><td>b) A-iv, B-iii, C-ii, D-i</td><td>c) A-iii, B-iv, C-ii, D-i</td><td>d) A-i, B-iv, C-ii, D-iv</td><td>c</td></tr>
<tr><td>18</td><td colspan="4">Following statements are either True or False:

A. Similipal National Park is the newest National Park of India
B. Similipal National Park is the third national park in Odisha.
C. Dihing-Patkaiis the newest National Park of India.
D. Assam has the second highest numbers of national parks in India.

Choose the correct answers from options given below:</td><td>A& D are true</td></tr>
<tr><td></td><td>a) A& D are true</td><td>b) B& C are true</td><td>c) A & B are true</td><td>d) A, B & D are true</td><td>a</td></tr>
<tr><td>19</td><td colspan="4">Assertion (A): The global economy is facing a period of high inflation and increased interest rates in 2025.

Justification (B): Central banks are raising interest rates to combat rising consumer prices.</td><td>Both A and B are true, and B is the correct explanation of A.</td></tr>
</table>

	a) Both A and B are true, and B is the correct explanation of A.	b) Both A and B are true, but B is not the correct explanation of A.	c) A is true, but B is false.	d) A is false, but B is true.	a
20	Match old names with their respective new names: A. Fort William — i. Sri Vijaya Puram B. Osmanabad — ii. Sribhumi C. Port Blair — iii. Dharashiv D.Karimganj — iv. Vijay Durg				A-iv, B-iii, C-i, D-ii
	a) A-iv, B-iii, C-i, D-ii	b) A-iv, B-iii, C-ii, D-i	c) A-iii, B-iv, C-ii, D-i	d) A-i, B-iv, C-ii, D-iv	a

File 2

21	Find the next number in the series: 2, 6, 12, 20, 30, __				44
	a) 40	b) 42	c) 44	d) 46	c)
22	What comes next in the sequence: 1, 1, 2, 6, 24, 120, __				720
	a) 600	b) 720	c) 840	d) 960	b)
23	Which of the following is always true for a valid categorical syllogism?				The middle term must be distributed at least once
	a) Both premises must be particular	b) The middle term must be distributed at least once	c) The conclusion must be universal	d) The conclusion must be affirmative	b
24	Match the logical laws to their symbolic representation: A De Morgan's Law — i. $\neg(A \vee B) \equiv \neg A \wedge \neg B$ B Double Negation — ii. $\neg(\neg A) \equiv A$ C Contrapositive — iii $A \rightarrow B \equiv \neg B \rightarrow \neg A$ D Distributive Law — iv $A \wedge (B \vee C) \equiv (A \wedge B) \vee (A \wedge C)$				A–i, B–ii, C–iii, D–iv
	a) A–ii, B–i, C–iii, D–iv	b) A–i, B–ii, C–iii, D–iv	c) A–iii, B–ii, C–i, D–iv	d) A–iv, B–ii, C–iii, D–i	b
25	The expression $(P \wedge Q) \rightarrow R$ is logically equivalent to $\neg(P \wedge Q) \vee R$				True
	a) True	b) False	c) Statement is not complete	d) Not conclusive	a
26	A: Assertion: If an argument is valid and has all true premises, then its conclusion must be true.				Both A and B are

	B: Justification: Validity ensures that the form of the argument preserves truth.				true, and B is the correct explanation
	a) Both A and B are true, and B is the correct explanation	b) Both A and B are true, but B is not the correct explanation	c) A is true, B is false	d) A is false, B is true	a
27	Consider the statements: 1. All engineers are professionals. 2. Some professionals are teachers. Which of the following conclusions logically follows?				Some teachers are professionals
	a) Some engineers are teachers	b) Some teachers are professionals	c) All teachers are engineers	d) None of the above	b
28	Which of the following best describes a tautology in propositional logic?				A compound statement that is always true
	a) A compound statement that is true for some truth assignments	b) A compound statement that is always false	c) A compound statement that is always true	d) A statement that leads to contradiction	c
29	Match the logical laws to their symbolic representation: A All A are B; All B are C → All A are C — i. Darii B No A are B; All B are C → No A are C — ii. Camestres C All A are B; No B are C → No A are C — iii Celarent D Some A are B; All B are C → Some A are C — iv Barbara				A–iv, B–iii, C–ii, D–i
	a) A–i, B–ii, C–iii, D–iv	b) A–ii, B–i, C–iii, D–iv	c) A–i, B–iii, C–ii, D–iv	d) A–iv, B–iii, C–ii, D–i	d
30	If both premises in a categorical syllogism are affirmative, the conclusion must also be affirmative.				False
	a) True	b) False	c) Statement is not complete	d) Not conclusive	b) B
31	A: A syllogism with a universal and a particular premise can yield a particular conclusion. B: A conclusion cannot be stronger than the weakest premise.				Both A and B are true, and B

					explains A
	a) Both A and B are true, and B explains A	b) Both A and B are true, but B doesn't explain A	c) A is true, B is false	d) A is false, B is true	a
32	Evaluate the expression: (P→Q)∧(¬Q) What can be inferred logically?				The statement is a contradiction if P is true
	a) P must be false	b) Q must be true	c) P must be true	d) The statement is a contradiction if P is true	d
33	If **?** is an algebraic operator defined as a **?** b = a -2b +ab, then the value of the expression 2**?**5 + 5**?**2 is				13
	a) 10	b) 11	c) 12	d)13	d)
34	If $\frac{3a+2b}{a+2b} = 5$, what is the value of $\frac{a+2b}{a+3b}$?				2
	a)2	b)$\frac{2}{3}$	c)$\frac{2}{5}$	d)3	a)
35	Which of the following are valid factorizations of $8x^3 + 48x^2 + 96x + 64$? A.$(x+3)^3 \times 8$ B.$(x+2)^3 \times 8$ C.$(2x+4)^3$ D. $(2x+4)^2 \times (2x+8)$				Both B and C
	a) Both A and D	b) Both A and B	c) Both B and C	d) Both B and D	c)
36	If $3a + 5b = 8$ and $5a + 3b = 16$, then the value of $a - b$ is				4
	a) 3	b)2	c)5	d)4	d)
37	A person goes to a bank and withdraws ₹5000 – he is given only Rs₹5 and Rs₹10 notes. He is given total 650 notes in total. How many ₹10 notes were given to him?				350
	a) 200	b) 250	c) 300	d) 350	d)
38	The value of $(0.004)^{-2.5} =$				3125
	a) 3125	b)125	c)625	d)25	a)

39	The value of $\frac{log5^{1/3}}{log5} =$				$\frac{1}{3}$
	a) $\frac{1}{15}$	b) $\frac{1}{3}$	c)$\frac{1}{5}$	d)5	b)
40	In a geometric progression, 4th term is 4 and the 7th term is 32. The 12th term is				1024
	a) 256	b) 512	c) 1024	d) 2048	c)
41	What is the value of the determinant below? $\begin{vmatrix} 2 & 7 \\ 5 & -1 \end{vmatrix}$				-37
	a) -7	b) -25	c) -27	d) -37	d)
42	Find the inverse of the following matrix $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$				$\begin{bmatrix} -2 & 1 \\ 1.5 & -0.5 \end{bmatrix}$
	a) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$	b) $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$	c) $\begin{bmatrix} -2 & 1 \\ 1.5 & -0.5 \end{bmatrix}$	d) $\begin{bmatrix} 2 & 1 \\ -1.5 & 0.5 \end{bmatrix}$	c)
43	The distance between two points $A(x_1, y_1)$ and $B(x_2, y_2)$ is given by:				Answer
	a) $\sqrt{\{(x_1 + x_2)^2 + (y_1 +$	b) $\sqrt{\{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	c) $(x_2 - x_1) + (y_2 - y_1)$	d) $(x_1 - x_2)^2 + (y_1 - y_2)^2$	b
44	Which of the following represents the general equation of a circle?				$x^2 + y^2 + 2gx + 2fy + c = 0$
	a) $x^2 + y^2 + 2gx + 2fy + c = 0$	b) $ax + by + c = 0$	c)$y = mx + c$	d)$ax^2 + by^2 = c$	a
45	State whether the following statements are True or False: A. The distance between two points in a Cartesian plane can be calculated using the distance formula. B. The general equation of a circle is $x^2 + y^2 + 2gx + 2fy + c = 0$ C. All parabolas open upward. D. The intersection of two lines always results in a curve.				Only A and B are true.
	a) All statements are true.	b) Only A and B are true.	c) Only A is true.	d) All statements are false.	b

46	For the following Assertion and Reasoning: A: Every parabola has a focus and a directrix. B: The equation of a parabola can be derived using the definition involving distance from a fixed point and a line.				Both A and B are true, and B is the correct explanation of A.
	a) Both A and B are true, and B is the correct explanation of A.	b) Both A and B are true, but B is not the correct explanation of A.	c) A is true, B is false.	d) A is false, B is true.	a
47	Match the following curves with their standard equations: A. Circle — i. $x^2 + y^2 = r^2$ B. Parabola — ii. $y^2 = 4ax$ C. Ellipse — iii. $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ D. Hyperbola — iv. $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$				A-i, B-ii, C-iii, D-iv
	a) A-i, B-ii, C-iii, D-iv	b) A-ii, B-i, C-iv, D-iii	c) A-iii, B-iv, C-ii, D-i	d) A-iv, B-iii, C-i, D-ii	a
48	What is the equation of a line passing through the point (2, 3) with slope 4*?*				y = 4x + 3
	a) y = 4x + 3	b) y = 4x - 5	c) y = 4x - 8	d) y = 4x - 4	a
49	Consider the parabola $y = x^2$ and the circle $x^2 + y^2 = 4$. Evaluate the following statements: **A**. The parabola and circle intersect at exactly two points in the coordinate plane. **B**. The vertex of the parabola lies inside the circle. **C**. The circle's center is at the vertex of the parabola. Which of the statements is/are correct?				All are true.
	a)Only A is true.	b)A and B are true.	c)A, B, and C are false.	d)All are true.	d

<table>
<tr><td>50</td><td colspan="4">Which of the following represents the general equation of a circle centered at the origin with radius r ?</td><td>$x^2 + y^2 = r^2$</td></tr>
<tr><td></td><td>a)$x^2 + y^2 = r^2$</td><td>b)$x^2 - y^2 = r^2$</td><td>c)$x + y = r$</td><td>d)$x^2 + y = r^2$</td><td>a</td></tr>
<tr><td>51</td><td colspan="4">Match the following geometric terms with their corresponding descriptions:

<table><tr><td>A. Distance formula</td><td>i. $\sqrt{\{(x_2 - x_1)^2 + (y_2 - y_1)^2\}}$</td></tr><tr><td>B. Slope of a line</td><td>ii. Measures steepness of a line</td></tr><tr><td>C. Equation of a line</td><td>iii. General form: y = mx + c</td></tr><tr><td>D. Point of intersection</td><td>iv. Solving two linear equations</td></tr></table></td><td>A-i, B-ii, C-iii, D-iv</td></tr>
<tr><td></td><td>a) A-i, B-ii, C-iii, D-iv</td><td>b) A-ii, B-iv, C-i, D-iii</td><td>c) A-iii, B-i, C-ii, D-iv</td><td>d) A-iv, B-iii, C-ii, D-i</td><td>a</td></tr>
<tr><td>52</td><td colspan="4">If a function is differentiable at a point, then it is:</td><td>Always continuous</td></tr>
<tr><td></td><td>a) Always continuous</td><td>b) Always discontinuous</td><td>c) Not defined</td><td>d) None</td><td>(a)</td></tr>
<tr><td>53</td><td colspan="4">What is the limit of $\frac{Sin\ x}{x}$ as x→0?</td><td>1</td></tr>
<tr><td></td><td>a) 0</td><td>b) 1</td><td>c)∞</td><td>d) undefined</td><td>(b)</td></tr>
<tr><td>54</td><td colspan="4">For the following statements:

A) Every continuous function is differentiable.
B) A function can have a maximum or minimum even if it’s not continuous.</td><td>A is False and B is True</td></tr>
<tr><td></td><td>a) A is True and B is False</td><td>b) A is False and B is True</td><td>c) Both A and B are True</td><td>d) Both A and B are False</td><td>(b)</td></tr>
<tr><td>55</td><td colspan="4">Assertion: The derivative of a function represents the slope of the tangent.
Reasoning: The derivative measures instantaneous rate of change.</td><td>Both Assertion</td></tr>
</table>

					and Reasoning are True
	a) Assertion is True	b) Reason is True	c) Both Assertion and Reasoning are True	d) Both are False	(b)
56	Match derivative of each functions: A Sin (x) — i. Sec^2 (x) B Cos (x) — ii. -Sin(x) C Tan (x) — iii. Cos (x) D Sec(x) — iv. -$Cosec^2$ (x)				A-iii, B-ii, C-i, D-iv
	a)A-i, B-ii, C-iii, D-iv	b)A-ii, B-i, C-iii, D-iv	c) A-iii, B-ii, C-i, D-iv	d)A-iv, B-iii, C-ii, D-i	(c)
57	Evaluate the integral $\int_1^3 (2x+1)dx$				10
	a) 4	b) 8	c) 10	d) 12	(c)
58	For the following statements: A) The point where the derivative changes sign is called a point of local extremum. B) Integration by substitution is useful when the integrand has a composite function.				Both A and B are True
	a) A is True and B is False	b) A is False and B is True	c) Both A and B are True	d) Both A and B are False	(c)
59	The derivative of *tan (x)* is _____.				sec^2 *(x)*
	a) *sec (x)*	b) sec^2 *(x)*	c) *cos (x)*	d) *cosec (x)*	(b)
60	Match the following ***Function*** — ***Derivative*** *A. f(x) =x^2* — *i. f'(x)=0* *B. f(x)=1* — *ii. f'(x)= 2x* *C. f(x)=e^x* — *iii. f'(x)= 1/x* *D. f(x)=ln(x)* — *iv. f'(x)=e^x*				A-ii, B-i, C-iv, D-iii
	a) A-i, B-ii, C-iii, D-iv	b) A-ii, B-i, C-iv, D-iii	a) A-i, B-ii, C-iv, D-iii	b) A-iv, B-iii, C-ii, D-i	b)
61	Evaluate the limit: $\lim_{x\to 2} \frac{x^2-4}{x-2}$				4
	a) 2	b) 4	c) 5	d) 6	(b)
62	Thrashing is:				Excessive swapping

<table>
<tr><td></td><td colspan="4"></td><td>between main memory and disk</td></tr>
<tr><td></td><td>a) A high-priority process being blocked</td><td>b) A process that performs well in cache</td><td>c) Excessive swapping between main memory and disk</td><td>d) Swapping data between registers and cache</td><td>c)</td></tr>
<tr><td>63</td><td colspan="4">In a system using paging, if the virtual address space is 32 bits and the page size is 4 KB, how many bits are required for the page offset?</td><td>12 bits</td></tr>
<tr><td></td><td>a) 10 bits</td><td>b) 12 bits</td><td>c) 14 bits</td><td>d) 16 bits</td><td>b)</td></tr>
<tr><td>64</td><td colspan="4">Which one is true:
A) Threads within the same process share the same memory space.
B) A process and its child process share the same memory space.
C) Processes can communicate through pipes.
D) The <code>exec()</code> system call creates a new process</td><td>A and C</td></tr>
<tr><td></td><td>a) A, B and C</td><td>b) B , C and D</td><td>c) A and C</td><td>d) A and B</td><td>c)</td></tr>
<tr><td>65</td><td colspan="4">Assertion (A): The First-Come, First-Served (FCFS) scheduling algorithm is non-preemptive.

Reason (R): In FCFS, the CPU is assigned to a process until it finishes its burst time.</td><td>Both A and R are true, and R is the correct explanation of A.</td></tr>
<tr><td></td><td>a) Both A and R are true, and R is the correct explanation of A.</td><td>b) Both A and R are true, but R is not the correct explanation of A.</td><td>c) A is true, but R is false.</td><td>d) A is false, but R is true.</td><td>a)</td></tr>
<tr><td>66</td><td colspan="4">Match the following :

<table><tr><td>A. Virtual Memory</td><td>i. Uses time-sharing to manage multiple processes</td></tr><tr><td>B. Round Robin Scheduling</td><td>ii. Enables execution of processes larger than RAM</td></tr><tr><td>C. Mutex</td><td>iii. Used to protect critical sections</td></tr><tr><td>D. System Call</td><td>iv. Interface between user programs and the OS kernel</td></tr></table></td><td>A-ii, B-i, C-iii, D-iv</td></tr>
<tr><td></td><td>a) A-ii, B-i, C-iii, D-iv</td><td>b) A-iii, B-iv, C-i, D-ii</td><td>c) A-i, B-ii, C-iv, D-iii</td><td>d) A-ii, B-i, C-iv, D-iii</td><td>a)</td></tr>
<tr><td>67</td><td colspan="4">Which of the following describes external fragmentation?
A) Unused memory within an allocated block
B) Memory that is not allocated to any process
C) Free memory scattered across the system
D) Memory blocks that are too small to allocate</td><td>C only</td></tr>
</table>

	a) A only	b) C only	c) A and C	d) D only	b)
68	Which of the following is not a requirement for the Banker's Algorithm to grant a resource request? A. The requested resources must be available. B. The system must remain in a safe state after granting the request. C. The request must not exceed the process's declared maximum need. D. The process must be the only one requesting resources at that time.				D only
	a) A and C	b) C and D	c) A only	d) D only	d)
69	A computer system uses paging for memory management. The logical address space consists of 16 pages, and each page is of size 1 KB. The physical memory has 8 frames. What is the number of bits required for the logical address?				14 bits
	a) 10 bits	b) 12 bits	c) 14 bits	d) 16 bits	c)
70	Match the following: A. Segmentation — i. Divides memory based on logical sections B. Paging — ii. Divides memory into fixed-size blocks C. Fragmentation — iii. Wasted memory due to allocation issues D. Swapping — iv. Moving processes between RAM and disk				A-i, B-ii, C-iii, D-iv
	a) A-ii, B-iii, C-i, D-iv	b) A-i, B-iii, C-ii, D-iv	c) A-i, B-ii, C-iv, D-iii	d) A-i, B-ii, C-iii, D-iv	d)
71	Which scheduling algorithm is most suitable for time-sharing systems? A) First-Come, First-Served (FCFS) B) Shortest Job First (SJF) C) Round Robin (RR) D) Priority Scheduling				C only
	a) A only	b) C only	c) B and C	d) D only	b)
72	Replace the question mark with an option that follows the same logic applied in first pair. 5 : 16 :: 7 : ?				36
	a) 20	b)6	c) 36	d) 10	c
73	Match terms with their definition: A. Data Structure — i. encompasses the processes an procedures for storing, handling manipulating and securing data withi a database. B. Operating System — ii. a way of organizing and storing dat in a computer so it can be use efficiently. C. Database Management — iii. the process of creating software tha translates higher level programmin				A-ii, B-iv, C-i, D-iii

			language into machine code that a computer can directly execute.		
	D. Compiler Design		iv. is the software that manages computer's hardware and software resources, providing a platform for application to run.		
	a) A-iv, B-i, C-iii, D-ii	b) A-iii, B-i, C-iv, D-ii	c) A-iii, B-iv, C-i, D-ii	d) A-ii, B-iv, C-i, D-iii	d
74	Following statements are either True or False: A. one KB is equal to 1000 bytes. B. one bytes is equal to 10 bits. C. one KB is equal to 1024 bits. D. one nibble is equal to 4 bits Choose the correct answers from options given below:				D only
	a) A, B & D only	b) A & B only	c) A only	d) D only	d
75	**Assertion (A):** Main aim of AVL tree is to perform efficient search, insertion and deletion operations. **Justification (B):** AVL tree rotations helps to perform efficient search, insertion and deletion operations.				A is true, but B is false.
	a) Both A and B are true, and B is the correct explanation of A.	b) Both A and B are true, but B is not the correct explanation of A.	c) A is true, but B is false.	d) A is false, but B is true.	c
76	Find inorder traversal for a binary search tree, whose order of insertion of elements in the tree is given below: 27 , 13, 56, 34, 80, 38, 18				13, 18, 27, 34, 38, 56, 80
	a) 13, 18, 27, 34, 38, 56, 80	b) 34, 13, 80, 56, 38, 18, 27	c) 27, 18, 13, 56, 80, 34, 38	d) 80, 56, 38, 34, 27, 18, 13	a
77	Default return type of C function is:				int
	a) void	b) int	c) char	d) float	b
78	Match *C* keywords that are generally used together: A. do — i. default B. if — ii. struct C. typedef — iii. while D. switch — iv. else				A-iii, B-iv, C-ii, D-i
	a) A-ii, B-iv, C-iii, D-i	b) A-iii, B-i, C-ii, D-iv	c) A-iii, B-iv, C-ii, D-i	d) A-ii, B-i, C-iii, D-iv	c

<table>
<tr><td>79</td><td colspan="4">Which of the following statements are True for B Tree of order m :

A. All leaf nodes are at same level.
B. A non leaf node with n-1 key values must have n-1 non Null value.
C. All nodes (except root node) should have at least ⌈m/2⌉-1 keys.
D. All non leaf node nodes (except root node) should have at least ⌈m/2⌉ children.

Choose the correct answers from options given below:</td><td>A, C & D only</td></tr>
<tr><td></td><td>a) B & C only</td><td>b) A, C & D only</td><td>c) A & B only</td><td>d) B & D only</td><td>b</td></tr>
<tr><td>80</td><td colspan="4">Assertion (A): When queue is implemented as an array, dequeued positions can’t be utilized.
Justification (B): In queue, enqueue and dequeue occurs at different ends, therefore it can’t utilize dequeued positions.</td><td>Both A and B are true, and B is the correct explanation of A.</td></tr>
<tr><td></td><td>a) Both A and B are true, and B is the correct explanation of A.</td><td>b) Both A and B are true, but B is not the correct explanation of A.</td><td>c) A is true, but B is false.</td><td>d) A is false, but B is true.</td><td>a</td></tr>
<tr><td>81</td><td colspan="4">Identify the odd one out from the group:
{ CSS, C#, C , C++}</td><td>CSS</td></tr>
<tr><td></td><td>a) CSS</td><td>b) C#</td><td>c) C</td><td>d) C++</td><td>a</td></tr>
<tr><td>82</td><td colspan="4">Which of the following is not an example of recursion?</td><td>Linear search</td></tr>
<tr><td></td><td>a) Factorial</td><td>b) Linear search</td><td>c) Greatest Common Divisor</td><td>d) Fibonacci Series</td><td>b</td></tr>
<tr><td>83</td><td colspan="4">Match the hashing method with its procedure:

<table><tr><td>A. Truncation</td><td>i. key is broken into different parts where length of each part is same as that of required address.</td></tr><tr><td>B. Midsquare</td><td>ii. key is divided by the table size and the remainder is taken as address.</td></tr><tr><td>C. Folding</td><td>iii. takes only a part of the key as address</td></tr><tr><td>D. Modulo-Division</td><td>iv. take square of the key take middle part of the square as address</td></tr></table></td><td>A-iii, B-iv, C-i, D-ii</td></tr>
<tr><td></td><td>a) A-ii, B-iii, D-i, C-iv</td><td>b) A-iv, B-iii, C-i, D-ii</td><td>c) A-ii, B-i, D-iii, C-iv</td><td>d) A-iii, B-iv, C-i, D-ii</td><td>d</td></tr>
</table>

<table>
<tr><td>84</td><td colspan="4">Following statements are either True or False:

A. A good hash function should not be very easy to compute.
B. A good hash function should distribute the keys as uniformly as possible in the hash table.
C. An ideal hash function should give unique addresses for all keys, but this is not practically possible.
D. A good hash function should generate addresses with minimum collision.

Choose the correct answers from options given below:</td><td>B, C & D only</td></tr>
<tr><td></td><td>a) A & C are true only</td><td>b) B, C & D only</td><td>c) A & D only</td><td>d) B & C only</td><td>b</td></tr>
<tr><td>85</td><td colspan="4">Assertion (A): Stack follows Last in first out principle.

Justification (B): In stack, first element that is pushed into it is the last element to get popped.</td><td>Both A and B are true, but B is not the correct explanation of A.</td></tr>
<tr><td></td><td>a) Both A and B are true, and B is the correct explanation of A.</td><td>b) Both A and B are true, but B is not the correct explanation of A.</td><td>c) A is true, but B is false.</td><td>d) A is false, but B is true.</td><td>b</td></tr>
<tr><td>86</td><td colspan="4">For a complete undirected graph with three vertices, how many spanning trees are possible to generate?</td><td>3</td></tr>
<tr><td></td><td>a) 1</td><td>b) 2</td><td>c) 3</td><td>d) 4</td><td>c</td></tr>
<tr><td>87</td><td colspan="4">Which of the following is not an algorithm to find shortest path in a weighted graph?</td><td>Kruskal’s Algorithm</td></tr>
<tr><td></td><td>a) Bellman Ford Algorithm</td><td>b) Floyd’s Algorithm</td><td>c) Kruskal’s Algorithm</td><td>d) Dijkstra’s Algorithm</td><td>c</td></tr>
<tr><td>88</td><td colspan="4">Match C operator type with operator signs:

<table><tr><td>A. Bitwise</td><td>i. = =</td></tr><tr><td>B. Arithmetic</td><td>ii. <<</td></tr><tr><td>C. Relational</td><td>iii. =</td></tr><tr><td>D. Assignment</td><td>iv. %</td></tr></table></td><td>A-ii, B-iv, C-i, D-iii</td></tr>
<tr><td></td><td>a) A-ii, B-iv, C-i, D-iii</td><td>b) A-iii, B-i, C-ii, D-iv</td><td>c) A-iii, B-iv, C-ii, D-i</td><td>d) A-ii, B-iv, C-iii, D-i</td><td>a</td></tr>
<tr><td>89</td><td colspan="4">Following statements are either True or False:

A. B Tree is inefficient in sequential search.
B. AVL tree is efficient for binary search.
C. B+ Tree is efficient for sequential search
D. B Tree is efficient for m-way search.

Choose the correct answers from options given below:</td><td>All are True</td></tr>
</table>

	a) Only A, B and D are True	b) All are True	c) Only B, C and D are True	d) Only C and D are True	b
90	**Assertion (A):** A graph is complete if any vertex in the graph is adjacent to all the vertices of the graph. **Justification (B):** There is an edge between any pair of vertices in the graph.				Both A and B are true, and B is the correct explanation of A.
	a) Both A and B are true, and B is the correct explanation of A.	b) Both A and B are true, but B is not the correct explanation of A.	c) A is true, but B is false.	d) A is false, but B is true.	**a**
91	A graph where every vertex is adjacent to same number of vertices is _____.				Regular Graph
	a) Simple Graph	b) Regular Graph	c) Planar Graph	d) Directed Acyclic Graph	b
92	Binary Number 101110110 is equal to decimal number _____				374
	a)468	b)412	c)374	d)326	(c)
93	Let *f (A, B)* $=\bar{A}+B$, simplified expression for *f(f(xy,y),z)* will be				None of these options
	a)$\bar{x}+z$	b) xyz	c)$x\bar{y}+z$	d) None of these options	(d)
94	De-Morgan's Law states that A) $\overline{(x+y)} = \bar{x} * y$ B) $\overline{(xy)} = \bar{x}+\bar{y}$ C) $\overline{(xy)} = \bar{x} + y$ D) $\overline{(x+y)} = \bar{x} * \bar{y}$				B, D
	a) A, B	b) A, D	c) B, D	d) A, C	(c)
95	In the light of the following statements A and B, choose the most appropriate answer from the options given bellow: **A:** A basic Multiplexer has several data input lines and a single output line. The selection of a particular input line is controlled by selection lines **B:** It is a digital switch, which allows digital information from several sources to be routed onto a single output line. It is many to one mapping and provides the digital equivalent of an analog selector switch.				Both A and B are true, and B is the correct explanation of A

<table>
<tr><td></td><td colspan="4"></td><td></td></tr>
<tr><td></td><td>a) Both A and B are true, and B is the correct explanation of A</td><td>b) Both A and B are true, but B is not the correct explanation of A</td><td>c) A is true, but B is not true</td><td>d) A is false, but B is true</td><td>(a)</td></tr>
<tr><td>96</td><td colspan="4">Match the following:

<table><tr><td>A. Unit distance code/reflected binary code</td><td>i. Universal Gate</td></tr><tr><td>B. Flip-Flop</td><td>ii. Excess-3 code</td></tr><tr><td>C. NAND and NOR</td><td>iii. Sequential circuit</td></tr><tr><td>D. non-weighted, self-complementing BCD (Binary Coded Decimal) code</td><td>iv. Gray code</td></tr></table></td><td>A-iv, B-iii, C-i , D-ii</td></tr>
<tr><td></td><td>a) A-iv, B-iii, C-i , D-ii</td><td>b)A-ii, B-iii, C-i , D-iv</td><td>c)A-iv, B-i, C-iii , D-ii</td><td>d)A-iii, B-iv, C-i , D-ii</td><td>(a)</td></tr>
<tr><td>97</td><td colspan="4">Which of the following circuit has its output dependent only upon the present input</td><td>Combinational Circuit</td></tr>
<tr><td></td><td>a) Sequential Circuit</td><td>b) SR Flip-flop</td><td>c) JK Flip-flop</td><td>d) Combinational Circuit</td><td>(d)</td></tr>
<tr><td>98</td><td colspan="4">When subtracting two n-bit numbers using 2's complement and the result is positive,

A The carry-out bit does not have a significant role in determining the outcome of the subtraction
B The carry-out bit indicates an overflow and the carry-out bit is inverted
C The carry bit is essentially ignored in this scenario
D The carry-out bit is added to the result</td><td>A, C</td></tr>
<tr><td></td><td>a) A, D</td><td>b) A, C</td><td>c) B, D</td><td>d) A, D</td><td>(b)</td></tr>
<tr><td>99</td><td colspan="4">Any combinational circuit can be designed using only</td><td>NOR gates</td></tr>
<tr><td></td><td>a) NOR gates</td><td>b) AND gates</td><td>c) OR gate</td><td>d) XOR gate</td><td>(a)</td></tr>
<tr><td>100</td><td colspan="4">Match the following :

<table><tr><td>A. Humming Code</td><td>i. Uses an extra parity bit at the end of each word to detect errors in received data</td></tr><tr><td>B. Error detecting code</td><td>ii. Provides no error detection at all</td></tr><tr><td>C. Forward error detecting code</td><td>iii. Permits the detection of two errors or correction of only one error</td></tr><tr><td>D. Baudot code</td><td>iv. Permits the correction of errors by receiver without retransmission</td></tr></table></td><td>A-iii, B-i, C-iv, D-ii</td></tr>
<tr><td></td><td>a)A-iii, B-i, C-ii, D-iv</td><td>b)A-iii, B-iv, C-i, D-ii</td><td>c) A-iii, B-i, C-iv, D-ii</td><td>d)A-ii, B-i, C-iv, D-iii</td><td>(c)</td></tr>
</table>