



**COMPUTER SCIENCE SENIOR 4 HOLIDAY PACKAGE**

**...DECEMBER,2023**

**MAXIMUM MARKS: 70**

**Q1:** a) write in full the following terms/**6marks**

**A) USB**

**b) VGA**

**c) XOR**

b) What are the two examples of electronic devices connected to VGA Port **/2 marks**

c) Give two importance of computer power supply. **/2marks**

**Q2:** a) who is considered as the father of the computer? **/1mark**

b) Tick in the cell where the device matches with the device type as shown below

**/5marks**

<b>DEVICES</b>	<b>INPUT DEVICES</b>	<b>OUTPUT DEVICES</b>	<b>STORAGE DEVICES</b>
<b>RAID</b>			
<b>Touchpads</b>			
<b>Lightpen</b>			
<b>Scanner</b>			
<b>microphone</b>			
<b>Monitor</b>			
<b>speaker</b>			
<b>Electronic whiteboard</b>			
<b>printer</b>			
<b>Compact disk</b>			
<b>Hard disk</b>			

c) Put these binary numbers in one's complement. **/4 marks**

**I. (1001110)<sub>2</sub>**

**II. (1011111)<sub>2</sub>**

**Q3:** An alarm bell uses three sensors to determine whether it should sound or not. Two sensors A and B are inside the room while C is hidden somewhere outside the room. If either sensor A or B or both detect motion in the room and C never reported sensing motion outside, then the system knows that there is an intruder. An ON signal is sent to the bell and the bell rings loudly. Only authorised persons know where sensor C is hidden outside the room. To safely enter the room, they have to follow a procedure i.e. start by standing in front of C for the system to sense their presence before entering the room. In that case all the sensors A, B and C will have detected the presence of an authorised person, therefore, no signal will be sent to the alarm for it to ring. In essence, as long as C detects motion, the alarm assumes that the person entering the room is not an intruder. Draw a logic circuit that would represent this logic and do a truth table for it.

**Q4: a)** with the truth tables differentiate the AND and OR logic gates /7 marks

**b)** Explain some characteristics that makes a computer suitable for processing Repetitive task /3marks

**Q5: a)** Complete below table based on generations of computer /5marks

Generation	Names/technology	characteristics
1 <sup>st</sup> generation	.....	
.....	microprocessor	.....
.....	.....	Used Assembly language -magnetic tapes and magnetic disk were developed
3 <sup>rd</sup> generation		
.....	Artificial intelligent	.....

**b)** Distinguish between the following: /5marks

**I. ROM from RAM**

**II. IDE/PATA from SATA**

**Q6: I.** Determine the value of m in the following binary arithmetic operations: /3marks

A)  $1010_2 + m = 100110_2$

B)  $m \times 1101_2 = 1000001_2$

C)  $x = 1100110101001$   $m = x$  shift right by 2

**II.** perform the following calculation of below binary expressions: /3marks

A)  $1100110 - 11010$

B)  $111110 + 10110$

C)  $1011 * 110$

**III.** using place value method convert: /2marks

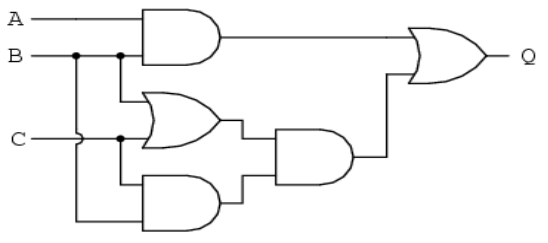
a)  $487_{10} = (?)_2$

**IV:** convert the following numbers /2marks

A)  $BEBE_{16} = (?)_8$

B)  $10001.001_2 = (?)_{10}$

**Q7:** Write the Boolean expression and truth table of the following logic circuit /7marks



b. Simplify it. /3marks

**MERRY CHRISTMAS AND HAPPY NEW YEAR 2024!**