

# MODEL TEST PAPER FOR AMIE EXAMS



**COMPUTING & INFORMATICS**

**TEST PAPER 1**



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**COMPUTING & INFORMATICS**

*Time: Three Hours*

*Maximum Marks: 100*

*Answer five questions, taking ANY TWO from Group A, any two from Group B and all from Group C.*

*All parts of a question (a, b, etc. ) should be answered at one place.*

*Answer should be brief and to-the-point and be supplemented with neat sketches.*

*Unnecessary long answer may result in loss of marks.*

*Any missing or wrong data may be assumed suitably giving proper justification.*

*Figures on the right-hand side margin indicate full marks.*

**Group A**

1. (a) Write a program to check whether a year is leap year or not. 5
- (b) Write a program for conversion of a decimal number to binary number. 5
- (c) Write a program to print the Fibonacci series using recursion. 5
- (d) Write a program to check whether a given number is palindrome or not. 5
  
2. (a) What is an algorithm ? Describe briefly various categories of algorithms. 5  
Write an algorithm to find the largest of three numbers.
- (b) What do you understand by structured programming 5
- (c) Between recursion and iteration, which is more efficient ? Why ? 5
- (d) What are the advantages of C++ programming compared to C programming? 5
  
3. (a) With reference to object oriented programming (OOP), explain the terms (i) 8  
encapsulation (ii) abstraction.
- (b) What is the difference between a local and a global variable ? 6
- (c) What are constructors and destructors in C++? Explain their use with 6  
suitable examples.

4. (a) What is LAN? What are different LAN topologies? Explain briefly a LAN protocol. 5
- (b) What is DBMS? What are different types of DBMS? 5
- (c) What is a relational database management system? What are the distinctive features of a relational database? Specify with some examples. 5
- (d) What is TCP/IP protocol suite? How many layers are there in TCP/IP? Draw a neat diagram and briefly describe them. 5

**Group B**

5. (a) What is a cache memory? How does it improve the performance of the computer system? 5
- (b) What are the different forms of secondary storage media employed in modern day computer system? Explain their usefulness and applications in short. 5
- (c) What is meant by spooling? Briefly explain. 5
- (d) Using a schematic block diagram, explain how CPU, memory, secondary storage and the input/output units are interconnected in a computer. Explain how they interact with each other. 5
6. (a) What is the difference between application software and system software? Give examples of each. 5
- (b) What is an *interrupt* in a computer system? How is an interrupt handled? 5
- (c) How does the CPU execute program instructions? Explain using a block diagram. 5
- (d) What is program counter? What information does it store? 5
7. (a) Convert the following from one number system to another: 5
- (i)  $(1267.3125)_{10} = ( )_2$
- (ii)  $(10110.101)_2 = ( )_{10}$
- (iii)  $(1234)_8 = ( )_{16}$
- (iv)  $(B2C)_{16} = ( )_2$
- (v)  $(10110111.1)_2 = ( )_8$

- (b) (i) Perform following addition  $1010111 + 1011010$  5  
(ii) Perform following subtraction  $1101011 - 1010110$
- (c) Simplify the following Boolean equations using rules of Boolean algebra. 5  
(i)  $X = (A + \overline{BC})(\overline{B + C})$   
(ii)  $X = ABC + \overline{A}BC + AB\overline{C}$
- (d) Draw logic diagram that use only 2 input NOR gates to implement each of 5  
the following logic gates:  
(i) 2 input OR  
(ii) 2 input AND  
(iii) NOT  
(iv) 2 input EX-OR
8. (a) What are various functions of an operating system? Briefly explain them. 5  
Also, give name of any two OS known to you.
- (b) Explain, in sequence, all the tasks performed at the time of booting up. 5
- (c) What is difference between multi programmed, multitasking and time 5  
shared operation system?
- (d) Briefly explain important components of UNIX operating system and their 5  
roles.

**Group C**

9. Answer the following questions: 20
- (i) What will be the output generated by the following code?  

```

ink k = 5 ;
ink i = 0 ;
if (k) i ++ ;
cout << i

```
- (ii) What output will the following code generate?  

```

char c = 'A';
int i;
for (i = 0; i < 3, i++)
cout << c++;

```
- (iii) What is the purpose of using a parity bit ?

- (iv) What is not-volatile memory?
- (v) What do you mean by "throughput" of an operating system ?
- (vi) What is the difference between a compiler and an interpreter ?
- (vii) What is the similarity between a structure, union and an enumeration ?
- (viii) How much time will be required to transmit 100 K bits of data over a 100 Mbps line?
- (ix) Write the truth table for a I-bit half adder.
- (x) To realize 8 Mbyte of memory, how many chips of size 512 kbytes are required ?

*(Refer our course material for answers)*

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