SN – 664

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V Semester B.C.A. Degree Examination, Nov./Dec. 2017
(CBCS) (F + R) (2016-17 and Onwards)
BCA 503 : COMPUTER ARCHITECTURE

Time : 3 Hours Max. Marks : 100

***Instruction**: Answer **all** Sections.*

SECTION – A

I. Answer **any ten** questions. **Each** carries **two** marks. **(10×2=20)**

1) Write the symbol, logical expression and truth table of NAND gate.
2) Give the classification of integrated circuits.
3) Distinguish between RAM and ROM.
4) Define Multiplexer and Demultiplexer.
5) What are the types of binary codes ?
6) Subtract $24_{(10)}$ from $13_{(10)}$ using 2's complement method.
7) Define opcode and operand.
8) What is BUN instruction ?
9) What are the two types of computer architecture based on registers ?
10) What are the different types of interrupts ?
11) Define access time and transfer rate.
12) Define Baud rate.

SECTION – B

II. Answer **any five** questions. **Each** question carries **five** marks. **(5×5=25)**

13) Explain the steps involved in the design of the sequential circuits.
14) Explain synchronous binary counter with logic diagram.
15) Discuss on error detection and correction codes briefly.
16) Explain any five register reference instructions.
17) With a block diagram, explain how BSA instruction executes.
18) Explain the addressing modes.
19) Explain DMA controller with a block diagram.
20) Write a note on virtual memory.

P.T.O.

SECTION – C

III. Answer **any three** questions. **Each** question carries **fifteen** marks. **(3×15=45)**

21) a) Simplify F(ABCD) = Σm (1, 3, 7, 11, 15) + Σd (0, 2, 5) using K-map. **7**

b) What is a half adder ? Design a half adder using only NAND gates. **8**

22) a) Explain decoder expansion with neat diagram. **7**

b) Discuss the parity generator and parity checker. **8**

23) a) Explain common bus organization of basic computer with neat diagram. **8**

b) Distinguish between FGI and FGO. **7**

24) a) What is a sub-routine ? Explain CALL and RETURN instructions. **8**

b) Explain the arithmetic logic shift with a neat diagram. **7**

25) a) Explain I/O interface unit with a neat diagram. **8**

b) Write a note on isolated vs memory mapped I/O. **7**

SECTION – D

IV. Answer **any one** question. Question carries **ten** marks. **(1×10=10)**

26) a) Explain 4-bit shift register. **5**

b) Explain the working of J-K flip-flop. **5**

27) a) Explain interrupt cycle with suitable example. **6**

b) List the applications of EEPROM. **4**
