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2406

Bachelor of Computer Application
B.C.A. (II Year) Examination, 2019
DIGITAL ELECTRONICS AND COMPUTER ARCHITECTURE

Paper-I (BCA-201)

Time Allowed : Three Hours

Maximum Marks : 75

*Attempt **five** questions in all, selecting **one** question from each unit. **All** questions carry equal marks.*

*प्रत्येक इकाई में से **एक** प्रश्न का चयन करते हुए, कुल **पाँच** प्रश्नों के उत्तर दीजिए। **सभी** प्रश्नों के अंक समान हैं।*

Unit I

(a) Prove the following expression : 7

A.B'.C + A.B'.C' + A'.B'.C = A.B' + B'.C

(b) Explain the following : 4×2=8

(i) Capacitor

(ii) Transistor

(iii) Inductor

(iv) Register.

2. (a) State and prove De-Morgan's laws. Verify *one* of the De-Morgan's law using truth table. 8

(b) Explain the difference between analog and digital electronics. 7

Unit II

3. (a) Explain the *three* basic logic gates with proper circuit diagram. 8

(b) Draw the logic circuit diagram for the Boolean expression : 7

Y = (A' + B) (B + C').

4. Differentiate between the following : 3×5=15

(i) Half Adder and Full Adder

(ii) Encoder and Decoder

(iii) RS and JK flip-flop.

Unit III

5. (a) What is computer architecture ? Explain the major components of CPU. 7

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(b) Explain the controlling operation instructions with suitable example : 4×2=8

(i) Branch

(ii) Skip

(iii) Shift

(iv) Jump.

6. (a) Explain the following : 4×2=8

(i) Micro operation

(ii) Micro instruction

(iii) Micro code

(iv) Micro program.

(b) What is memory management system ? Explain the types of memory management. 7

Unit IV

7. What is addressing mode in computer architecture ? Explain the different types of addressing modes with suitable examples. 15

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8. Write short notes on the following : 3×5=15

(a) Shift registers

(b) Stack pointers

(c) Buffer registers.

Unit V

9. Differentiate between the following : 3×5=15

(a) RAM and ROM

(b) EPROM and EEPROM

(c) Cache and virtual memory.

10. (a) Explain the purpose of I/O cards in personal computers. 7

(b) Explain the block diagram of a super computer 'PARAM' in detail. 8

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