L – 3932

Reg. No. : ....

Name : ....

First Semester B.Sc./B.C.A. Degree Examination, August 2021

Career Related First Degree Programme under CBCSS

Computer Science/Computer Applications

Core Course CS 1141/CP 1141 : INTRODUCTION TO PROGRAMMING

(2020 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A (Very short answer type)

One word to maximum of **two** sentence. Answer **all** questions.

1. Define algorithm.

2. What is an object code?

3. What is the storage capacity of integer data type?

4. Which are simple I/O statements?

5. What is an exit control loop?

6. Define pointer array.

7. What is recursion?

8. What do * and & operator mean?

9. What are the steps to write a function in a program?

10. What is format specifier?

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

Not to exceed **one** paragraph, answer any **eight** questions. **Each** question carries **2** marks.

11. Classify the different types of decision making statements.

12. Why do we use header files?

13. Write and explain Syntax of a function definition.

14. Define pointer. How can we declare it?

15. Display string "corona" in reverse order.

16. Define structure. How to initialize a structure?

17. What are different file operations?

18. Write a C program to swap two numbers using function.

19. Give the general syntax of conditional operator with example.

20. Explain escape sequence character in C.

21. What is multidimensional array?

22. Explain macros.

23. Write a program to find the sum of first n natural numbers.

24. What do you mean by identifiers and literals?

25. Explain break and continue statement.

26. What is meant by dynamic memory allocation?

. **(8 × 2 = 16 Marks)**

L – 3932

SECTION – C (Short Essay)

Not to exceed **120** words, answer any **six** questions. **Each** question carries **4** marks.

27. Explain the structure of a C program.

28. What are storage classes? Explain.

29. Write the algorithm, flowchart and the C program to find the largest among three numbers.

30. Explain with example about a function with return type and arguments.

31. Explain the following with example.

    (a) fprintf

    (b) printf

    (c) fscanf

    (d) scanf

32. Write a C program to print the Fibonacci series using recursion.

33. Write a short note on precedence of operators and order of evaluation of expressions.

34. Explain symbolic constants used in C.

35. Write a C program to read and print the array of elements using pointers.

36. Explain the difference between post increment and pre increment operators with example.

37. Explain nested for loop with example.

38. Write a C program to find the transpose of a matrix.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

39. What is array? Write a Program to read n numbers into an array and find the

    (a) Sum of odd numbers

    (b) Sum of even numbers

    (c) Average of all numbers

40. What are different data types in C? Explain in detail with example.

41. (a) Write and explain about switch statement.

    (b) Write a program to perform arithmetic operation using switch.

42. Distinguish between the following. With example:

    (a) Actual and formal arguments

    (b) Global and local variables

    (c) Call by value call by reference

43. Define 'union'. Give the syntax. List out the difference between union, structure and arrays with example.

44. (a) Write a program to display the contents of the file in reverse order.

    (b) Write a program to copy the contents from one file to another file.

(2 × 15 = 30 Marks)

Reg. No. : ....

Name : ....

First Semester B.C.A. Degree Examination, August 2021

Career Related First Degree Programme under CBCSS

Mathematics

Complementary Course I

MM 1131.9 : MATHEMATICS I

(2020 Admission Regular)

Time : 3 Hours   Max. Marks : 80

SECTION – I

All the first questions are compulsory. **Each** question carries **1** mark.

1. Find $\dfrac{d(sec\,h\,x)}{dx}$.

2. Find the derivative of $sec^{-1}\,x^2$.

3. Show that $cosh\,2x = 1 + 2(sinh\,x)^2$.

4. State Rolle's Theorem.

5. Show that $\mathcal{L}\{e^{\alpha t}\} = \dfrac{1}{s-a}; s > a$.

6. Give an example of second degree first order differential equation.

7. Solve the differential equation $\left(\dfrac{d^2y}{dx^2} - 1\right)y = 0$.

8. Define Relatively Prime Numbers.

9. State Fermat's Theorem.

10. Express $-1 + i\sqrt{3}$ in the form $r(\cos\theta + i\sin\theta)$.

(10 × 1 = 10 Marks)

SECTION – II

Answer any **eight** questions among the questions 11 to 26. They carry **2** marks each.

11. Find $\dfrac{dy}{dx} = x^y$

12. Show that $\sinh 2x = 2 \sinh x \cosh x$

13. Find $\dfrac{dy}{dx}$ when $x = \cos t$ and $y = \sin t$

14. Verify Rolle's Theorem for the function $f(x) = 16x - x^2$ in then interval [0, 16]

15. Solve the differential equation $\dfrac{d^2y}{dx^2} + y = 0$

16. Find the integrating factor for the differential equation $\dfrac{dy}{dx} + y \tan x = \cos^3 x$

17. Find $\mathcal{L}\{te^t\}$

18. Find the sum of divisors of 480

19. Give an example to show that $a^2 \equiv b^2 \pmod{n}$ need not imply that $a \equiv b \pmod{n}$

20. Find the remainders when 2^{50} is divided by 7

21. Show that $f(z) = z$ is analytic

22. Separate into real and imaginary parts cosh $(\alpha + i\beta)$

23. Find the derivative of $\cos z + e^z$, where $z = x + iy$

24. Formulate a Linear Programming problem for the following "Maximise the perimeter of a rectangle with sum of length and breadth do not exceed 7 and their difference must be greater than 5"

25. Explain Pure Birth process in Markov Process

26. Write the Fourier Series of the even function $f(x)$ with the period of $2L$.

(8 × 2 = 16 Marks)

SECTION – III

Answer any **six** questions among the questions 27 to 38. They carry **4** marks each.

27. Find the maxima and minima of $x^2 + xy + y^2 + 3x - 3y + 4$

28. Solve $x\dfrac{dy}{dx} - y \tan x = \dfrac{\sin x \cos^2 x}{y^2}$

29. Solve $\dfrac{d^3y}{dx^3} + y = 0$

30. Find the inverse Laplace Transform of $\dfrac{3s+1}{(s-1)(s^2+1)}$

31. Find the n the derivative of $e^x \ln x$

32. Show that $\dfrac{\partial^2 f}{\partial x^2} + \dfrac{\partial^2 f}{\partial z^2} = 0$, for the function $e^{-2y} \cos 2x$

33. Solve $\dfrac{d^2y}{dx^2} + 3\dfrac{dy}{dx} - 10y = e^{2x}$

34. Find the remainder when 2^{1000} is divisible 17

3

L – 3943

35. If p and q are distinct primes, prove that

$$p^{q-1} + q^{p-1} \equiv 1 \,(mod \; pq)$$

36. Show that 16! + 86 is a multiple of 323

37. Prove that the integer $53^{103} + 103^{53}$ is divisible by 39

38. Expand the function $f(x) = x^2$, $0 < x < 2\pi$ in a Fourier Series.

(6 × 4 = 24 Marks)

SECTION – IV

Answer any **two** questions among the questions 39 to 44. They carry **15** marks each.

39. (a) State and prove Leibnitz's Theorem

    (b) Show that the maximum value of $\dfrac{1}{x^x}$ is $e^{1/e}$

40. Find the general solution of the partial differential equation $xz\dfrac{\partial z}{\partial x} + yz\dfrac{\partial z}{\partial y} = xy$

41. Show that $a^7 \equiv a \,(mod \; 42)$ for any positive integer a

42. Show that 41 divides $2^{20} - 1$

43. (a) Show that $f(x + iy) = x - iy$ is not analytic

    (b) Solve $x^5 + 32 = 0$.

44. Maximize $5x\text{-}y$ subject to the constraints : $2x + 5y \le 80$; $x + y \le 20$, $x, y \ge 0$.

(2 × 15 = 30 Marks)

L – 3927

Reg. No. : ....

Name : ....

First Semester B.Sc./B.C.A. Degree Examination, August 2021

Career Related First Degree Programme Under CBCSS

Computer Science/Computer Applications/Physics with Computer Applications

Foundation/Vocational Course

CS 1121/CP 1121/PC 1171 — COMPUTER FUNDAMENTALS AND ORGANIZATION

(2018 – 2019 Admission)

Time : 3 Hours   Max. Marks : 80

SECTION – A

(Very Short Answer Type)

(One word to maximum one sentence, Answer all questions).

1. Expand SMPS.

2. What is Mother Board?

3. Define Volatile Memory.

4. What is a Register?

5. Define Hit Ratio.

6. Expand RISC.

7. What is an instruction?

8. Define SISD stream.

9. Define Interrupt.

10. Define Peripheral Device.

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer)

(Not to exceed **one** paragraph, answer **any eight** questions. **Each** question carries **2 marks**).

11. Write about video Card.

12. Discuss the role of a computer port.

13. Write about Pointing Devices.

14. Write a note on various types of ROM.

15. What is meant by locality of reference?

16. Write a note on memory stick.

17. What is one address instruction format? Explain.

18. Explain MOV and LEA instructions.

19. Write a note on Hardwired Control Unit.

20. Explain handshaking.

21. Write about priority interrupt.

22. Write a note on Programmed I/O.

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

(Not to exceed **120** words, answer **any six** questions. **Each** question carries **4** marks).

23. Write a note on Characteristics of Computer.

24. Explain about ASCII.

25. Differentiate RAM and ROM.

26. Explain about CPU Registers.

27. Write a note on Cache Memory.

28. Write a note on CISC architecture.

29. Explain about Microprogram.

30. Write about isolated versus memory mapped I/O.

31. Write about asynchronous serial communication.

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

(Answer **any two** questions. **Each** question carries **15** marks).

32. Explain Types of Output Devices.

33. Write a detailed note on secondary storage devices.

34. Explain in detail about Microprogrammed Control Unit.

35. Write about DMA.

(2 × 15 = 30 Marks)

Reg. No. : ....

Name : ....

First Semester B.Sc./B.Com./B.B.A./B.C.A/B.Voc./B.M.S./B.S.W. Degree Examination, August 2021

Career Related First Degree Programme under CBCSS

Language Course I – English

EN 1111/EN 111/EN 1111.4 : LANGUAGE SKILLS

(2020 Admission Regular)

Time : 3 Hours   Max. Marks : 80

I.   Answer **all** questions, each in a word or sentences.

1.   Etymologically the word 'communication' means ——————.

2.   What is redundancy?

3.   Blog is a shortened version of the term ——————.

4.   An anchor can also be called ——————.

5.   —————— refers to transmitter that codes the message.

6.   What is structural editing?

7.   What is a CV?

8.   —————— is a type of communication through verbal medium like words, speeches etc.

9.   —————— is the medium used to transmit the signal.

10. Our brain process information at a rate of ——————.

                                                          (10 × 1 = 10 Marks)

II.   Answer any **eight**, each in a short paragraph not exceeding **50** words.

11.   Name any two barriers to effective communication.

12.   Suggest two ways to improve communication.

13.   What is podcasting?

14.   What is non-verbal communication?

15.   Netiquette.

16.   What are gestures?

17.   What are problems encountered by second language learners?

18.   Mention the importance of Feedback as a major component of communication.

19.   How can you master the skill of public speaking?

20.   List ways in which you can follow Telephone Etiquette?

21.   Suggest ways to improve effectiveness in academic writing.

22.   Introduce yourself to your prospective employer.

23.   How can your posture create a negative impression?

24.   What is communication?

25.   What are the things to be followed while attending an interview?

26.   What is Blogging?

(8 × 2 = 16 Marks)

III.   Answer any **six**, each in a paragraph not exceeding **100** words.

27.   Read the following passage carefully and answer all the questions that follow. "The Legend" is a very short story by O.V. Vijayan. It can be described as a work of Flash fiction, a genre coming under fiction. The word count of flash fiction is not fixed though, generally it can very from a few words to 2000 words. Flash fiction, also known by other names like sudden fiction, short-short stories, microfiction or microstories. This sub genre is also referred to by words like short shorts, nanotales, micro-stories, postcard fiction or napkin fiction. An acceptable definition goes like this: Flash fiction is a medium of brief and enclosed stories. Its average word count ranges anywhere from five to 1,500 words, but the consensus is that maximum tops out at 2,000. Many eminent writers like Margaret Atwood, Paulo Coelho and Jamaica Kincaid have written flash stories.

Reg. No. : ....

Name : ....

First Semester B.Sc./B.C.A. Degree Examination, August 2021

Career Related First Degree Programme Under CBCSS

Computer Science/Computer Applications/Physics with Computer Applications

Foundation/Vocational Course

CS 1121/CP 1121/PC 1171 — COMPUTER FUNDAMENTALS AND ORGANIZATION

(2018 – 2019 Admission)

Time : 3 Hours   Max. Marks : 80

SECTION – A

(Very Short Answer Type)

(One word to maximum one sentence, Answer **all** questions).

1. Expand SMPS.

2. What is Mother Board?

3. Define Volatile Memory.

4. What is a Register?

5. Define Hit Ratio.

6. Expand RISC.

7. What is an instruction?

8. Define SISD stream.

9. Define Interrupt.

10. Define Peripheral Device.

<div align="right">(10 × 1 = 10 Marks)</div>

SECTION – B

(Short Answer)

(Not to exceed **one** paragraph, answer **any eight** questions. **Each** question carries **2** marks).

11. Write about video Card.

12. Discuss the role of a computer port.

13. Write about Pointing Devices.

14. Write a note on various types of ROM.

15. What is meant by locality of reference?

16. Write a note on memory stick.

17. What is one address instruction format? Explain.

18. Explain MOV and LEA instructions.

19. Write a note on Hardwired Control Unit.

20. Explain handshaking.

21. Write about priority interrupt.

22. Write a note on Programmed I/O.

<div align="right">(8 × 2 = 16 Marks)</div>

SECTION – C

(Short Essay)

(Not to exceed **120** words, answer **any six** questions. **Each** question carries **4** marks).

23. Write a note on Characteristics of Computer.

24. Explain about ASCII.

25. Differentiate RAM and ROM.

26. Explain about CPU Registers.

27. Write a note on Cache Memory.

28. Write a note on CISC architecture.

29. Explain about Microprogram.

30. Write about isolated versus memory mapped I/O.

31. Write about asynchronous serial communication.

(6 x 4 = 24 Marks)

SECTION – D

(Long Essay)

(Answer **any two** questions. **Each** question carries **15** marks).

32. Explain Types of Output Devices.

33. Write a detailed note on secondary storage devices.

34. Explain in detail about Microprogrammed Control Unit.

35. Write about DMA.

(2 x 15 = 30 Marks)

L – 3927

Reg. No. : ....

Name : ....

First Semester B.Sc./B.C.A. Degree Examination, August 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science /Computer Applications

Complementary Course

CS 1131/CP1131 – DIGITAL ELECTRONICS

(2020-Admission Regular)

Time : 3 Hours   Max. Marks : 80

PART – A

Answer **all** questions. Each question carries 1 mark.

1. What is meant by peak inverse voltage?

2. Draw the V-I characteristics of Zener diode.

3. What is an emitter follower?

4. What do you mean by operating point?

5. Convert $(101011.101)_2$ to decimal number.

6. Draw the truth table and logic symbol of NAND gate.

7. According to De-morgan's theorem, $\overline{AB + CD}$ is equivalent to ——————.

8. What do you meant by toggle condition?

Reg. No. : ....

Name : ....

First Semester B.Sc./B.C.A. Degree Examination, August 2021

Career Related First Degree Programme under CBCSS

Computer Science/Computer Application

Core Course – CS 1141/CP 1141

INTRODUCTION TO PROGRAMMING

(2018 - 2019 Admission)

Time : 3 Hours   Max. Marks : 80

SECTION – A

[Very Short Answer type]

(One word to maximum of one sentence. Answer **all** questions)

1. Define identifiers

2. Write the syntax of do-while loop.

3. How to declare a function?

4. What is meant by recursive function?

5. List any two advantage of using pointers.

6. What are enumerated data types?

7. How to use a one dimensional array?

8. How to declare a pointer?

9. What is the use of Storage class?

10. How to open the file for reading only?

<div align="right">(10 × 1 = 10 Marks)</div>

SECTION – B

[Short answer]

[Not to exceed one paragraph, answer **any eight** questions. Each question carries **2 marks**]

11. What are the steps to execute a C Program?

12. Write a note on data types in C.

13. Differentiate Structure and Union.

14. Explain switch case statement with example.

15. Write Call by reference parameter passing.

16. What is pre-processor directive?

17. What is meant by dynamic memory allocation?

18. Write C statement to find the simple interest.

19. What are pointers?

20. What are the basic file operations?

21. What are the different modes for opening a file?

22. Write about **getc** and **putc** function.

<div align="right">(8 × 2 = 16 Marks)</div>

[Short essay]

[Not to exceed **120** words. Answer **any six** questions. Each question carries **4 marks**]

23. Describe the Symbols used in flowcharts. Draw a flowchart to find the sum and average of three numbers.

24. Describe any four basic data types with example.

25. Write a program to find the sum of squares of 10 numbers.

26. Write a program to find the factorial of a number using recursion.

27. Explain the file handling operations.

28. Explain with example how multi-dimensional arrays are used.

29. Write a C Program to input a number and check whether it is even or odd.

30. How to use structures? Explain with example.

31. Explain any four string handling functions.

(6 × 4 = 24 Marks)

SECTION – D

[Long Essay]

(Answer **any two** questions. Each question carries **15** marks)

32. Write a program to sort N numbers in descending order.

33. Differentiate Structure and Union with example.

34. Explain with example different loop control structures used in C program.

35. Explain with example Pointer to arrays and Array of pointers.

(2 × 15 = 30 Marks)

Reg. No. : ....

Name : ....

First Semester B.C.A. Degree Examination, August 2021

Career Related First Degree Programme under CBCSS

Mathematics

Complementary Course

MM 1131.9 : MATHEMATICS – I

(2013, 2015 – 2019 Admission)

Time : 3 Hours   Max. Marks : 80

I. . All the first **ten** questions are compulsory. These questions carry 1 marks each.

1. The derivative of $\log_a x$ is —————.

2. In terms of exponential functions, $\sinh x =$—————.

3. If $\operatorname{sech} x = \dfrac{4}{5}$, find $\cosh x$.

4. State Rolle's Theorem.

5. Give the degree and order of the differential equation

$$\frac{dy}{dx} + \left(x^{\frac{1}{2}} - y \right) = 0 \,.$$

6. General solution of the differential equation $\dfrac{dy}{dx} = 2x$ is

7. Solve the differential equation $y' = -xy$.

8. When we say that two integers are relatively prime?

9. Give the modulus of the complex number $3 - 2i$.

10. Identify the objective function and constraints in the following optimization problem:

Maximize $z = 12x_1 + 7x_2$

subject to the constraints

$2x_1 + x_2 \leq 9$
$x_1 + 2x_2 \leq 28$
$x_1, x_2 \geq 0$.

(10 × 1 = 10 Marks)

II. Answer **any eight** questions from among the questions 11 to 22. These questions carry **2** marks each.

11. Show that $\cosh(x + y) = \cosh x \cosh y + \sinh x \sinh y$

12. Verify Lagrange's mean value theorem for the function $f(x) = x^2 + 2x + 9, \ x \in [1, 5]$.

13. Solve the differential equation.

$y'' - y' - 6y = 0$

14. Solve the Euler-Cauchy differential equation $x^2 \dfrac{d^2y}{dx^2} - 2.5x \dfrac{dy}{dx} - 2y = 0$.

15. Find $\mathcal{L}[e^{-at}]$.

16. Find $\mathcal{L}^{-1}\left[\dfrac{s}{s^2 + 36}\right]$.

17. Find the g.c.d. of -8 and -36.

18. Calculate the value ϕ (5040), where ϕ is the Euler phi-function.

19. Compute the remainder of 8^{103} when divided by 13.

20. If $\sin(A + iB) = x + iy$, show that

$$\frac{x^2}{\cosh^2 B} + \frac{y^2}{\sinh^2 B} = 1.$$

21. Describe Markov Process.

22. Find the Fourier series expansion of $f(x) = \begin{cases} -\pi & -\pi < x < 0 \\ x, & 0 < x < \pi. \end{cases}$

(8 × 2 = 16 Marks)

III. Answer **any six** questions from the questions 23 to 31. These questions carry 4 marks each.

23. Find $\frac{dy}{dx}$, when $y = \cos x^{\tan x}$.

24. If $y = \cos(m \sin^{-1} x)$, prove that

$$(1 - x^2) y_{n+2} - (2n + 1) x y_{n+1} + (m^2 - n^2) y_n = 0.$$

25. An open box is to be made from a 16-inch by 30-inch piece of cardboard by cutting out squares of equal size from the four corners and bending up the sides. What size should the squares be to obtain a box with the largest volume?

26. Find the general solution of the differential equation

$$y'' + 2ky' + k^2 y = 0$$

27. Find the general solution of the partial differential equation

$$x^2 \frac{\partial z}{\partial x} + y^2 \frac{\partial z}{\partial y} = (x + y)z.$$

28. Find the gcd (34, 126) and express it as a linear combination of 34 and 126.

29. Find all values of $(-8i)^{\frac{1}{3}}$.

30. Find the Fourier series for $f(x) = |x|$ in $[-\pi, \pi]$ with $f(x) = f(x+2\pi)$.

31. Show that the function $u = e^x \cos y$ is a solution of the two dimensional Laplace equation $\dfrac{\partial^2 u}{\partial x^2} + \dfrac{\partial^2 u}{\partial y^2} = 0$.

(6 × 4 = 24 Marks)

IV. Answer **any two** questions from among the questions 32 to 35. These questions carry **15** marks each.

32. Find the Laplace transform of $\cos at$ and $\sin at$.

33. (a) If p is a prime, then prove that $a^p = a$ (mod p) for any integer a.

    (b) Prove that $5^{2n+2} - 24n - 25$ is divisible by 576.

34. Solve the nonhomogeneous equation
$$y'' + 4y = 8x^2$$

35. Solve the following L. P. P. graphically:

    Maximize $z = 5x_1 + 7x_2$

    subject to the constraints

    $$x_1 + x_2 \le 4$$
    $$3x_1 + 8x_2 \le 24$$
    $$10x_1 + 7x_2 \le 35$$
    $$x_1, x_2 \ge 0.$$

(2 × 15 = 30 Marks)

Reg. No. : ....

Name : ....

First Semester B.Sc./B.C.A. Degree Examination, August 2021

Career Related First Degree Programme Under CBCSS

Computer Science/Computer Applications/Physics with Computer Applications

Foundation/Vocational Course

CS 1121/CP 1121/PC 1171 : COMPUTER FUNDAMENTALS AND ORGANIZATION

(2020 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. **Each** question carries **1** mark.

1. What is CMOS?

2. What is port?

3. What is ROM?

4. What is virtual memory?

5. What is USB?

6. What is instruction register?

7. What is OPCODE?

8. What is ISR?

9. What is HLDA?

10. What is a bus?

<div align="right">(10 × 1 = 10 Marks)</div>

SECTION – B

Answer **any eight** questions. **Each** question carries **2** marks.

11. Write short notes on ASCII.

12. What is BIOS?

13. What is the use of expansion cards?

14. What is RAM? Explain its types.

15. What are the operations in cache memory?

16. Write short notes on memory representation.

17. Explain instruction format with an example.

18. What are the data transfer instructions?

19. What is parallel processing?

20. Write short notes on interrupt priority.

21. What is hit ratio?

22. What are the types of optical disks?

23. Write short notes on ribbon cables.

24. Why we need an external hard disk?

25. What are the advantages of hardwired control unit?

26. Write short notes on programmed I/O.

<div align="right">(8 × 2 = 16 Marks)</div>

SECTION – C

Answer **any six** questions. **Each** question carries **4** marks.

27. Explain the characteristics of computer.

28. Explain the following :

    (a) SMPS

    (b) Motherboard.

29. Discuss Von Neumann model briefly.

30. What is memory hierarchy? Explain its characteristics.

31. Write notes on CPU registers.

32. Explain micro programmed control unit.

33. Explain fetch cycle with an example.

34. Explain types of interrupts.

35. Explain asynchronous data transfer.

36. What is accumulator? Explain its characteristics.

37. With a figure, explain interrupt cycle.

38. What are the advantages of magnetic disk?

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. **Each** question carries **15** marks.

39. Explain various input and output devices in detail.

40. Discuss types of secondary storage devices and its characteristics.

41. Briefly explain CISC and RISC architectures.

42. Explain working of DMA controller and transfer modes in detail.

43. Explain the following :

    (a) Primary memory

    (b) Instruction format and cycles.

44. Explain any four hardware located inside the computer.

                                                    (2 × 15 = 30 Marks)

_____

Reg. No. : ....

Name : ....

First Semester B.Sc./B.C.A. Degree Examination, August 2021

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science /Computer Application

Complementary Course

CS 1131/CP1131 –DIGITAL ELECTRONICS

(2018–2019 Admission)

Time : 3 Hours   Max. Marks : 80

SECTION – A

(Very Short answer type)
(One word to maximum of one sentence. Answer **all** questions)

1. Which combinational circuit is called a data selector?

2. Which values for S and R are not possible in a D-flip flop?

3. What is a Zener diode?

4. How many flip flops are required for a counter of 0 to 15?

5. What are truth tables?

6. What are half adders?

7. Convert $(30A)_{16}$ to octal number.

8. What are max terms?

9. What is a bipolar junction transistor?

10. What is the value for A XOR B XOR C when A=B= 1 and C=0.

SECTION – B

(Short answer essay)

(Not to exceed one paragraph. Answer **any eight** question. Each question carries **2** marks.

11. Distinguish between combinational and sequential logic circuits.

12. Explain the principle of duality in Boolean algebra.

13. Explain the basic logic gates.

14. Convert the decimal 532.75 to hexadecimal and binary.

15. What are Shift registers?

16. What do you mean by a canonical expression? Which are the two Canonical expressions?

17. Describe briefly SR flip flop.

18. What is RC Coupled Feedback Amplifiers?

19. How the difference between two binary numbers is can be calculated using 2's complement method? Give one example.

20. Explain ASCII.

21. What is map rolling?

22. What is DeMorgan's theorem?

(8 × 2 = 16 Marks)

SECTION – C

(Short essay)

(Not to exceed 120 words. Answer **any six** questions. Each question carries **4** marks.

23. Explain Master-slave J-K flip flops with a neat diagram.

24. Convert the binary number 1101010.110 to decimal, octal and hexadecimal.

25. Prove using the laws of Boolean algebra that $(XY)' + X' + XY = 1$.

26. State and prove distributive law of Boolean algebra using truth table.

27. Explain floating point representation.

28. Explain half wave and full wave rectifiers.

29. If $F(a, b, c, d) = \Sigma(0, 2, 4, 5, 7, 8, 10, 12, 13, 15)$, obtain the simplified form using K-map,

30. Distinguish between encoders and decoders.

31. Explain RC coupled feedback amplifiers.

(6 × 4 = 24 Marks)

SECTION – D

(Long essay type)

Answer **any two** questions. Each question carries **15** marks.

32. Explain the various flip flops with neat diagrams.

33. Describe in detail the basic logic gates, NAND ,NOR and XOR gates.

34. What are Karnaugh maps. Explain how to reduce a Boolean expression in S-O-P form using K-map.

35. Explain the various laws of Boolean algebra with proof and truth table.

(2 × 15 = 30 Marks)

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