

Reg. No. :

Name :

First Semester B.Sc./B.C.A. Degree Examination, November 2019

Career Related First Degree Programme under CBCSS

Group 2(b)–Computer Science/Computer Applications

Core Course – CS 1141/CP 1141 : INTRODUCTION TO PROGRAMMING

(2014 – 2017 Admissions)

Time : 3 Hours

Max. Marks : 80

PART – A (Very Short Answer Type)

Answer **all** questions.

One word to maximum of **one** sentence.

1. What is the meaning of **int** in the statement **int main()**?
2. What is executable file?
3. 'The **#define** line should not end with semicolon', why?
4. What is global variable?
5. Write the statement **a = a*(n+1);** in statement with shorthand assignment operator.
6. What is the meaning of **scanf** ?
7. What do you mean by pointer variables?
8. What is the use of **calloc()** statement?
9. What is the format of **fseek()** function?
10. What is the use of **fprintf()**?

(10 × 1 = 10 Marks)

P.T.O.

PART – B (Short Answer)

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

11. What is top-down design?

12. Find errors, if any, in the following program

```
/* A simple program
int main()
{
    /* Does nothing */
}
```

13. What would be the value of x after execution of the following statements?

```
int x, y = 10 ;
char z = 'a' ;
x = y + z ;
```

14. What is the meaning of * in the place width of the statement

```
scanf ("%d %*d %d", &a, &b)?
```

15. What is the difference between the statements

```
printf ("% -6d", 9876) and printf ("%06d", 9876)?
```

16. What is the use of break statement?

17. What is the difference between %s and %c?

18. List the arithmetic operators used in C language..

19. Compare the statements y = m++; and y ++m;

20. Write the format of any two entry-controlled loops.

21. If p1 is an integer pointer with an initial value 2800. Find the value of p1, after the operation $p1 = p1+1$;
22. What are the different modes of open a file?

(8 × 2 = 16 Marks)

PART – C (Short Essay)

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

23. Write an algorithm to print the reverse of a number.
24. What are the basic types of constants?
25. Discuss storage classes and their meaning.
26. Explain the Rules for evaluation of expression with example.
27. Write a recursive function to evaluate factorial of n.
28. Write a program to reverse a number.
29. Explain dynamic memory allocation.
30. Consider the statements:

```
int a,b, *p, *q,x,y, z;  
a=12; b=4 p =&a;q=&b;  
x=*p * *q - 6;  
y = 4* - *p/*q +10;
```

Find the value of x and y.

31. Compare arrays and structures.

(6 × 4 = 24 Marks)

PART – D (Long Essay)

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

32. Discuss the simple I/O statements used in C language.
33. Explain the loop control structures with example.
34. Write a program to print multiplication table for number 1 to 5 using two-dimensional array.
35. Write a program to read item from a file named DATA contains a series of integer numbers and write all 'odd' numbers to a file to be called ODD and all 'even' numbers to a file to be called EVEN.

(2 × 15 = 30 Marks)

(Pages : 3)

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Reg. No. :

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First Semester B.Sc./B.C.A. Degree Examination, November 2019

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science / Computer Applications

Core Course – CS 1141/CP 1141 – INTRODUCTION TO PROGRAMMING

(2018 Admission onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

(Very short answer type)

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

1. Explain Source Code and Object Code.
2. Write the syntax of for Loop.
3. Explain union.
4. What are identifiers?
5. Write any two Datatypes in C.
6. What is meant by an array?
7. Define Storage Classes.

P.T.O.

8. What is binary file?
9. How to declare a pointer?
10. Write any two functions used for file handling. **(10 × 1 = 10 Marks)**

SECTION – B

(Short answer)

(Not to exceed **one** paragraph. Answer **any eight** questions.

Each question carries **two** marks)

11. Explain Flowchart with an example.
12. Explain the functions of an interpreter.
13. Explain Arithmetic Operators.
14. Explain break and Continue statement.
15. How to declare a two dimensional array?
16. Explain call by value with an example.
17. Explain high level and low level language with an example.
18. What are the features of C pre-processor?
19. Explain any three input/output functions used in C.
20. Write a note on conditional operator.
21. Explain the rules to declare a variable.
22. Explain Static variables in C. **(8 × 2 = 16 Marks)**

SECTION – C

(Short Essay)

(Not to exceed **120** words. Answer **any six** questions.)

Each question carries **four** marks)

23. Describe the symbols used in flowcharts. Draw a flowchart to check the number is even or odd.
24. What is meant by recursion? Write a recursive program to calculate factorial of a number.
25. Write a note on arrays in C.
26. Write a program to find the sum and average of N numbers.
27. Explain array pointers with example.
28. Write a program to find the transpose of two matrix.
29. Write a note on identifiers, keywords and variables.
30. Explain the structure of a C program.
31. Write a program to find the sum of squares of ten numbers. **(6 × 4 = 24 Marks)**

SECTION – D

(Long Essay)

(Answer **any two** questions. Each questions carries **fifteen** marks)

32. Write a program to sort N numbers in ascending order and find the maximum number.
33. Explain with example the structure of a C program.
34. Differentiate :
 - (a) Call by value and call by reference.
 - (b) Formal arguments and actual arguments.
35. Explain with examples different loop control structures used in C program. **(2 × 15 = 30 Marks)**

Reg. No. :

Name :

First Semester B.Sc./B.Com./B.B.A./B.C.A./B.M.S./B.S.W./B.Voc. Degree
Examination, November 2019

Career Related First Degree Programme under CBCSS

Language Course — I

EN 1111/EN 111/EN 1111.4 : LANGUAGE SKILLS

(Common for Career Related 2(b) and B.Voc. Programmes)

(2019 Admission)

Time : 3 Hours

Max. Marks : 80

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

1. What does "channel" mean in communication?
2. What is entropy?
3. What is 'lingua franca'?
4. What is an active skill?
5. What is the primary difference between listening and hearing?
6. Why is communication considered as a biphasic process?
7. Why is English called Un-phonetic language?

What is a syllable?

9. Question tags hold a _____ intonation.

10. What is bio-data?

(10 × 1 = 10 Marks)

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

11. Distinguish between micro-skills and macro skills.

12. What is plagiarism? Name some instances of plagiarism.

13. How can you keep up proper eye contact while engaging in a conversation?

14. Name some barriers to effective communication.

15. How is language acquisition different from language learning?

16. Which are the four types of reading?

17. How is editing classified?

18. What are the common characteristics of academic writing?

19. Write a paragraph about your dream job.

20. Role of gestures in communication.

21. Etiquette you have to bear in mind while engaging in a telephone conversation.

22. What are the do's and don'ts of netiquette?

(8 × 2 = 16 Marks)

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

23. Read the following passage carefully and answer all the questions that follow :

Deforestation, the act of clearing the forest land to serve different purposes, is a growing concern worldwide. It has led to numerous environmental problems. Some of these include the loss of wildlife, impact on biodiversity, climate change, global warming and impact on the water cycle.

Deforestation has disrupted the water cycle as well as the carbon cycle and thus attributed to climate change which in turn is causing numerous problems for humans as well as animals. Plants and trees inhale carbon dioxide and release oxygen which is one of the essentials for the human survival. Trees also absorb other harmful gases from the atmosphere thus making it cleaner. Deforestation leads to the loss of vast number of trees which in turn leads to an increase in the amount of carbon and poisonous gases such as methane in the atmosphere. This has contributed a great deal to the global warming.

Forests also play a significant role in managing the water cycle. Continuous cutting of forests is the root cause of disruption in the water cycle which causes erratic rainfalls in different regions. Deforestation also results in environmental imbalance by affecting the biodiversity adversely. Forests serve as safe habitats for a large species of flora and fauna. Clearing away the forest lands damages the habitat of these innocent creatures. Several species of animals and plants become extinct each day due to loss of habitat and lack of food. Our planet needs to sustain rich biodiversity in order to strike environmental balance. Deforestation thus creates an imbalance in the environment.

- (a) Why do people engage in deforestation?
 - (b) How does deforestation affect climate change?
 - (c) What are the effects of deforestation on environment?
 - (d) How can we protect our flora and fauna?
24. Write an anchoring script for the prize distribution ceremony of state level athletic meet.
25. Write a report of the social extension activity conducted in your college.

- You are interested in pursuing your higher studies abroad. You are making telephone enquiry with the chairman of a reputed institution. What can be the contents of such a conversation? Write at least ten exchanges between you and the chairman about the course that you are interested in.
27. Write an email to a publisher enquiring about the availability of some important books that you require for your degree project.
28. Write minutes of a meeting that was arranged in connection with the forthcoming College arts festival.
29. Edit the following Passage :
- Bhimrao Ramji Ambedkar, affectionate known as Babasaheb Ambedkar, was the main architecture of our Constitution. The first meeting of the Constituent Assembly for this purpose was held on December 6, 1946. Ambedkar elected on August 29, 1947 as the chairman of the drafting committee. He was insistent that the guarantees of fundamental right be clear incorporated in the Constitution and that remedy for their enforcement be easily accessible and swift. He belief that unless the moral values of a Constitution is uphold, grandiloquent words will not protect the freedom and democracy values of people.
30. Write a blog on the need for healthy food habits.
31. Prepare a speech on the topic: Impact of Social Media in public life.

(6 × 4 = 24 Marks)

IV. Answer any **two** each in about **300** words :

32. Write notes for the following passage : (10-15 points)

You might have heard the term 'Health is Wealth', but its essential meaning is still not clear to most people. Generally, people confuse good health with being free of any kind of illnesses. While it may be part of the case, it is not entirely what good health is all about. In other words, to lead a healthy life, a person must be fit and fine both physically and mentally. For instance, if you are constantly eating junk food, yet you do not have any disease, it does not make you healthy. You are not consuming healthy food which naturally means you are not healthy, just surviving. Therefore, to actually live and not merely survive, you need to have the basic essentials that make up for a healthy lifestyle.

If you wish to acquire a healthy lifestyle, you will certainly have to make some changes in your life. Maintaining a healthy lifestyle demands consistent habits and disciplined life. There are various good habits that you can adopt like exercising regularly which will maintain your physical fitness. It also affects your mental health as when your appearance enhances, your confidence will automatically get boosted.

Further, it will prevent obesity and help you burn out extra fat from your body. After that, a balanced diet is of great importance. When you intake appropriate amounts of nutrition, vitamins, proteins, calories and more, your immune system will strengthen. This will, in turn, help you fight off diseases powerfully resultant in a disease-free life. Above all, cleanliness plays a significant role in maintaining a healthy lifestyle. Your balanced diet and regular exercise will be completely useless if you live in an unhealthy environment. One must always maintain cleanliness in their surroundings so as to avoid the risk of getting communicable diseases.

33. Write about the achievements in your life.
34. The following passage is in jumbled manner. Arrange them in the correct order so as to make a sensible passage. The first and last one is done for you :

Global warming has become a grave problem which needs undivided attention.

The natural causes include the release of greenhouses gases which increases temperature. It is not happening because of a single cause but several causes. Further, volcanic eruptions are also responsible for global warming. One of the most common issues that are taking place rapidly is deforestation. So, when one of the biggest sources of absorption of carbon dioxide will only disappear, there will be nothing left to regulate the gas. After that, the excessive use of automobiles and fossil fuels results in increased levels of carbon dioxide.

In addition, activities like mining and cattle rearing are very harmful to the environment. Thus, it will result in global warming. These causes are both natural as well as manmade. Similarly, methane is also one big issue responsible for global warming. That is to say, these eruptions release tons of carbon dioxide which contributes to global warming.

Steps must be taken immediately to stop global warming and make the earth better again.

35. Tata Motors is looking for Sales Executives in their newly opened showroom in Kochi. You saw the advertisement in a daily and like to apply for the same. Draft a covering letter and prepare a CV.

(2 × 15 = 30 Marks)

(Pages : 6)

H – 2256

Reg. No. :

Name :

**First Semester B.Sc/B.Com/B.B.A/B.C.A/B.M.S/B.S.W.
Degree Examination, November 2019**

Career Related First Degree Programme Under CBCSS

Language Course I

EN 1111.4 – LISTENING, SPEAKING AND READING

(For Career Related 2(b) Courses)

(2016 Admission to 2018 Admission)

Time : 3 Hours

Max. Marks : 80

- I. Answer **all** questions in **one** or **two** sentences. **Each** question carries **1** mark.
1. What is aspiration?
 2. Write a word where // is silent.
 3. How many syllables are there in the word 'caricature'?
 4. Name a physical barrier in listening.
 5. What is good listening?
 6. Write two words where 'd' occurs initially.
 7. Write two common expressions for polite request.

P.T.O.

8. Write a word where all the consonants are nasal.
9. Write the syllable structure of the word 'rustle'.
10. Write the last sound in the word 'ruse'.

(10 × 1 = 10 Marks)

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

11. Write some attributes of poor listening?
12. What are some barriers in listening?
13. What is word stress?
14. What is skimming?
15. How can you classify a reader according to his reading speed?
16. Explain the difference in pronunciation for (a) wanted (b) picked
17. What is intonation?
18. Transcribe the following words: (a) cure (b) wear
19. You went to see off a relative at the airport. Construct the dialogue.
20. You meet a friend of yours. Make a conversation with him about applying for a job.
21. Mention two ways of introducing your friend.
22. How do graphics and visual aids help in reading?

(8 × 2 = 16 Marks)

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

23. Explain Extensive reading.

24. Transcribe the following words: rose, finish, camera, dogs, phonetics, killed, pure, theory.

25. What are form class and function class words?

26. Complete the conversation given below:

Arundhati : May I come in Sir?

Tutor : _____

Arundhati: Goodmorning Sir. Sir I would like to clarify certain doubts regarding my project if you aren't too busy.

Tutor : _____

Aruridhati: _____

Tutor: Yes there should be an Introduction wherein you give a brief outline of the things you plan to do.

Arundhati : _____

Tutor: The content is more important than the page numbers, Still there should be minimum 25 pages.

Arundhati : _____

Tutor: Start working on it. Bring the manuscript to me by the end of next week.

Arundhati : _____

Tutor : _____

27. Your friend is admitted in the hospital. You pay him a visit. Construct the dialogue.
28. Imagine the roles of a counter clerk and a customer at the bank. The customer wants to open an account. Construct a dialogue.
29. What are the deviations of Indian English from R.P.?
30. Scan the following poem and find answer to the following questions:

Mind Wanting More

Only a beige slat of sun
above the horizon, like a shade pulled
not quite down. Otherwise,
clouds. Sea rippled here and
there. Birds reluctant to fly.

The mind wants a shaft of sun to
stir the grey porridge of clouds,
an osprey to stitch sea to sky
with its barred wings, some dramatic
music: a symphony, perhaps
a Chinese gong.

But the mind always
wants more than it has –
one more bright day of sun,
one more clear night in bed
with the moon; one more hour

to get the words right; one
more chance for the heart in hiding
to emerge from its thicker
in dried grasses-as if this quiet day
with its tentative light weren't enough,
as if joy weren't strewn all around.

- (a) What does the mind want?
- (b) What is the sun likened to?
- (c) What is the theme of the poem?
- (d) What can one more hour do?

31. Read the passage intensively and answer the questions:

"I have a dream" is a public speech delivered by American civil rights activist Martin Luther King Jr. during the March on Washington for Jobs and Freedom on August 28, 1963, in which he calls for an end to racism in the United States and called for civil and economic rights. Delivered to over 2,50,000 civil rights supporters from the steps of the Lincoln Memorial in Washington D.C. the speech was a defining moment of the civil rights movement. Beginning with a reference to the Emancipation Proclamation which freed millions of slaves in 1863, he observes that "one hundred years later, the Negro is still not free". Toward the end of the speech he departed from his prepared text for a partly improvised one on the theme "I have a dream" prompted by Mahalia Jackson's cry: "Tell them about the dream, Martin!" In this part of the speech which most excited the listeners and has now become its most famous, he describes his dreams of freedom and equality arising from a land of slavery and hatred.

- (a) What issues does King's speech address?
- (b) What compelled him to use the phrase "I have a dream"?
- (c) Where was the address made?
- (d) What is his dream?

(6 × 4 = 24 Marks)

IV. Answer any **two** each in about **300** words.

32. Explain different kinds of reading.

33. Write an essay on the importance of various reading skills in student life.

34. Transcribe the following words:

foetus, endure, clerk, shuttle, judge, chef, machine, gather, sample, photograph, receipt, knot, magic, curtain, tall

35. You have to attend an interview in Chennai. You reach Chennai and you ask the local people about the way to your hotel. At the hotel you order your menu to the waiter. Then you ask them about the way to the office where the interview is being conducted. Construct the three dialogues.

(2 × 15 = 30 Marks)



- 17) Construct a dialogue between two fresher students who are introducing themselves to each other.
- 18) You have bought a birthday gift for your sister and you want the shopkeeper to gift wrap it. Construct a dialogue between the shopkeeper and yourself.
- 19) What are voiced sounds ? Give examples.
- 20) Why is English referred to as the '*lingua franca*' of the modern era ?
- 21) What is a nasal sound ?
- 22) What is sub-vocalisation ?

(8×2=16 Marks)

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

- 23) Explain the concept of strong forms and weak forms.
- 24) What is skimming ? Give two examples of skimming.
- 25) Transcribe the following words : *allow, name, pride, change, grammar, woman, television, liquid.*
- 26) Complete the conversation given below :

Receptionist : Good morning. FM Dental Clinic.

Amy : _____

Receptionist : 4 o' clock appointment with Dr. Rachael ? Let me check.

Oh Yes, there you are _____

Amy : _____

Receptionist : Would you like me to reschedule your appointment ?

Amy : _____

Receptionist : _____

Amy : Can I come in at 4 o' clock ?

Receptionist : _____

Amy : All right. I'll be there at 5 tomorrow _____

Receptionist : _____

- 27) Imagine that you are Ravi who is interested in a tour of Jaipur. Construct a dialogue between the travel agent and Ravi about the details of the tour package.
- 28) How do graphics and visual aids promote reading ?

- 29) Imagine the roles viz those of a customer and a shopkeeper and do as directed.

Shopkeeper	Customer
Greets customer and offers assistance	Greets and informs that the jeans he bought yesterday appear damaged
Enquires about the problem	States that the zipper of the fly is not working
Offers a seat and checks the jeans and finds the zip jammed	Wants to exchange the pair of jeans
Apologies and informs that it cannot be exchanged because the customer had bought it from the discount sale pack	Protests and demands to see the Manager
Agrees to arrange the meeting and asks him to wait	Informs that he would wait for the Manager

- 30) Scan the following poem and find answer to the following question :

In my craft or sullen art
 Exercised in the still night
 When only the moon rages
 And the lovers lie abed
 With all their griefs in their arms
 I labour by singing light
 Not for ambition or bread
 Or the strut and trade of charms
 On the ivory stages
 But for the common wages
 Of their most secret heart.
 Not for the proud man apart
 From the raging moon I write
 On these spindrift pages
 Nor for the towering to dead
 With their nightingales and Psalms
 But for the lovers, their arms



Round the griefs of the ages.
 Who pay no praise or wages
 Nor heed my craft or art.

- 1) Comment on the theme of the poem.
- 2) What prompts the poet to write his poems ?
- 3) Consider the poem as the poetic manifesto of the poet.
- 4) What does 'towering to dead with their nightingales and Psalms' refer to in the poem ?

31) Read the passage intensively and answer **any four** questions :

Many believe that chocolate decays your teeth. True, because it contains a lot of sugar. However it can also prevent tooth decay. The husks of the cocoa beans from which chocolate is made contain an antibacterial agent that fights plaque. Chocolate can also fight heart diseases. Some studies have shown that if you eat chocolate three times a month, you will live almost a year longer. If you eat too many, you will gain weight and will become obese. If you have excess weight, you run the risk of heart diseases. Dark chocolates are considered to be better than milk chocolates. They help to increase the levels of HDL, a type of cholesterol that helps prevent fat clogging arteries.

- 1) Why is chocolate bad for your teeth ?
- 2) What are the advantages of dark chocolates ?
- 3) How is chocolate good for health ?
- 4) What are the ill-effects of eating too much chocolate ? (6×4=24 Marks)

IV. Answer **any two each** in about **three** hundred words.

32) Transcribe the following words : *union, sentence, twinkle, autumn, pressure, action, machine, shame, vision, height, heart, music, school, glass, room.*

33) Comment on the sub-skills of reading.

34) Write an essay on the impact created by Martin Luther King Jr's speech *I Have A Dream* on the readers.

35) You are organising an inter-collegiate literary fest in your college. You are visiting a neighbouring institution to request the participation of students in the literary fest. At first you meet a student in the campus who directs you towards the Principal. The Principal tells you to meet the Arts Club Coordinator of the college who is a faculty member of the Department of English and hand over the brochure and details of the literary fest. Construct the three dialogues.

(15×2=30 Marks)

(Pages : 4)

H – 2282

Reg. No. :

Name :

First Semester B.C.A. Degree Examination, November 2019

Career Related First Degree Programme under CBCSS

Complementary Course – I

MM 1131.9 —MATHEMATICS – I

(2014 Admission onwards)

Time : 3 Hours

Max. Marks : 80

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

1. What is the derivative of $\sinh^{-1} x$?
2. Express $\tan(x)$ in terms of exponential function.
3. Solve the differential equation $\frac{dy}{dx} = \sin 3x$.
4. Find the Laplace transform of t^n .
5. $a \equiv b \pmod{n}$ if and only if n divides _____.
6. State Wilson's theorem.
7. Evaluate $\sinh(4 + 5i)$ in the form of $u + iv$.

P.T.O.

8. Find the principal argument of $z = 3 + 3\sqrt{3}i$.
9. Define feasible solution of a linear programming problem.
10. Evaluate $\int_{-1}^1 \sin \frac{k\pi x}{l} dx$.

(10 × 1 = 10 Marks)

Answer any **eight** questions from 11 to 22. Each question carries **2** marks.

11. Find $\frac{dy}{dx}$ for $t = \frac{\pi}{2}$, when $\pi = 2\cos(t) - \cos(2t)$, $y = 2\sin(t) - \sin(2t)$.
12. Differentiate $y = x^{\sin(x)}$.
13. Verify mean value theorem for $f(x) = \log_e x$ in the interval $[1, e]$.
14. Determine the order and degree of the differential equation $\frac{d^4 y}{dx^4} = \left[c + \left(\frac{dy}{dx} \right)^2 \right]^{\frac{3}{2}}$.
15. Solve the initial value problem $\frac{dy}{dx} = -\frac{y}{x}$, $y(1) = 1$.
16. Solve the partial differential equation $u_{xy} = -u_x$.
17. Write the prime factorization of 4725.
18. Determine $\phi[375]$.
19. Let p be a prime number and $a, b \in N$. If p divides both a and b , then prove that p divides the product ab .

20. If z_1 and z_2 are complex numbers, prove that $\arg(z_1 z_2) = \arg(z_1) + \arg(z_2)$, up to multiples of 2π .
21. Find the principal value $\text{Ln}(z)$ of the complex natural logarithm $\ln(z)$ for $z = 1 + i$.
22. Find the Fourier series of the function $f(x) = k$ if $-1 < x < 1$.

(8 × 2 = 16 Marks)

Answer any **six** questions from 23 to 31. Each question carries **4** marks.

23. Find the greatest and least values of the function $3x^4 - 2x^3 - 6x^2 + 6x + 1$ in the interval $[0, 2]$.

24. If $y = \sin(\sin x)$, prove that $\frac{d^2y}{dx^2} + \tan x \frac{dy}{dx} + y \cos^2 x = 0$.

25. Solve the differential equation $y'' + 3y' + 2y = 4x^2$.

26. Find the general solution of the partial differential equation :

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

27. Using Euclidian algorithm find the Greatest Common Divisor (GCD) of 2076 and 1776. Hence express the GCD as a linear combination of 2076 and 1776.

28. Prove that 41 divides $2^{20} - 1$.

29. Find a complex mapping which maps $(1, 4, \infty)$ to $(0, 1-i, 1+i)$.

30. Find all the complex cube roots of $1+i$.

31. Expand $f(x) = x^2$, $0 \leq x \leq 2\pi$ in a Fourier series if the period is 2π .

(6 × 4 = 24 Marks)

Answer any **two** questions from 32 to 35. Each question carries **15** marks.

32. (a) If $w = \log \sqrt{x^2 + y^2 + z^2}$. Prove that $\frac{\partial^2 w}{\partial x^2} + \frac{\partial^2 w}{\partial y^2} + \frac{\partial^2 w}{\partial z^2} = \frac{1}{x^2 + y^2 + z^2}$.

(b) Find the n^{th} derivative of $x^2 e^x \cos x$ using Leibnitz's theorem.

33. (a) State and prove Fermat's theorem.

(b) Find the remainder when 30^{2020} is divided by 19.

34. (a) Find the Laplace transform of $f(t) = t e^{-4t} \cos 6t$.

(b) Find the inverse Laplace transform of $F(s) = \frac{2s^2 - 6s + 5}{s^3 - 6s^2 + 11s - 6}$.

35. Solve the Linear programming problem graphically :

Maximize and minimize $z = 3x + 9y$

Subject to the constraints $x + 3y \leq 60$

$x + y \geq 10$

$x \leq y$

$x \geq 0, y \geq 0$.

(2 × 15 = 30 Marks)

(Pages : 4)

H – 2324

Reg. No. :

Name :

First Semester B.Sc./B.C.A. Degree Examination, November 2019

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Computer Applications

Complementary Course

CS 1131/CP1131 : DIGITAL ELECTRONICS

(2018 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

PART – A (Very Short Answer Type)

Answer all questions.

One word to maximum of one sentence.

1. What is a Zener diode?
2. What is fan in?
3. Convert the binary number 10110 to hexadecimal
4. What do you mean by universal gate?
5. How many inputs and outputs are there for a half adder?
6. What is a multiplexer?
7. What is a CE amplifier?
8. What is a flip-flop?

P.T.O.

9. What are shift registers?

10. What is a full adder?

(10 × 1 = 10 Marks)

PART – B (Short Answer Type)

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

Not to exceed one paragraph.

11. Distinguish between minterms and maxterms.

12. What are the advantages of 2's complement over 1's complement in negative number representation?

13. $(342)_8 = (\text{-----})_{10}$

14. Draw the truth table for "P implies Q"

15. What is a D-flip flop?

16. What is a combinational logic circuit? Give examples

17. What is an Astable multi-vibrator?

18. Define POS expression.

19. What are oscillators and what is its use?

20. Simplify $C + (BC)'$

21. Describe BCD.

22. What are bipolar junction transistors?

(8 × 2 = 16 Marks)

PART – C (Short Essay)

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

Not to exceed 120 words.

23. Represent the Boolean expression $A'B + CD$ using NAND gate only.
24. Convert the decimal number $(567.25)_{10}$ to binary, octal and hexa decimal.
25. Explain full subtractor with logic diagram and truth table.
26. Explain half wave and full wave rectifiers.
27. State and prove DeMorgans laws of Boolean algebra.
28. Find the difference between:
 - (a) 101110 and 10010
 - (b) 110100 and 1011using 2's complement method.
29. Reduce the following Boolean expression using K-map
$$F(A,B,C,D) = \Sigma(0, 1, 2, 4, 5, 8, 9, 10, 11)$$
30. Describe encoders and decoders.
31. Explain D and T flip flops.

(6 × 4 = 24 Marks)

PART – D (Long Essay Type)

Answer *any two* questions.

Each question carries **15** marks.

32. What are K-maps? Explain how to reduce a Boolean expression in S-O-P form using K-map.
33. Explain the various number system bases and Conversion between each.
34. Explain the various combinational logic circuits with neat diagrams.
35. What are flip flops? Explain the different types of flip flops with neat diagrams.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

First Semester B.Sc./B.C.A. Degree Examination, November 2019

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science/Computer Applications

Group 2(a) – Physics with Computer Applications

**Foundation / Vocational Course – CS 1121/CP 1121/PC 1171 – COMPUTER
FUNDAMENTALS AND ORGANIZATION**

(2018 Admission onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

(Very short answer type)

(One word to maximum of one sentences, Answer **all** questions)

1. What is an auxiliary storage?
2. What is DRAM?
3. Define ports and interfaces.
4. Write about any one CPU register.
5. What is POST?
6. What is DMA?

P.T.O.

7. Explain hit ratio.
8. Define CISC.
9. What is meant by Data transfer?
10. What is pipelining?

(10 × 1 = 10 Marks)

SECTION – B
(Short answer)

(Not to exceed **one** paragraph. Answer **any eight** questions. Each question carries **two** marks)

11. What do you mean by instruction format?
12. What are the advantage of assembly language over high level language?
13. Explain any three Arithmetic Instructions.
14. What is meant by microinstructions?
15. Explain the role of DMA controller.
16. Explain Page Fault.
17. What do you mean by Pipelining of Operations?
18. Explain memory Interleaving.
19. What are the advantage of Multiprocessor System?
20. Define a cache memory.
21. What is an Interrupt?
22. What do you meant by Parallel Processing?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

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

23. Explain about motherboard.
24. How an instruction is executed?
25. Explain the concept of Main Memory. What are the different types?
26. Explain Direct Memory Access.
27. Briefly discuss the different mapping techniques used in Cache memory system.
28. Explain different types of Input and Output Devices.
29. Explain Vector Processing.
30. What does 'Device Polling' means?
31. Explain about general purpose Multiprocessor. **(6 × 4 = 24 Marks)**

SECTION – D

(Long Essay)

(Answer any **two** questions. Each questions carries **fifteen** marks)

32. Explain in detail about secondary storage devices.
33. Explain the following
 - (a) SRAM
 - (b) ROM
 - (c) Asynchronous Data Transfer
34. Explain DMA, DMA Controller and DMA transfer modes.
35. Explain in detail about Instruction Format and Instruction cycles. **(2 × 15 = 30 Marks)**

(Pages : 3)

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Reg. No. :

Name :

First Semester B.Sc./B.C.A. Degree Examination, November 2019

Career Related FDP under CBCSS

Group 2(b) – Computer Science/Computer Applications

Complementary Course

CS 1131/CP 1131 : DIGITAL ELECTRONICS

(2014 – 2017 Admissions)

Time : 3 Hours

Max. Marks : 80

SECTION A

(Very Short Answer type)

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

1. What are capacitors?
2. What is diode?
3. What is full wave rectifier?
4. What is nibble?
5. Expand BCD.
6. What is flip-flop?
7. What is SOP?
8. What is power dissipation?
9. What is SSI?
10. What is propagation delay time?

(10 × 1 = 10 Marks)

P.T.O.

SECTION B

(Short Answer)

Answer any **EIGHT** questions.

Each question carries **2** marks.

11. What are the peculiarities of LED?
12. What is the largest decimal number that can be represented in binary with eight bits?
13. Find the 2's complement of the binary number 10110010.
14. Convert the decimal number 2469 into BCD.
15. Determine the values of A, B, C and D that make the product term $AB'CD'$ equal to 1.
16. What is the condition for SOP expression equal to 1?
17. What is the significance of "don't care condition" in Karnaugh map?
18. What is T flip-flop?
19. What is binary counter?
20. What is TTL?
21. Define Decoder.
22. Compare LSI and VLSI. **(8 × 2 = 16 Marks)**

SECTION C

(Short Essay)

Answer any **SIX** questions.

Each question carries **4** marks.

23. Convert the binary number 10110001101011.11110010 into Hexadecimal.
24. Express the decimal number -39 as an 8 bit number in sign magnitude, 1's complement and 2's complement forms.

25. What are the basic gates? Explain each with logic diagram and truth table.
26. What are the laws of Boolean algebra? Explain.
27. Simplify the Boolean expression $(AB + AC)' + A'B'C$.
28. Describe the steps of converting standard SOP to standard POS.
29. Write a short note on McClusky method.
30. Explain the full adder implementation with half adders.
31. Write a short note on De multiplexer. **(6 × 4 = 24 Marks)**

SECTION D

(Long Essay)

Answer any **TWO** questions.

Each question carries **15** marks.

32. Explain RC coupled amplifier with circuit diagram.
 33. What are different types of latches and flip-flop? Explain its operation with the help of suitable diagram.
 34. Simplify the Boolean function $F(w, x, y, z) = \Sigma (0, 1, 2, 3, 5, 6, 8, 9, 12, 13, 14)$
 35. Explain in detail about the different types of shift registers. **(2 × 15 = 30 Marks)**
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