Reg. No. : ....

Name : ....

Second Semester B.C.A. Degree Examination, August 2018
Career Related FDP Under CBCSS
Group 2(b) : Computer Applications
CP – 1242 : OBJECT ORIENTED PROGRAMMING
(2013 Admission)

Time : 3 Hours   Max. Marks : 80

SECTION – A (Very Short Answer)

One word to maximum of **one** sentence. Answer **all** questions.   **(10×1=10 Marks)**

1. Explain the use of this pointer.

2. What is specialty of array data type ?

3. What is a destructor ?

4. What is an abstract class ?

5. Explain the use of comma operator.

6. Give an example for unconditional jump statement.

7. What is a template class ?

8. Explain arithmetic assignment operator.

9. Explain the term compiler.

10. Which manipulator represents the new line character ?

SECTION – B (Short Answer)

Not to exceed **one** paragraph, answer **any eight** questions. **Each** question carries **two** marks. **(8×2=16 Marks)**

11. Explain the logical operators in C++.

12. What is meant by L value and R value ?

13. Explain the use of iomanip.h.

14. What is a preprocessor macro ?

15. What is a default constructor ?

16. What is the application of the scope resolution operator in C++ ?

17. List the hierarchy of I/O streams classes in C++.

18. What is meant by data hiding ?

19. What is the specialty of recursive function ?

20. Explain the use of size of operator.

21. What is a virtual base class ?

22. Explain the use of object pointer.

SECTION – C (Short Essay)

Not to exceed **120** words, answer **any six** questions. **Each** question carries **four** marks. **(6×4=24 Marks)**

23. Differentiate between public, private and protected members of a class.

24. Explain the rules for making a function as inline. List the merits and limitations of an inline function.

25. Explain the use of new and delete operators with code sample.

26. Explain the switch statement in C++.

27. What are the fundamental data type in C++ ?

28. Explain operator overloading with an example.

29. What is a nested class ? How can you declare a nested class ?

30. What is a copy constructor ? How it differs from other constructors ?

31. Explain the use of try, catch and throw statements with an example.

SECTION – D (Long Essay)

Answer **any two** questions. **Each** question carries **15** marks. **(2×15=30 Marks)**

32. What is meant by inheritance ? Explain different forms of inheritance. List the advantages of inheritance.

33. Compare procedure oriented and object oriented programming approach. What are the advantages of object oriented languages ?

34. Define a class to handle string data type with member functions to read, display, find the length of the string and check whether the string is palindrome or not.

35. Differentiate between following items with suitable examples.

    a) Friend class and Base class

    b) Function overloading and function overriding

    c) Dynamic binding and static binding.

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Second Semester B.Sc./B.C.A. Degree Examination, August 2018
Career Related FDP under CBCSS
Group 2(b) – COMPUTER SCIENCE /COMPUTER APPLICATIONS
CS 1242/CP 1242
Object Oriented Programming
(2014 Admission Onwards)

Time : 3 Hours   Max. Marks : 80

SECTION – A
(Very Short Answer Type)

(**One** word to maximum of **two** sentences. Answer **all** questions.)

1. What is the use of this pointer ?

2. Give an example for enumerated data type.

3. What is class and how does it accomplish data hiding ?

4. Define abstract data type. Give an example.

5. What is the significance of scope resolution operator (: :) ?

6. Write a short note about private member functions.

7. List out the operators that cannot be overloaded.

8. Describe the structure of a C++ program.

9. What are classes and objects ?

10. Explain the use of new and delete operators.   (10×1=10 Marks)

SECTION – B

(Short Answer)

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

11. What do you mean by dynamic binding ? How it is useful in OOP ?

12. What is a function ? How will you define a function in C++ ?

13. What is the use of a constructor function in a class ? Give a suitable example of a constructor function in a class.

14. Describe briefly the I/O stream class in C++.

15. What do you mean by friend class ?

16. Explain member function, static member function with example.

17. Explain unary and binary operator overloading with example.

18. Write a C++ program to overload + to find the sum of two time values given in the format HH : MM : SS.

19. Explain static data member and static member function,

20. Explain call by reference with an example program.

21. What do you mean by object slicing ?

22. Explain copy constructor with example.   **(8×2=16 Marks)**

SECTION – C

(Short Essay)

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

23. Explain mechanism of exception handling.

24. What is a constructor ? Can there be more than one constructor for a class ? Justify.

25. What is a virtual function ? Explain them with an example.

26. What is inline function ? When will you make a function inline and why ?

27. Explain the concept binary operator overloading with friend function with suitable example.

28. Describe the basic concept of object oriented program in detail.

29. Explain the term pure virtual function.

30. What is a virtual base class ? When do we make it ?

31. Differentiate between compile time polymorphism and run time polymorphism.

(6×4=24 Marks)

SECTION – D

(Long Essay)

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

32. Discuss about the different types of inheritance in C++ with suitable example.

33. Explain different type conversions in CPP with suitable example.

34. What do you mean by overloading and overriding of function ? Explain with example.

35. What is OOP ? What are the difference between POP and OOP ?

(2×15=30 Marks)

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Second Semester B.Sc./BCA Degree Examination, August 2018
Career Related FDP under CBCSS
Group 2 (b) – COMPUTER SCIENCE / COMPUTER APPLICATIONS
CS 1241/CP 1243
Data Structures
### (2014 Admission Onwards)

Time : 3 Hours   Max. Marks : 80

PART A (Very Short Answer Questions)

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

1. Define linear data structure.

2. Define the term array.

3. Write syntax to define a structure in C.

4. What do you mean by stack ?

5. What is the use of queue ?

6. What is a linked list ?

7. Write complexity of insertion sort algorithm.

8. Name any two non linear data structures.

9. Draw post order traversal of the given binary tree.
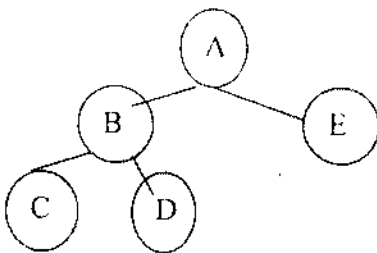
10. Define the term Polish notation.   **(10×1=10 Marks)**

P.T.O.

PART – B (Brief answer questions)

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

11. Differentiate static and dynamic data structures.

12. Define height of a binary tree.

13. What are the advantages of linked list over array ?

14. Mention few applications of stack.

15. What do you mean by collision ?

16. What is an expression tree ?

17. Write algorithm to perform exchange sort.

18. Define Binary Search Tree.

19. Define the term weighted graph.

20. What is a circular linked list ?

21. Distinguish between dynamic and static memory allocation.

22. What is a Graph ?   **(8×2=16 Marks)**

PART C (Short Essay Type Questions)

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

23. Discuss the methods of two dimensional array representation in memory.

24. Write short note on doubly linked list.

25. Explain push operation to stack using array.

26. Convert the following expression to polish form
    A+B–C*D/(E–F)

27. What is the use of binary search tree ?

28. Explain various applications of binary trees.

29. Explain selection sort with suitable example.

30. Write a note on DFS.

31. Compare linear and binary search techniques.   (6×4=24 Marks)

PART – D (Long essays)

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

32. Explain various operations on linear linked list.

33. Explain implementation of linear queue using arrays. Explain its operations.

34. Explain binary tree traversal with suitable examples.

35. Write short note on various hashing techniques.   (2×15=30 Marks)

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Second Semester B.Sc./B.C.A. Degree Examination, August 2018
Career Related FDP Under CBCSS
Group 2(b) : Computer Science/BCA
CS 1221/CP 1241 : ENVIRONMENTAL STUDIES
(2015 Admission Onwards)

Time : 3 Hours 　　　　　　　　　　　　　　　　　　 Max. Marks : 80

SECTION – A
(Very Short Answer Type)

One word to maximum of **one sentence**, Answer **all** questions.　　(10×1=10 Marks)

1. What is an ecosystem ?

2. What do you mean by endemic species ?

3. World Environment Day is celebrating on _____ of every year.

4. Expand a) IUCN b) IPCC

5. What is a food chain ?

6. 'Chipko' movement lead by _____

7. Herbivores are _____ consumers of the ecosystem.

8. Name any two biogeographic regions in India.

9. Minamata disease is caused by _____

10. What do you mean by watershed ?

SECTION – B
(Short Answer)

Not to exceed **one** paragraph. Answer **any eight** questions. **Each** question carries **two** marks. **(8×2=16 Marks)**

11. Differentiate between renewable and non-renewable resources with suitable examples.

12. Write a note on the relevance of environmental education.

13. What is an ecological pyramid ?

14. Write briefly on the cultural values of biodiversity.

15. Briefly explain about the energy flow in ecosystem.

16. What is biodiversity hotspot ?

17. Write a note on value education.

18. Which are the natural causes of air pollution ?

19. Briefly explain the role of decomposers in ecosystem.

20. What do you mean by noise pollution ?

21. What is eco-feminism ?

22. Explain about population growth curves.

SECTION – C
(Short Essay)

Not to exceed **120** words. Answer **any six** questions. **Each** question carries **four** marks.
(6×4=24 Marks)

23. Write a note on acid rain.

24. Briefly explain about the role of NGO's in environmental conservation.

25. Write a note on watershed management.

26. What is role of Family Welfare Programme ?

27. Describe the impacts of eutrophication of water bodies.

28. Explain about the structure of an ecosystem with suitable examples.

29. Briefly explain about the human-wildlife conflicts with suitable examples.

30. Write a note on environmental movement in India.

31. What is an umbrella species ?

SECTION – D
(Long Essay)

Answer **any two** questions. **Each** question carries **15** marks.   **(2×15=30 Marks)**

32. Write an essay on biodiversity and its significance with suitable examples.

33. Explain about the climate change and its impacts.

34. Explain the role of an individual in conservation of natural resources.

35. Narrate about the harvesting of rainwater with suitable illustrations.

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Second Semester B.C.A. Degree Examination, August 2018
Career Related First Degree Programme under CBCSS
Group 2(b) Complementary Course
MM 1231.9 – MATHEMATICS – II
(2013 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – I

Answer **all** questions. **Each** question carries **1** mark. Answer in **one** word to a maximum of **two** sentences.

1. Give the truth table for the conjunction of p and q.

2. Determine the contra positive of 'If it is raining, then I get wet'.

3. Draw the Venn diagram for the union of two sets A and B.

4. Find A×B when A = { 1, 2, 3} and B = {x, y}.

5. Define a relation on the set { a, b, c, d} that is reflexive and symmetric but not transitive.

6. Define a semi group with example.

7. Give an example of a non-abelian group of order 6.

8. What is the maximum degree of any vertex in a graph with n vertices ?

9. Why there are no 3-regular graphs with 5 vertices ?

10. What is the necessary and sufficient condition for a finite connected graph to be Eulerian ?

SECTION – II

Answer **any eight** questions **(11-22). Each** question carries **2** marks.

11. What is meant by contradiction ? Give an example.

12. Explain 'dual of a Boolean expression' with an example.

13. Show that $p \rightarrow q$ and $q \rightarrow p$ are not equivalent statements.

14. Find the relation R = {(x, y) : x ≥ y}, defined on the sets X = {2, 4} and Y = { 1, 2, 3,4}.

15. Draw the Hasse diagram for divisibility on the set {1, 2, 3, 4, 5, 6, 7, 8}.

16. If R is an equivalence relation on a set A, then R^{-1} is also an equivalence relation.

17. Show that the identity element of a group is unique.

18. Prove that, in an Abelian group G, $(a\ b)^2 = a^2b^2$ for all a, b in G.

19. Is the set of natural numbers is a ring with addition and multiplication ? Explain.

20. Show that the sum of the degrees of all the vertices in a graph is equal to twice the number of edges.

21. What is an adjacency matrix ? Give an example.

22. Draw the bipartite graph $K_{3,3}$ and explain its significance.

SECTION – III

Answer **any six** questions **(23-31). Each** question carries **4** marks.

23. Find the principal conjunctive normal form for f(x, y, z) = (x + z) (x′+y) (x + y + z′).

24. Construct a truth table for the compound proposition $(p \rightarrow q) \rightarrow r$.

25. Let R be the relation on the set of integers such that a R b if and only if a – b is an integer. Is R an equivalence relation ?

26. Let R be the set of all real numbers. Let f : R → R given by f(x) = 2x + 3 and g : R → R given by g(x) = 3x – 1. Find fog and gof.

27. Define Boolean algebra. Give an example.

28. Define the union and intersection of two fuzzy sets A and B with suitable examples.

29. Show that if every element of a group G is its own inverse, then G is abelian.

30. Show that a tree with n vertices has exactly (n – 1) edges.

31. Define a commutative ring with an example.

SECTION – IV

Answer **any two** questions **(32-35). Each** question carries **15** marks.

32. a) Test the validity of the argument :

   "If you invest in the stock market, then you will be getting rich. If you get rich, then you will be happy. Therefore, if you invest in the stock market, then you will be happy".

   b) Prove by induction that $3^{4n+2} + 5^{2n+1}$ is divisible by 14 for each positive integer n.

33. a) If f : R → R be defined by f(x) = 2x + 1, x ∈ R, the set of all real numbers, then find f^{-1} (15) and f^{-1} (– 15).

   b) Explain Warshal's algorithm with a suitable example.

34. a) State and prove De Morgan's laws in set theory.

   b) Explain, in detail, the need of error correction in codes.

35. a) Explain breadth-first algorithm with a suitable example.

   b) Define a binary tree. Give an example. Also give its importance in computer science.