



[3786] – 202

**P.G.D.C.A. (Semester – II) Examination, 2010**  
**202 : BASIC JAVA (2008 Pattern) (New)**

Duration : 3 Hours

Max. Marks : 70

*Note : 1) Q. 1 is compulsory.*  
*2) Solve any 4 from the remaining.*

1. A) Solve the following :

6

- a) Which statements are true ?
  - i) Static method can call non-static methods in the class.
  - ii) Class can contain both static and non-static methods and variables.
  - iii) All methods in the class are passed “this” parameter when called.
- b) Where notify () method is defined ? Select correct options.
  - i) Thread class
  - ii) Object class
  - iii) Applet class
  - iv) Runnable interface
- c) Which of the following are true ?
  - i) Constructors can be declared as abstract.
  - ii) Final class can be sub classed.
  - iii) Constructor does not have return type.
  - iv) Constructors can be overloaded.

B) Write short notes (**any 2**) :

8

- a) Object oriented concepts
- b) Access modifiers
- c) Hash table
- d) Difference between overloading and overriding.

P.T.O.



2. Write class adder which has overloaded methods :  
int sum(int, int),      double sum(double, double),      int sum(int, int, int),  
double sum (int, double),      double sum(double, int, int),      string sum(String, String)  
Write main method and call above methods. **14**
  
3. Write an awt application which will have a button with caption “Catch Me”.  
When user will try to click on the button the button should be moved to new  
random position. **14**
  
4. Write a threaded applet which will display circle with different colors. Color will  
change after 10 milliseconds. Accept radius of the circle as parameter. **14**
  
5. Write an application which will accept 2 file names from command line. Then  
append the contents of file 1 to other file. Do necessary validations. **14**
  
6. Write an application for Bank with instance variables acno, name, balance. Instance  
methods deposit(amt), withdraw(amt). If balance is less than 500 then throw user  
defined exception “insufficient balance”. **14**



[3786] – 101

**P.G.D.C.A. (Semester – I) Examination, 2010**  
**101 : FUNDAMENTALS OF INFORMATION TECHNOLOGY (New)**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 70

- Instructions :* 1) *Question No. 1 is compulsory.*  
2) *Solve any four questions from the remaining.*  
3) *Figures to right indicates full marks.*

1. Explain OSI model in detail. **10**
2. a) Define topology and explain BUS, RING, STAR topology with advantages and disadvantages. **8**
- b) Explain Client Server model. **7**
3. a) Compare the features of windows and UNIX. **7**
- b) Explain direct and indirect addressing techniques. **8**
4. a) Explain any two file handling functions. **8**
- b) Define operating system and explain FCFS and Round Robin. **7**
5. a) Differentiate System software, Application software and Firmware. **7**
- b) Explain BIU of Microprocessor. **8**

P.T.O.



6. a) Solve

8

i)  $(316)_{10} = ( \quad )_2$

ii)  $(1101011)_2 = ( \quad )_{10}$

iii)  $(BCD)_{16} = ( \quad )_{10}$

iv)  $(256)_{10} = ( \quad )_8$

b) Explain micro, mini and mainframe computer.

7

7. Write short notes on **(any three)** :

15

1) DMA concept with example

2) ASCII code

3) Keyboard and Mouse

4) Virus and Antivirus

5) Internet.

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[3786] – 102

**P.G.D.C.A. (Semester – I) Examination, 2010**  
**102 : C PROGRAMMING (2008 Pattern) (New)**

Time: 3 Hours

Total Marks: 70

*Note : Assume appropriate header files are included.*

1. Explain the output of following program segments (**any 4**) : **20**

```
1) main()
{
    int n[10],i;
    for (i = 0 ; i < 10; i++)
    {
        n[i] = i+2 ;
        printf (“\n%d”,n[i]);
    }
}
```

```
2) main ()
{
    int tang = 0;
    while (++tang < 4)
        printf (“Hi!”);
    do
        printf(“Bye !”);
    while (tang++ < 8);
}
```

```
3) #define PRODUCT (x) (x*x)
main ()
{
    int i = 3, j;
    j = PRODUCT (i+1);
    printf (“\n%d”, j);
}
```

P.T.O.



```

4) main ()
{
    char ch[8] = "Welcome";
    int i;
    for (i = 0; i < strlen (ch); ch++)
        printf("\n%c", ch[i]);
}

```

```

5) main ()
{
    char ch = 'F';
    printf("%d\n", ch >> 4 << 2);
}

```

2. Solve **any 5** :

**(5×9=45)**

- 1) Write a function append (sourcestrng, str) that stores "str" to the right of sourcestrng e.g. append ("water is", "wealth") then sourcestrng should contain "water is wealth".
- 2) Write a function that accepts a number and an array of 60 integers as parameters and returns count of occurrence of that number in the array.
- 3) Write a program to print the following pattern.

```

1   2   3   4   5
5   5   5   5
1   2   3
3   3
1

```



- 4) Define a structure called hotel that will describe the following members as name, address, room number and stay days. Declare an array of customer with 50 elements and write a program to read the information about all the 50 customers and print the customer's name that stayed maximum days in hotel.
  - 5) Write a program that appends one file at the end of another.
  - 6) Find whether a given square matrix is symmetric.
  - 7) Write a program to accept  $3 \times 3$  matrix print the sum of lower triangle of a matrix.
3. Discuss storage classes in C. **5**
-



**P.G.D.C.A. (Semester I) Examination, 2010**  
**101 : ELEMENTS OF INFORMATION TECHNOLOGY (Old)**  
**(2005 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) *Question No. 1 is compulsory. Out of all the remaining attempt any four questions*  
2) *Neat diagrams must be drawn wherever necessary.*  
3) *Figures to right indicates full marks.*

1. Write short notes on (**any 4**) : **20**
- 1) Cache memory and virtual memory.
  - 2) E-mail
  - 3) Types of Softwares
  - 4) BUS
  - 5) Star and Ring Topology.
2. A) a) Simplify logical expressions. **8**
- i)  $X\bar{Y}\bar{Z} + X\bar{Y}\bar{Z}W + X\bar{Z}$
  - ii)  $X + \bar{X}Y + \bar{Y} + (X + \bar{Y}) + \bar{X}Y$
- b) Draw diagrams using gates
- 1)  $Y = A\bar{B}C + A\bar{B}\bar{C} + ABC$
  - 2)  $A = XYZW + XYZ\bar{W} + X\bar{Y}ZW + X\bar{Y}\bar{Z}\bar{W} + \bar{X}YZW + \bar{X}\bar{Y}\bar{Z}\bar{W}$
- B) Explain logic gates in detail. **7**
3. a) Discuss Network and Transport layers of OSI Model. **8**
- b) Explain the concept of RISC and CISC. **7**
4. a) Explain concept of RAID Technology. **7**
- b) Draw the block diagram of Digital computer and discuss characteristics of computer. **8**
5. a) Explain BIU in Micro processor chip. **7**
- b) Explain any two file accessing technology. **8**
6. a) Explain BCD and ASCII codes. **7**
- b) Explain system software, application software, firmware, assembly language. **8**



[3786] – 12

**P.G.D.C.A. (Semester – I) Examination, 2010**  
**102 : PRINCIPLES AND PRACTICES OF MANAGEMENT (Old)**  
**(2005 Pattern)**

Time : 3 Hours

Max. Marks : 80

*N.B : Solve **any five** questions.*

1. F.W. Taylor is known as “Father of Scientific Management” and Henri Fayol is known as “Father of Administrative Management”. Discuss critically.
2. What are the objectives of planning ? “Planning and controlling are inseparable”. Discuss.
3. Define decision making. Explain decision making process in the light of corporate challenges.
4. How does functional organisation differ from line and staff organisation ?
5. What do you mean by leadership ? State its importance. Explain in brief types of leaders.
6. Write short notes on (**any two**) :
  - a) Importance of Management
  - b) Decentralisation
  - c) Matrix organisation
  - d) Decision types.



[3786] – 201

**P.G.D.C.A. (Semester – II) Examination, 2010**  
**201 : VISUAL BASIC**  
**(2008 Pattern) (New)**

Time : 3 Hours

Marks : 70

*All questions are compulsory.*

1. Give output for following section of code and explain (**any 5**) : **20**

A) dim i As Integer, j As Integer

```
dim str As string
for i = 1 to 4
for j = 1 To i
str = str & j
next
print str
str = ""
next
```

B) dim mystr @

```
print left ("Visual Basic", varType (mystr))
```

C) dim mystr

```
mystr = StrReverse (Right ("childhood",4))
print mystr
```

D) dim k As Integer

```
For k = 75 To 80
Print Asc(k)
```

```
Next
```

E) print WeekdayName(chr(50))

F) print MonthName(Instr (2, "Try this", "is"))

**P.T.O.**



2. Write ADO Code for the following table Movie \_ mst.

10

Field Name	Type
Movie _ no	Number
Name	Text
Movie _ type	Text
Budget	Currency
No_ of Actors	Number

Perform operations Add, Update, Delete, View, First, Last, Next and Previous Records.

3. Write a Sectional Code for the following (**any 3**) :

15

- 1) Invoke a color dialogbox and give the fore color to textbox.
- 2) Write a function to display simple interest by accepting principal amount, rate and number of years.
- 3) Consider above table and validate the data at the form level.
- 4) Design an interface. Take a combo box, filled it with colors. Change the background color of the form as you select the color from it.
- 5) Invoke the font dialogbox and change the font in a textbox object to “Verdana”, 18, **Bold**, underline and ~~strikeout~~.

4. Explain in short the various components of IDE (Integrated Development Environment)

10

- a) Project Explorer
- b) Property Window
- c) Form Layout
- d) Tool box
- e) Tool bar
- f) Menu bar
- g) Code Window.



5. Write short note (**any 3**) :

**15**

A) Data Types in Visual Basic.

B) Any 5 Date functions with e.g.

C) Fixed and Dynamic Arrays.

D) Controls in Microsoft Common Control 6.0.

E) Types of errors.

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[3786] – 22

**P.G.D.C.A. (Semester – II) Examination, 2010**  
**203 : DATABASE MANAGEMENT SYSTEM (DBMS)**  
**(2005 Pattern) (Old)**

Time : 3 Hours

Max. Marks : 80

*Note : 1) All questions carry equal Marks.*  
*2) Solve any five questions*

1. Explain with example how normalization is used in DBMS.
  2. Explain concurrency control mechanisms locks and time stamps.
  3. Compare HDB, NDB and RDB.
  4. Explain what is transaction and properties of transaction.
  5. Explain concept of domain, tuple, cardinality.
  6. Write notes (**any 2**) :
    - a) Distributed data bases
    - b) Users of DBMS
    - c) Integrity constraints.
-

**P.G.D.C.A. (Semester – III) Examination, 2010**  
**301 : SOFTWARE ENGINEERING AND BUSINESS PROCESS**  
**(New) (2008 Pattern)**

Time : 3 Hours

Max. Marks : 70

*Note : 1) Q. No. 1 must be answered.*

*2) Attempt **any 3** from remaining.*

*3) Draw **neat** diagrams. Neat diagrams **carry** marks.*

1. Book shop Automation Software (BAS) should help user query whether a book is in stock or not. If book is in stock, exact number of copies available and the rack number in which the book is located should be displayed. BAS should maintain price of various books. As soon as customer selects a book for purchase the sale clerk should enter the title for BAS to update the stock and generate the sales receipt. This software should also allow employees to update the inventory when new supply arrives.
  - a) Draw Context Level Diagram **5**
  - b) Draw ERD **5**
  - c) Screen layout to display book details **5**
  - d) Design normalized tables. **10**
2. Design following reports from Hotel Management System. **15**
  - a) Final bill while check out (with all service details and charges)
  - b) Room Availability chart
  - c) List of various types of rooms along with charges.
3. Define System. Explain System Development Life cycle with the help of block diagram. **15**

P.T.O.



4. What are decision tools ? Draw decision tree to print grade obtained by student. **15**
- Percentage below 40% Fail
  - Percentage between 40% and 50% Grade C
  - Percentage between 51% and 60% Grade B
  - Percentage between 61% and 70% Grade A
  - Percentage above 70% Distinction
5. Write short notes on (**any three**) : **15**
- a) Data Codification Schemes
  - b) Functional Decomposition Diagram (FDD)
  - c) Types of Systems
  - d) Spiral Model.



[3786] – 302

**P.G.D.C.A. (Semester – III) Examination, 2010**  
**302 : ORACLE (New)**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 70

- Instructions :* 1) *Q. 1 and 6 are compulsory.*  
2) *Solve any 3 questions from the remaining.*  
3) *Figures to the right indicate full marks.*

1. Consider following table structure to write SQL queries.

**20**

Item table

itemno number(3),      iname varchar 2 (30),      stock number(4),  
min\_level number (3),      reorder\_level number (3),      reorder –qty  
number(3)

Supplier table

Suppno number(2),      sname varchar2(30),      saddress varchar2(30)

Item\_supplier table

Itemno number(3),      Suppno number (2),      rate number (7)

- List all suppliers from Pune city.
- List all items having stock = 100.
- Show alphabetical list of suppliers.
- Show all suppliers names and rate for “washing machines”.
- Display names of items starting with letter “s”.
- Display how many different items are available ?
- Show all items having stock less than reorder level.

**P.T.O.**



- h) Create item table with proper constraints.
  - i) Insert a record in supplier table.
  - j) Delete record from item table if stock is zero.
2. Write a stored procedure which will accept employee number and will return hire date of that employee. Handle exceptions. **10**
3. Write a function which will accept employee no as an argument and will return his annual salary. Handle exceptions. **10**
4. Write a PL/SQL block which will accept deptno and will print empno, name, salary and hire date of all employees. Use cursor. **10**
5. Explain how to use group functions. **10**
6. Write short notes (**any four**) : **20**
- a) Views
  - b) Constraints
  - c) Packages
  - d) Triggers
  - e) Data types.
-



[3786] – 31

**P.G.D.C.A. (Semester – III) Examination, 2010**  
**302 : OBJECT ORIENTED PROGRAMMING WITH JAVA**  
**(2005 Pattern) (Old)**

Time : 3 Hours

Max. Marks : 80

*Note : 1) Q. 1 is compulsory.*  
*2) Solve any four from the remaining.*

1. A) What will be the output ? Justify your answer.

6

i) Public class A {

```
    Public static void main (String [ ] args){  
        int i = 10;  
        int j = 20;  
        int k = 0 ;  
        k = j > i ? j >= (5*2) ? 5 : 10 : 100;  
        System.out.println (“k =” +k);  
    }  
}
```

ii) Select correct statements :

- a) Constructors can be declared as private
- b) Constructors do not have return type
- c) Constructors can be overridden
- d) Constructors can be over loaded

iii) Public class ABC{

```
    Public static void main (string args [ ]){  
        String s = “Learning java is interesting, I told you”;  
        String p = “times”;  
        int i = 17;  
        int j = 60;  
        System.out.println (s + i + j + p);  
    }  
}
```

P.T.O.



B) Write short notes (**any two**) : **10**

- 1) Threads
- 2) Applet life cycle
- 3) Features of java.

- 2. Accept a string from user. If the occurrence of “the” in the string is more than 1 then throw “The Not Required” user defined exception. **16**
- 3. Write a program to read the file. file name should be given from command line print the contents in uppercase. **16**
- 4. Design an applet which will have 3 scrollbars and a text field. When scrollbar value is changed then color of text field should change. **16**
- 5. Write an application which will print current date and time. **16**
- 6. Write date class with day, month and year as instance variables with following constructors.

Date ( )

Date (int, int, int)

Date (String)

Date (Date)

Write print Date ( ) method which will print the date.

Create 4 objects of Date class by calling above constructors. **16**

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[3786] – 32

**P.G.D.C.A. (Semester – III) Examination, 2010**  
**303 : UNIX (Old)**  
**(2005 Pattern)**

Time : 3 Hours

Max. Marks : 80

*Note : A) All questions are compulsory.*  
*B) Write both Sections on same answer sheets.*

SECTION – I

1. Explain the following commands with example (**any five**) : **10**
  - A) mkdir
  - B) sleep
  - C) ln
  - D) mv
  - E) wc
  - F) nice
  
2. Answer **any two** : **10**
  - A) Explain Inter-user communication commands.
  - B) Explain mail command with example.
  - C) Explain the egrep command with example.
  
3. Write Unix commands (**any five**) : **10**
  - A) Print number of words in file file1.
  - B) Move file “m1” from current directory to “d1” directory.
  - C) Display the month of the year.
  - D) Display all ordinary files in current directory.
  - E) Stop incoming messages from user.
  - F) Send message “welcome” to all the users currently logged in.
  
4. Explain the concept of command line argument in shell programming. **10**

P.T.O.



SECTION – II

5. Solve **any four** :

**40**

- A) Write a shell script to print prime numbers between 1 and 200.
- B) Write a shell script which accept two numbers as command line arguments and print tables of all numbers between given two numbers.
- C) Explain Unix file structure.
- D) Write shell script to check repeatedly whether user “u1” is logged in and as soon as he/she logs in send message “Congratulations!”.
- E) Write awk program to print first word and last word of each line from abc.txt file.

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[3786] – 41

**P.G.D.C.A. (Semester – IV) Examination, 2010**  
**401 : SOFTWARE ENGINEERING**  
**(2005 Pattern)**

Time : 3 Hours

Max. Marks : 70

- Note* : 1) *Q. 1 must be answered.*  
2) *Attempt any 3 from remaining.*  
3) *Draw neat diagrams. Neat diagrams carry marks.*

1. Fitness centre is health club offering health services such as fully equipped gym, instructions in aerobics, yoga and proper diet. People from various age groups join the club. The club provides various programs such as weight loss, weight increase, fitness etc. depending on their needs. Health club caters to member's needs by keeping in mind their condition of health.
  - a) Draw First Level Diagram. **10**
  - b) Draw ERD. **5**
  - c) Data entry screen for member registration. **5**
  - d) Report layout to print member's health status. **5**
  
2. Design following reports from payroll system. **15**
  - 1) Pay slip
  - 2) Pay sheet
  - 3) Provident fund statement to be submitted to State Govt.
  
3. Explain various fact finding methods used by analyst. Explain advantages and disadvantages of each method. **15**

**P.T.O.**



4. State the need of Decision Tools in SDLC. Draw Decision Table for the following case. **15**  
XYZ classes has following scheme for payment of fees.
- Student who has scored  $\geq 60\%$  marks is enrolled for scholar batch.
  - Student who has scored  $\geq 45\%$  and  $< 60\%$  marks is enrolled for ordinary batch.
  - Student who has scored  $< 45\%$  marks is not given admission.
  - Student can opt for prime time batch or regular batch.  
For prime time batch, 10% additional fees are charged.
  - Students paying full fees before 15<sup>th</sup> August are given 5% discount in fees.
5. Write short notes on (**any three**) : **15**
- a) System implementation
  - b) Software Testing
  - c) CASE Tools
  - d) Waterfall model.
-



**P.G.D.C.A. (Semester – IV) Examination, 2010**  
**402 : BUSINESS APPLICATION (2005 Pattern)**

Time : 3 Hours

Max. Marks : 80

*Instructions :* 1) *Question No. 1 is compulsory.*  
2) *Solve any four from the remaining.*

1. Write short notes (**any four**) : **20**
  - a) LIFO
  - b) Trial Balance
  - c) Stock Ledger
  - d) Ratio Analysis
  - e) Journal Entry.
2. State and explain the concept of Inventory control system. What are the objectives and need for the same ? **15**
3. A number of items are dispatched to customer against order acceptance given to the customer. Some items in the order acceptance are not delivered due to deliveries from factory. Design the following reports and necessary file layouts. **15**
  - a) Delivery Challan cum Invoice
  - b) Areawise, Customerwise pending items.
4. What is Market segmentation ? How it helps sales analysis ? **15**
5. What is BOM ? How it helps in Production Planning and Control (PPC) ? **15**
6. What is Ageing Report ? How does it help in Debtors Analysis ? **15**
7. Draw Layout (**any three**) : **15**
  - a) GRN
  - b) GRIR
  - c) Bincard
  - d) Material Requisition Slip.



[3786] – 401

**P.G.D.C.A. (Semester – IV) Examination, 2010**  
**401 : DATA STRUCTURES AND ALGORITHMS (New) (2008 Pattern)**

Time : 3 Hours

Max. Marks : 70

- Instructions :** a) Attempt *any* 7 questions.  
b) State your assumptions *clearly*.  
c) Answer all **sub** questions of a question at **one** place.  
d) Figures on the **right** are **full** marks.  
e) Use **ANSI 'C'** language in your codes.

1. A) Consider a 2-D array, A of 20 rows and 25 columns. Compute the address of member A (18, 15) of this array by both row major and column major methods. Assume that each value of this array consumes 2 bytes of computer's storage and base address of the array as 100. Show all steps of your calculations . **10**
  
2. A) Convert the following infix form to its prefix form.  
$$A * (B + C) / D - E$$

Show the contents of both the stacks at each step in a tabular form. **5**

B) Evaluate the following postfix form.  
$$ABC + *D/E -$$

where A=2 B=3 C=4 D=5 E=6

Show the contents of stack at each step in a tabular form. **5**
  
3. A) Write a function to add an element in a circular queue of characters implemented as a linked list. **5**
  
- B) Write a function to pop an element from a stack of characters implemented as a linked list. **5**
  
4. A) Write a function to delete a node from a linear single linked list of integers . **5**
  
- B) Write a function that returns length of a doubly linked list of integers. **5**

P.T.O.



- 5. A) Write a function which accepts address of Head node of a Circular Double linked list as a parameter and prints all the nodes of the list. **5**
- B) Explain the concept of generalized list (GList). **5**
- 6. A) Write a function to create a mirror of binary search tree. **5**
- B) Write a function that counts number of non leaf nodes in a binary search tree. **5**
- 7. Construct an AVL tree for the following data. **10**  
SIX, ONE, EIGHT, TWO, FOUR, THREE, FIVE, SEVEN
- 8. Consider the message “ PREPARATION” and draw HUFFMAN’s tree. **10**

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[3786] – 402

**P.G.D.C.A. (Semester – IV) Examination, 2010**  
**402 : PRINCIPLES AND PRACTICES OF MANAGEMENT AND**  
**ORGANISATIONAL BEHAVIOUR**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 70

*Instructions : 1) Q . No. 1 is compulsory.*

*2) Attempt any three from the remaining.*

*3) Figures to the right indicate full marks.*

1. a) Define motivation. Explain any one theory of motivation in detail. **15**  
b) Explain meaning, need and scope of management. **10**
2. The work of Taylor and Fayol was, of course, essentially complementary. Do you agree ? Give reasons for your answer. **15**
3. What is planning ? What are the steps involved in planning ? Explain characteristics of planning. **15**
4. “Leaders are born not made”, comment and explain various styles of Leadership. **15**
5. Controlling is an important function of management. Explain the relevance of controlling and its process. **15**
6. What are the different Ego states ? How transactional analysis is used to resolve conflict ? **15**
7. Write short notes on (**any three**) : **15**
  - a) MBO
  - b) Attitudes, values and beliefs.
  - c) Organisation structure
  - d) Johari window
  - e) Types of conflicts.

[3770] – 213





**T.Y. B.Sc. (Semester – IV) Examination, 2010**  
**PHYSICS (Paper – V)**  
**PH – 345 (B) : Advanced Electronics**

Time : 2 Hours

Max. Marks : 40

- N.B.:* 1) All questions are **compulsory**.  
2) Figures to the **right** indicate **full** marks.  
3) Draw neat diagrams **wherever** necessary.  
4) Use of log tables and calculator is **allowed**.

1. Attempt **all** of the following (**one** mark **each**) : **10**

- a) What is Synchronous Counter ?
- b) What is the difference between an OR gate and exclusive OR gate ?
- c) What is the supply voltage range over which 74C and 4000B families of CMOS IC's can work ?
- d) A sinusoidal carrier is amplitude modulated to a depth of 20%. If the carrier power is 20 kW, what must be the power contained in one of its side bands ?
- e) Explain the term numerical aperture.
- f) List different types of pulse modulation.
- g) What do you mean by combinational logic ?
- h) State different applications of Karnaugh map.
- i) If the pulse width of monostable multivibrator is 1 sec and capacitance is 100 pF, what must be the value of resistance ?
- j) List different types of ADC.

2. Attempt **any two** :

- a) Draw the functional block diagram of IC - 555 and explain function of each pin terminals. **5**
- b) Discuss the characteristics of output and speed with reference to TTL and CMOS integrated circuits. **5**
- c) What are indicators ? Why are LED's popularly used as indicators ? **5**

3. Attempt **any two** :

- a) What are fibre losses ? Explain absorption loss. 5
- b) A sinusoidal carrier voltage frequency 10 MHz and amplitude 200V is amplitude modulated by a sinusoidal voltage of frequency 10KHz producing 40% modulation. Calculate frequency and amplitude of upper and lower side bands. 5
- c) With suitable block diagram explain the working of R - 2R D/A converter. Discuss the advantage of it over the weighted register type D/A converter. 5

4. A) Attempt **any one** :

- a) With suitable diagram explain in brief the construction and working of a single optical fiber. 8
- b) i) Draw and explain modulating amplifier circuit. 4
- ii) A 20 MHz sinusoidal carrier wave of amplitude 0.01V is modulated by a 8000 Hz sinusoidal audio signal wave of amplitude 5 mV. Calculate the frequency component of the resultant modulated wave and their amplitude. 4

B) Attempt **any one** :

- a) An astable multivibrator using IC – 555 uses the following component values. 2  
 $R_A = 12 \text{ k}\Omega$   $R_B = 12 \text{ k}\Omega$   $C = 50 \text{ nf}$   
 Calculate the ON time period.
- b) What is optoloupler ? Give its advantages. 2