Shri Vile Parle Kelavani Mandal`s
SHRI BHAGUBHAI MAFATLAL POLTYECHNIC
AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY,2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | SEMESTER: I
MAXIMUM MARKS: 100 | PROGRAME:COMPUTER/INFORM.TECH
COURSE: ENGINEERING MATHEMATICS | CODE : 168902

INSTRUCTIONS:
(1) Answer to the two sections must be written in separate answer books.
(2) Attempt all questions each from Section I & Section II.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 **Attempt Any Six** **(18)**

(a) If $\log\left(\frac{a+b}{2}\right) = \frac{1}{2}\log a + \frac{1}{2}\log b$ show that a = b

(b) Resolve into partial fractions $\frac{x}{x^2-x-2}$

(c) Prove that $\frac{\cos 3\theta}{\cos\theta} + \frac{\sin 3\theta}{\sin\theta} = 4\cos 2\theta$

(d) If $f(x) = x^2 + x + 3$, find $f(x+1)$

(e) If $Y = f(x) = \frac{x+1}{x-1}$ show that $f(y) = x$

(f) Prove that $7\log\frac{16}{15} + 5\log\frac{25}{24} + 3\log\frac{81}{80} = \log 2$

(g) Prove that $2\cot^{-1}(3) + co\sec^{-1}\left(5/4\right) = \pi/2$

(h) Prove that $\tan 3\theta = \frac{3\tan\theta - tan^3\theta}{1-3tan^2\theta}$

Q.2 **Attempt Any Four** **(16)**

(a) If A & B are obtuse angles and $\sin A = \frac{5}{13}, \cos B = -\frac{4}{5}$ Find the quadrant of the angle A + B. Also find tan (A + B)

(b) Prove that $\frac{1}{\log_6 24} + \frac{1}{\log_{12} 24} + \frac{1}{\log_8 24} = 2$

(c) Resolve into partial fractions $\frac{x+1}{2x^2+7x+5}$

(d) Prove that $\cos^{-1}\left(\frac{4}{5}\right) + \cos^{-1}\left(\frac{12}{13}\right) = \cos^{-1}\left(\frac{33}{65}\right)$

(e) Prove that $\frac{\log_2 5}{2+\log_2 3} = \log_{12} 5$

(f) If $f(x) = x^2 - 3x + 4$ find $f(2x+1)$

Q.3 **Attempt Any Two** **(16)**

(a) If $f(x) = x - \frac{1}{x}$ show that $[f(x)]^3 = f(x^3) - 3f\left(\frac{1}{x}\right)$

(b) Prove that $\cos 20.\cos 40.\cos 60.\cos 80 = \frac{1}{16}$

(c) Resolve into partial fractions $\frac{x^2+23x}{(x-3)(x^2+1)}$

SECTION-II

Q.4 **Any Six out of Eight** **(18)**

(a) Evaluate : $\lim_{x\to 4} \frac{x^2-x-20}{x+4}$

(b) Evaluate : $\lim_{x\to 9} \frac{\sqrt{x}-3}{x-9}$

(c) Determine $\frac{dy}{dx}, if\ Y = \frac{x^2+5}{x^2-6}$

(d) Find the slope of tangent to $Y = x^2 + 3x + 5$ at the point $(-1, 3)$

(e) Differentiate $Y = \log\left(\frac{x}{e^{-x}}\right)$ w.r.t. x

(f) Differentiate : $x\cos^{-1} x$ w.r.t.x

(g) If $x = \frac{1}{y^3}$ find $\frac{dy}{dx}$

(h) Evaluate $\lim_{x\to\infty}\left[\sqrt{x^2 + x + 1} - x\right]$

Q.5 **Any Four out of Six** **(16)**

(a) Find the acute angle between the curves $y = x^3$ & $x^2y = 1$ at their point of intersection.

(b) Discuss the maximum and minimum values of the function $x^3 - 9x^2+24x-5$

(c) Find $\frac{dy}{dx}$, if $Y = (sinx)^{tanx}$

(d) Determine $\frac{dy}{dx}$, if $e^x + e^y = e^{x+y}$

(e) Evaluate $\lim_{x\to 0}\left[\frac{\log(a-x)-\log a}{x}\right]$

(f) Evaluate $\lim_{x\to 0}\left[\frac{10^x-2^x-5^x+1}{x\tan x}\right]$

Q.6 **Any Two out of Three** **(16)**

(a) If $Y = e^{m\sin^{-1}x}$ prove that $(1 - x^2)\frac{d^2y}{dx^2} - x\frac{dy}{dx} - m^2y = 0$

(b) Evaluate : $\lim_{x\to -3} \frac{\sqrt{2x+22}-4}{x+3}$

(c) If $x^2 + y^2 + xy - y = 0$, find $\frac{dy}{dx}$ at (2, 1)

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Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC
AUTONOMOUS SEMESTER EXAMINATION APRIL /MAY, 2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | **SEMESTER: I/II**
MAXIMUM MARKS: 100 | **PROGRAME: CSE/IT**
COURSE: WEB PROGRAMMING | **CODE: 168905**

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) All questions are compulsory.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Figures to the right indicate full marks.
(5) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 **Attempt ANY SIX of following.** **(18)**

(a) Describe client – server architecture with neat diagram.
(b) Describe use of following tag with suitable example.
i) Bold ii) Italic iii) Underline
(c) Describe use of img tag with example.
(d) Explain term frame? Give any two advantages and two disadvantages of frames.
(e) Compare mark up language and scripting language (Any Three Points)
(f) Describe various image formats.
(g) Describe rowspan and colspan attributes with example.
(h) Give the types of URL and explain term URL.

Q.2 **Attempt ANY FOUR of the following.** **(16)**

a) Define server? Describe types of server.
b) Describe following. i) Search engine ii) Structure tags
c) Describe image maps with suitable example.
d) Describe formatting of tables with example.
e) Describe FRAMESET TAG with example.
f) Describe ordered and unordered list with example.

Q.3 **Attempt ANY TWO of the following.** **(16)**

a) Describe Frame tag. Give use of following attribute.
i) Name ii) Frame border iii) Margin height
iv)Margin width v) resize vi) scrolling
b) Explain following terms and give its functions.
i) Server side coding ii) client side coding
c) Write HTML code for following output

ROLL NO	NAME	PERCENTAGE
01	JACK	63%
02	JOHN	56%
03	STEVE	78%
04	SMITH	62%

SECTION-II

Q.4 **Attempt ANY SIX of the following** **(18)**

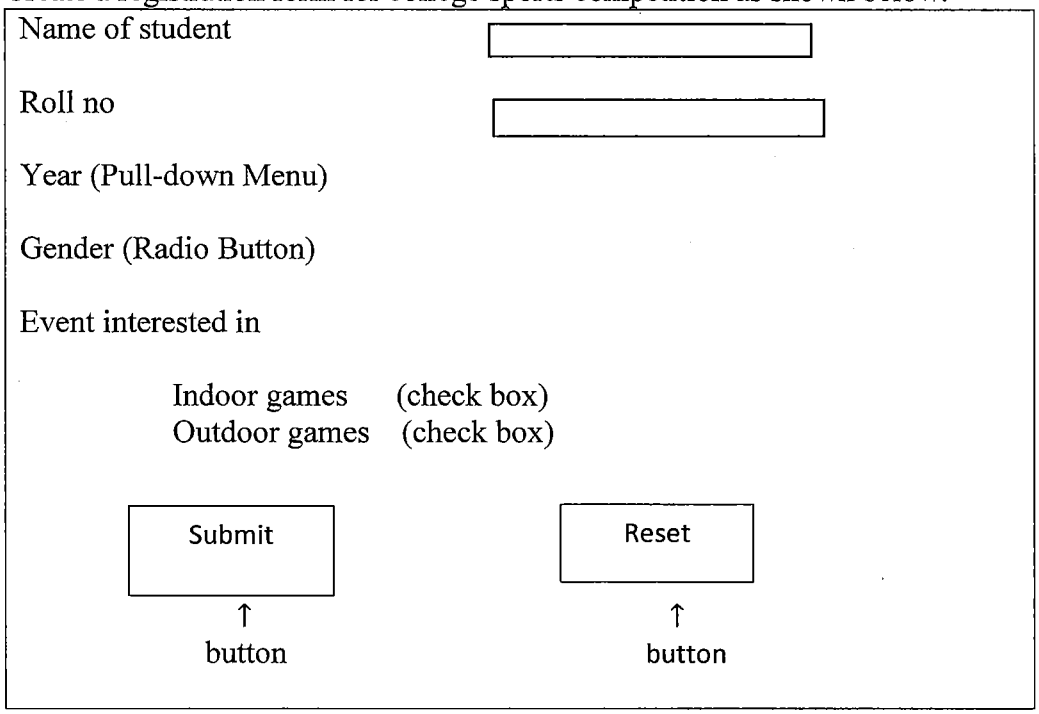
a) Give the difference between GET & POST method.
b) Define function in java script.
c) List the advantages of stylesheetss?
d) Define animation, explain briefly GIF animation.
e) Enlist the type selector? Explain any one.
f) Explain the significance of "action" attribute and "target" attribute.
g) Explain the attributes of radio button.
h) Give the advantages & disadvantage of GIF in animation.

Q.5 **Attempt ANY FOUR of the following** **(16)**

a) Explain the components of CSS with an example.
b) Describe DOM structure hierarchy.
c) Explain image mapping with an example.
d) Explain cell spacing and cell pudding attribute with example.
e) Write a program by taking user name as input and display user name in alert box.
f) Explain the following methods w.r. to Java script.
   i) ON MOUSEUP
   ii) ON BLUR

Q.6 **Attempt ANY TWO of the following** **(16)**

a) Describe the steps to create an animated GIF with fading effects.
b) Create a registration form for college sports competition as shown below.



c) Write a java script program by taking user input and perform addition.

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AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY, 2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | SEMESTER: II
MAXIMUM MARKS: 100 | PROGRAME: CSE/IT
COURSE: APPLIED MATHEMATICS | CODE: 168907

INSTRUCTIONS:
(1) Answer to the two sections must be written in separate answer books.
(2) All Questions are compulsory.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 **Solve Any Six** **(18)**

(a) Find `x`if $\begin{vmatrix} x & 4 & -4 \\ 3 & -2 & 1 \\ -2 & -4 & 4 \end{vmatrix} = 0$

(b) If A = $\begin{bmatrix} 1 & -5 \\ 6 & 4 \end{bmatrix}, B = \begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$ find the matrix AB – 2I.

(c) The distance between the points (5, –3) and (x,1) is 5 units. Find x.

(d) Show that the lines 2x + 3y – 1 = 0 and 3x – 2y + 6 = 0 and 3x – 2y + 6 = 0 are perpendicular.

(e) Find the centre and radius of the circle $x^2 + y^2 - 8x - 6y + 24 = 0$.

(f) Find the value of determinant by the expansion $\begin{vmatrix} 2 & -1 & 3 \\ 1 & 3 & -4 \\ 5 & -5 & 4 \end{vmatrix}$

(g) If A= $\begin{bmatrix} 2 & 4 \\ -1 & -2 \end{bmatrix}$ show that A^2 is a null matrix.

(h) Find the equation of the circle with centre at (2, –7) and radius $\sqrt{2}$ units.

Q.2 **Solve Any Four** **(16)**

(a) The three vertices of rectangles are (2, –2) , (8, –4) and (5, 7). Find the fourth vertex.

(b) Find the acute angle between the lines 3x – 2y + 4 = 0 and 2x – 3y – 7 = 0

(c) If A = $\begin{bmatrix} 2 & -2 \\ 3 & 1 \end{bmatrix}$, B = $\begin{bmatrix} -1 & 5 \\ 4 & -3 \end{bmatrix}$, C = $\begin{bmatrix} 7 & -5 \\ 0 & 5 \end{bmatrix}$ verify that $(AB)_C$ = A (BC)

(d) Determine which of the two circle is greater $x^2 + y^2 - 3x + 4y = 0$ and $x^2 + y^2 - 6x + 8y = 0$

(e) If A = $\begin{vmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{vmatrix}$ show that $A^2 = A$

(f) Find the area of the triangle whose vertices are (–1,5) (3, 1) and (5, 7).

Q.3 **Solve Any Two** **(16)**

(a) The voltage in an electric circuit are related by the following equation
$V_1 + V_2 + V_3 = 9 \quad V_1 - V_2 + V_3 = 3 \quad V_1 + V_2 - V3 = 1$

Solve the above equation using Cramer`s rule and find the value of V_1, V_2 and V_3.

(b) Find the inverse of the co-efficient matrix of the equation.
$2x + 3y - Z + 3 = 0 \quad 5x + y + 3z = 10$
$4x + 3y - 2z + 3 = 0$ and hence solve them

(c) Find the equation of a tangent and normal to the circle $X^2 + Y^2 + 6x - 6y - 7 = 0$ at (0, 7)

SECTION-II

Q.4 **Any Six out of Eight (3 marks each)** **(18)**

(a) Evaluate : $\int \frac{x+1}{\sqrt{x-2}}\, dx$

(b) Integrate w.r.t x $six^2x\ Cos^2x$

(c) Evaluate: $\int \frac{dx}{\sqrt{3-4x-2x^2}}$

(d) Express in the form of x +iy : $\frac{2i^2-3i^7+4i^6+2}{3i^2-4i^5+4}$

(e) If $Z_1 = 6 - 2i$, $Z_2 = 2 - 5i$ Find $|2Z_1 - 3Z_2|$ and $|Z_1 Z_2|$

(f) Find Modulus and amplitude of $1 - i\sqrt{3}$.Hence write it in polar form.

(g) If $\bar{a} = 3\bar{\imath} - 2\bar{\jmath} + 2\bar{k}$, $\bar{b} = 6\bar{\imath} + 4\bar{\jmath} - 2\bar{k}$, $\bar{c} = 3\bar{\imath} + 2\bar{\jmath} + 4\bar{k}$ Find $\bar{a} \times (\bar{b} \times \bar{c})$

(h) If $|\bar{a} + \bar{b}| = |\bar{a} - \bar{b}|$ Prove that $\bar{a}$ *and* $\bar{b}$ are perpendicular

Q.5 **Any Four out of Six (4 marks each)** **(16)**

(a) Simplify using De Meivre`s Theorem $\frac{(\cos 2\theta + i \sin 2\theta)^3\ (\cos 3\theta - i \sin 3\theta)^4}{(\cos\theta + i \sin\theta)^2 (\cos 2\theta - i \sin 2\theta)^{-3}}$

(b) Evaluate $\int x^2 \tan^{-1} x\, dx$

(c) Evaluate $\int \frac{dx}{(x^2+4)\,(x+1)}$

(d) If $\bar{a} = 3\bar{\imath} + \bar{\jmath} - 2\bar{k}$ and $\bar{b} = \bar{\imath} - 3\bar{\jmath} + 4\bar{k}$ Find $\bar{a}.\bar{b}$ and $\bar{a} \times \bar{b}$

(e) Evaluate $\int_0^{\pi/2} \frac{dx}{1+\sqrt{\tan x}}$

(f) Find the sine of the angle between the vectors $3\bar{\imath} - 2\bar{\jmath} + 4\bar{k}$ and $6\bar{\imath} + 3\bar{\jmath} + \bar{k}$

Q.6 **Any Two out of Three (8 marks each)** **(16)**

(a) (i) Using Euler`s formula prove that $\sin 2\theta = 2 \sin\theta\ \cos\theta$

(ii) Two points A (1, 4) and B (9, 12) are on the parabola $Y^2 = 16x$. Show that the area enclosed between the Chord AB and the parabola is $\frac{16}{3}$ Sq. units.

(b) Evaluate : $\int_0^{\pi} \frac{xsinx}{1+cos^2 x}\, dx$

(c) (i) A force of magnitude 3 units in the direction of $2\bar{\imath} + \bar{3}\bar{\jmath} + 6\bar{k}$ acts at (1,1,1). Find its moment about the point (–1,2,3)

(ii) Prove that $(1+i)^8 + (1-i)^8 = 32$

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SHRI BHAGUBHAI MAFATLAL POLTYECHNIC

AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY- 2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | SEMESTER: III
MAXIMUM MARKS: 100 | PROGRAMME: IT/ CSE
COURSE: ELECTRONIC DEVICES & CIRCUITS | CODE: 168908

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) Attempt **ALL** Questions from Section I & Section II.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 Attempt Any Six of following. **(18)**

(a) Define current gain in common Base and common Emitter configuration of transistor and find relation between them.

(b) Draw energy level diagram of semiconductor. Define donor and acceptor levels.

(c) Define following terms:
(i)Peack inverse voltage (ii) Potential barrier (iii)Depletion regions

(d) Draw circuit of Π filter and briefly explain its working.

(e) Define following terms : (i) Ripple factor (ii) Efficiency
(iii) Transformer utilisation factor (TUF)

(f) Define P-type and N-type semiconductor material, define minority and majority charge carriers.

(g) Compare between half wave and full wave rectifier.

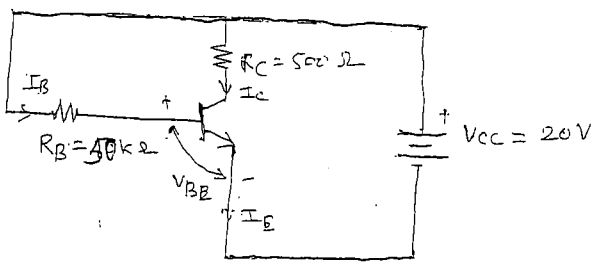
(h) Explain process of formation of potential barrier and PN junction.

Q.2 Attempt Any Four of following. **(16)**

(a) Draw V.I. characteristics of P.N. Junction explain forward and reverse biasing.

(b) Compare between different configurations of transistor.

(c) Determine the Q point of transistor circuit shown in below fig. The transistor has $\beta = 150$ and $V_{BE} = 0.7V$



$R_B = 50k\Omega$, $R_C = 500\ \Omega$, $V_{CC} = 20V$

(d) Define DC load line and operating point, explain its significance.

(e) Explain need of rectifier and filters. Draw half wave rectifier circuit.

(f) Derive the relationship between α, β *and* r current gain at CB, CE and CC configuration.

Q.3 Attempt Any Two of following. (16)

(a) Enlist the Regions on output characteristics of CE configuration. Draw input and output characteristic of CE configuration and explain.

(b) Draw Bridge full wave rectifier circuit, it`s waveforms and explain it`s working.

(c) Explain Zener diode As voltage regulator with help of example and diagram.

SECTION-II

Q.4 Answer any Six of following. (18)

(a) Discuss the term Thermal runway with respect to power amplifier.

(b) State and explain the classifications of power amplifiers.

(c) Draw CE amplifier circuit diagram and explain function of each component.

(d) Sketch a neat diagram of Schmitt trigger with it`s waveforms.

(e) Enlist the types of photo electric devices.

(f) Draw a diagram of photo multiplier tube and give it`s applications.

(g) List the application of multivibrators.

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(h) Explain the effect of cascading in amplifier stages on
(i) Bandwidth (ii)gain (AV)

Q.5 Answer Any Four of following. **(16)**

(a) Explain the functions of transistor as an amplifier.
(b) Sketch a circuit diagram of class A transformer coupled power amplifier and explain it.
(c) State need of multistage amplifier and give the types of coupling used to design multistage amplifier.
(d) Compare different types of multivibrators.
(e) Explain the operation of photo transistor with its characteristics.
(f) With the help of neat diagram and waveform explain the operation of Bistable multivibrator.

Q.6 Answer Any Two of following. **(16)**

(a) With a neat circuit diagram and frequency response explain the operation of RC coupled amplifier.
(b) Explain the construction and operation of LED.
(c) With a neat sketch explain the operation of complementary symmetry power amplifier.

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SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY- 2018

SEAT NO._____

TIME ALLOWED: 03 HOURS
MAXIMUM MARKS: 100
COURSE: Programming In C

SEMESTER: II
PROGRAMME: Computer Engg.
CODE: 168909

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) Attempt all questions.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of Mathematical and Steam tables and pocket calculator (non-prog.) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 **Attempt ANY SIX of following.** (18)

a) Draw a flowchart to find area of rectangle.

b) List any six keywords in C.

c) Define the following: (i) Keyword (ii) Variable (iii) Constant

d) Explain conditional operator with syntax & example.

e) State different data types supported by C.

f) State use and syntax of printf ( ) and scanf ( )

g) Differentiate between do while & while loop.

h) State use of break and continue statement.

Q.2 **Attempt ANY FOUR of following** (16)

a) Define algorithm and write an algorithm to accept marks of five subjects and find average.

b) Write a program to enter basic salary. Calculate gross salary with 5% DA and 15 % TA on basic salary. Display calculated gross salary.

c) Explain arithmetic and logical operators of C with their use.

d) State the use of increment and decrement operators. Also give difference between i++ and ++i statement with example.

e) Two numbers are input through the keyboard into two locations. Write a program to interchange contents of those two locations.

f) Write a program in C to find whether given number is prime or not.

Q.3 **Attempt ANY TWO of following** (16)

a) Write a menu driven program for following.

i) To find whether entered number is even or odd

ii) To display sum of two entered numbers

b) Write a program to display series of 11 to 30 in ascending and descending order. Also calculate sum of 11 to 30.

c) Debug following program and write only errors if any

i)
```
# include <stdio.h>
main ( )
{
    char x ;
    while  (x = 0; x< = 255; x++)
     Printf ("\n character is % c", X);
}
```

ii)
```
# include <stdio.h>
void main ( )
{
    int  suite = 0;
    switch (suite)
{
     case 0; printf("club")
     case 1; printf("Diamond");
}
}
```

SECTION-II

Q.4 **Solve ANY SIX out of EIGHT** (18)

(1) What is pointer? Enlist the benefits of using pointer?

(2) Enlist different string handling functions & explain anyone using suitable example.

(3) Describe the limitation of get char ( ) & scanf ( ) functions for reading the string.

(4) Explain the use of following pointer operator : (i) & (ii) *

(5) How to declare & initialize character array?

(6) Differentiate structure & Union.

(7) Write a program to print reverse of string without using string handling function.

(8) Write a program to scan & print elements of 2 dimensional matrix.

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Q.5 **Solve ANY FOUR out of SIX** (16)

(1) Explain "Nesting of Functions" using suitable example.

(2) Write a program using function to search a given number form the list of 5 numbers. Print proper message for number found / not found (Note : scan the numbers from users)

(3) Explain following structure concepts:

(i) Defining structure

(ii) Declaring initialization

(iii) Structure initialization

(iv) Accessing structure members

(4) Using suitable example, explain "pointers as function argument".

(5) Write a program to perform following operation: C = A+B where A, B, & C are one –dimensional array.

(6) Write a program to demonstrate the concept of call by reference.

Q.6 **Solve ANY TWO out of SIX** (16)

(1) Define the term Recursion. Write a `c' program to calculate factorial of a number using recursion and explain the steps of execution.

(2) Enlist different categories of function. Explain any two with suitable example programs.

(3) Write a `C' program using array of structure to scan employee information like name, employee number, salary for 3 employees & display the information.

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SHRI BHAGUBHAI MAFATLAL POLTYECHNIC

AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY-2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | SEMESTER: I/ II

MAXIMUM MARKS: 100 | PROGRAME: COMPUTER/INFORM.TECH.

COURSE: COMMUNICATION SKILLS | CODE: 168910

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) Attempt **ALL** questions from Section-I and Section-II.
(3) All questions are compulsory.
(4) Illustrate your answers with neat sketches, wherever necessary.
(5) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(6)Figures to the right indicate full marks.
(7) Assume suitable additional data, if necessary.

SECTION-I

Q.1 **Solve Any Six of the following questions** (18)

(a) Define Feedback. Enlist types of Feedback.
(b) Discuss any two objectives of Communication.
(c) Give advantages and disadvantages of oral communication.
(d) What are physical barriers? Enlist types of physical barriers.
(e) Explain the upward communication network.
(f) Explain the role of 'silence' in effective communication.
(g) 'Good Communication is good business' Explain.
(h) Explain Netiquettes.

Q.2 **Attempt Any Four of the following questions** (16)

(a) What is communication? Discuss cycle of communication.
(b) Discuss the downward and grapevine communication.
(c) Mark the stress in the following words:
(i) Fuse box (ii) maintain (iii) Referee (iv) Mercy
(d) Explain eye contact, gestures and smile.
(e) Do as Directed:
(i) If you require any further information. Please contact me.(Rewrite using 'should')
(ii) I was doing my homework. He came to meet me.(Rewrite using'when')
(iii) He works really hard (Rewrite in the present perfect tense)
(iv) When I was in the college. I would visit the library regularly (Rewrite using 'used to')
(f) Explain in brief horizontal or lateral network.

Q.3 **Attempt Any Two of the following questions:** (16)

(a) Discuss linguistic and socio-cultural barriers.
(b) What is no-verbal communication? Discuss its features and importance.

Q.3 (c) Write a paragraph on any one of the following:

(i) 07 April : Worlds Health Day
(ii) 12 January : National Youth Day
(iii) Make in India

SECTION-II

Q.4 **Answer Any Three out of Five** **(18)**

(a) Grapevine as a means of communication.
(b) What are the 7Cs of good writing?
(c) Explain the internet as a means of communication.
(d) Explain the cycle of communication.
(e) What is technical jargon? Explain with examples.

Q.5 Answer Any four out of Six (16)

(a) Write a note on the types of reports.
(b) What are linguistic barriers?
(c) Explain Netiquettes.
(d) Write a letter to Hazlite Stationary & Co. enquiring about the terms of business for the purchase of exquisite stationary for your employees.
(e) Write a letter of complaint to Laxmi Engineering Works on the issue of faulty Machinery delivered to your Company
(f) Write a letter to the Editor of outlook magazine on your views regarding the pros and cons of online shopping.

Q.6 **Answer Any Two out of Three** **(16)**

(A) Read the following comprehensions and answer the questions given below passage:

(a) In the passage, 'autism 'is described as : (01)
(i) a disease (ii) a physical handicap (iii) brain disorder (iv) Sleep disorder
(b) What is the central characteristic that distinguishes an autistic child from a normal child? (01)
(c) Who are 'sanants'? Do they read normal lines? Quote a sentence from the passage in support of your answer. (01)
(d) What are some of the reasons for violent behaviour in autistic children? (01)
(e) What are the 'sonsory' difficulties faced by autistic children? Explain with an example from the passage. (01)
(f) How does Temple Grandin describes herself ? Why ? (01)
(g) Write the verb form of : (01)
(i) Interaction (ii) Communication (ii) Conversation (iv) Perception
(h) Find the opposites of the given words for the passage (01)
(i) Ability (ii)Competent

Para on separate page No.3

168910

Autism Spectrum Disorder is a complex, lifelong disorder of brain development marked by difficulties in social interaction, verbal and non-verbal communication and repetitive behaviours. Simply put, the individual has difficulty in understanding the rules of social behaviour that most of us seem to learn very naturally through observation and imitation and just being part of a social group. For example, a typically developing four year old knows perfectly well that she is not supposed to snatch a toffee from her two year old sibling. Even if she does so, she will probably cast a furtive glance towards her mother fully expecting a frown or a scolding. Understanding the mental states of other and orienting our own behaviour accordingly denotes what psychologist call a 'theory of mind'. It is this fundamental difficulty in social understanding that characterizes the autistic condition. Autism is a 'spectrum' disorder whose severity and intensity is highly variable. Some individuals may be so mildly affected that they may pass off in society as being merely odd or eccentric; others may have such severe difficulties that they may require care all their lives. There is a widespread belief that people with autism have extraordinary talents in areas like music or math, a perception reinforced by popular films and fiction, but these 'savants', as they are termed, form a miniscule percentage of the autistic population. Despite the extraordinary abilities in certain areas, they may have great difficulties in functioning in other aspects of daily life like going to the store to buy a loaf of bread or making polite conversation.

One of the early 'warning signs' that a child may have autism is delayed speech or development of speech patterns that are not 'meaningful' in nature. For instance, in the case of R, we saw that the child could recite rhymes and jingles. But he could not tell his parents when he felt hungry or thirsty or respond to their speech meaningfully. Due to their inability to make themselves understood and difficulties in communicating, children with autism may often throw temper tantrums, scream, cry, hit out at others or even engage in self injurious behaviour like head banging, hand biting etc. The child is assumed to be a 'spoilt brat' and the parents as over-indulgent or incompetent. The reality, of course is quite different.

People with autism also experience 'sensory difficulties' owing to their neurological problem. In other words, because they are 'wired' differently, they may experience very different reactions to sensory stimuli like touch, heat or cold, sounds, smells etc. Many children hate being held or cuddled, others relish it. A child I know can 'hear' the sound of an approaching airplane half a minute before anyone else. And one child is so terrified at the sound of bursting crackers, that his family has to retreat to the quiet of the hills each Diwali! The combination of communication and sensory difficulties and the inability of people around them, to understand how chaotic and confusing 'our' world may appear to them, have been beautifully summed up by Temple Grandin, a very able and successful woman with autism. 'An Anthropologist on Mars', is how she describes herself!

(B) Paragraph writing (08)

(i) Online shopping (ii) Corruption

(C) Write an investigation report on causes of students absenteeism in festive days. (08)

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168910

Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC
AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY 2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | SEMESTER: III / II
MAXIMUM MARKS: 100 | PROGRAMME: CSE/IT

COURSE: Digital Electronics | CODE: 168912

INSTRUCTIONS:
(1) Answer to the two sections must be written in separate answer books.
(2) All questions are compulsory.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of pocket calculator (non-programmable) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q. 1 **Attempt ANY SIX** **(18)**

a) Perform multiplication $(01111111)_2$ by $(00000101)_2$
b) Find 2's complement of $(01100111)_2$
c) Define & give example Odd parity & Even parity.
d) Classify the logic families.
e) State commutative & associative law.
f) Draw the circuit diagram of half adder using basic logic gates.
g) Illustrate with examples
   i) Binary to Grey Converter
   ii) Grey to Binary Converter
h) List the applications o multiplexers.

Q.2 **Attempt any Four** **(16)**

a) Compare CMOS & TTL logic families.
b) Perform using 2's compliment method.
   i) 48 – 23 ii) 23 - 12
c) Minimize using K map and realize it using the basic gates.
   $Y = \sum m\,(1,3,5,9,11,13) + d\,(2, 4)$
d) Discuss 7 bit hamming code with example.
e) Enlist the I/p & O/p parameters of logic families.
f) Draw & Explain along with the truth table 1 : 4 demultiplexer.

Q.3 **Attempt any two** **(16)**

a) i) Draw full adder using two half adder
   ii) State De Morgan's theorem using truth table.
b) Design 16:1 multiplexer using 4:1 multiplexers. Describe the working.
c) With a neat diagram explain the function of TTL Nand gate.

SECTION – II

Q. 4 **Solve ANY SIX** **(18)**

1) Define FLIP FLOP. Write its applications.
2) Compare FLIP FLOP and registers. Give classification of register.
3) Draw S.R. FLIP FLOP. Write its truth table.
4) Briefly explain various modes of shift register.
5) Define counters and its types.
6) Explain the memories based on physical characteristics.
7) Draw 3 bit Asynchronous down counter
8) List application of IC 555 time.

Q.5 **Solve ANY FOUR** **(16)**

1) Draw the circuit of J.K. flip, write its truth table and define race around condition.
2) With neat diagram explain the operation of 4 bit parallel in serial out register.
3) Compare static and dynamic RAM.
4) Draw IC555 timer as monostable multivibrator. Draw and explain waveform.
5) Explain with diagram 3 bit ring counter using D Flip Flop.
6) Design T Flip Flop, write its truth table. Compare it with D flip flop.

Q.6 **Solve any two** **(16)**

i) Discuss MS JK flipflop with waveform and truth table explain how race around condition is avoided.
ii) Draw and explain block diagram of IC555 timer.
iii) Draw and Explain 4 bit bidirectional shift register.

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Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC
AUTONOMOUS SEMESTER EXAMINATION APRIL / MAY 2018

SEAT NO._____

TIME ALLOWED: 03 HOURS **SEMESTER: III**
MAXIMUM MARKS: 100 **PROGRAME: IT**

COURSE: SYSTEM PROGRAMMING **CODE: 168913**

INSTRUCTIONS:
(1) Answer to the two sections must be written in separate answer books.
(2) All questions are compulsory.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Figures to the right indicate full marks.
(5) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 Solve Any SIX out of Eight (3 marks each) **(18)**

1. Differentiate between multiprocessing and multiprogramming.
2. Enlist the functions performed by operating system.
3. Explain with example how physical address is calculated to access the data.
4. Explain an `Instruction' with example.
5. List the functions of Macros.
6. List the functions of Assembler.
7. Describe BALR and BCT instruction using example.
8. Perform shell sort on the following set of data :
   22, 10, 03, 27, 18, 01

Q.2 Answer ANY FOUR out of SIX (Four Marks each) **(16)**

1. List the components of system programming. Explain any one in brief.
2. Explain ANY TWO instruction format used in IBM 360/370.
3. Explain with the help of an example address modification using instruction as data.
4. Draw micro flowchart for IBM 360 `ADD' instruction.
5. Explain address calculation sort for the following data :
   22, 19, 01, 04, 35, 18
6. Explain `Macro' and its expansion with an example.

Q.3 Answer ANY TWO out of THREE (Eight marks each) **(16)**

1. Draw general machine structure and explain how the components work.
2. Draw the Pass1 and Pass2 flowchart of Macros.
3. Draw and explain the databases required in Pass1 and Pass2 Assemblers.

SECTION-II

Q.4 ANY SIX out of EIGHT (THREE marks each) **(18)**

a) Explain use of ESD, TXT, RLD cards used in loader.
b) Give importance of HLL?
c) Explain dynamic loading.
d) What is storage assignment in compilers general model?
e) Explain the term Relocating loader.
f) Describe overlay structure?
g) State the advantages of P-code compiler?
e) Give advantages of HLL over assembly language?

Q.5 ANY FOUR out of SIX (FOUR marks each) **(16)**

a) Explain Dynamic linking with example.
b) Describe function of interpretation phase of compiler.
c) Explain compile and go loader & disadvantages of it.
d) Describe extensive data types in HLL.
e) Define transfer vector & relocation bit.
f) Explain `Asynchronous Operation'.

Q.6 ANY TWO out THREE (EIGHT marks each) **(16)**

1) Explain lexical phase? Syntax phase in compilation process.
2) Explain absolute loader with design.
3) Discuss function modularity & flexibility in HLL.

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Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLTYECHNIC

AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY- 2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | SEMESTER: III

MAXIMUM MARKS: 100 | PROGRAMME: COMPUTER ENGG.

COURSE: PROGRAMMING IN C ++ | CODE: 168914

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) Attempt **ALL** Questions from Section I & Section II.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 **Attempt Any Six out of Eight** **(18)**

(a) Discuss the advantages and disadvantages of inline function.
(b) Distinguish between objects and classes.
(c) Define destructor with an eexample.
(d) Explain conditional operator using example.
(e) Compare break and continue statement.
(f) Explain how the data and functions are organised in oops?
(g) State the characteristics of procedure oriented programming.
(h) Define keyword. Give the list of keywords in C++

Q.2 **Attempt Any Four out of Six** **(16)**

(a) Enlist the types of constructors and explain parameterized constructor with example.
(b) Explain the role of static member function in oop with suitable example.
(c) Describe type conversion with suitable example.
(d) Explain the use of array of objects in C++
(e) Discuss function overloading with its syntax.
(f) Explain the concept of objects as function argument with suitable example.

Q.3 **Attempt Any Two out of Three** **(16)**

(a) Explain concept of (i) Call by value (ii) Call by reference
Using suitable example.
(b) Write a C++ programme to define class employee having empid, empname and basic salary as class members. Read the data of five employees and display employee details of employee having basic salary > 5000.
(c) Write a programme to find the square of a given number and the square of the sum of given three numbers by using function overloading.

SECTION-II

Q.4 **Answer Any Six** **(18)**

(a) Write steps involved in overloading of operator.
(b) Write a C++ program to find the length of entered string using pointer.
(c) Explain abstract class with suitable example.
(d) What is static member function? How is it declared?
(e) State the difference between Macro and Inline function.
(f) Explain friend function with suitable example.
(g) What is virtual base class ? Describe with suitable example.
(h) State any two types of memory allocation in detail with example.

Q.5 **Attempt Any Four** **(16)**

(a) Explain generic function using suitable example
(b) Draw and explain multiple inheritance with suitable example.
(c) Explain relationship between "Pointer and Array "and "Pointer and function "
(c) What is nesting of member classes?
(d) Write exception in detail with same example.
(e) Illustrate purpose of protected specifiers in C++

Q.6 **Attempt Any Two** **(16)**

(a) Illustrate how to overload unary and binary operator using C++ programme.
(b) Write a programme to declare a class "student " consisting of data member stud-name, Roll No and Gender. Write programme with member function accept ( ) to accept and display ( ) to display the data for four students. Using pointer.
(c) Write a program for runtime polymorphism using virtual function with suitable example.

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Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLTYECHNIC
AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY,2018

SEAT NO._____

TIME ALLOWED: 03 HOURS
MAXIMUM MARKS: 100
COURSE: DATA STRUCTURE

SEMESTER: III
PROGRAME: COMPUTER ENGG.
CODE : 168915

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) Attempt all questions each from Section I & Section II.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

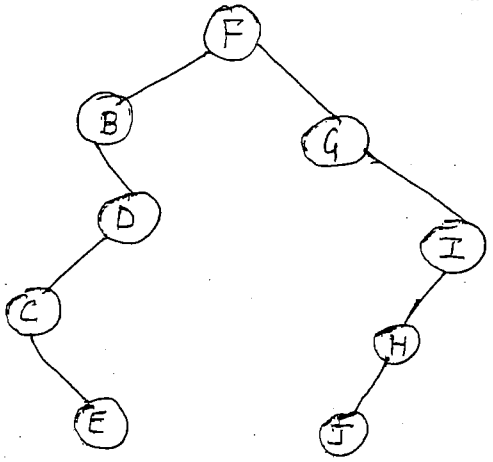
SECTION-I

Q.1 **Attempt Any Six out of Eight** (18)

(a) Classify the various types of data structure with example of each.
(b) Explain recursion with a suitable example.
(c) Describe priority queue and declare the structure for the node of a priority queue.
(d) Write the advantages of a linked list over an array.
(e) Discuss the creation of a singly linked list with the help of diagram.
(f) Define (i) Complete binary tree (ii) Binary search tree
(g) Describe doubly linked list and write the structure of its node.
(h) Compare LL and RR rotation in AVL tree.

Q.2 **Answer Any Four out of Six** (16)

(a) Convert the following infix expression in its equivalent prefix and postfix form. $A + \left(B * C - \left(\frac{D}{E} \uparrow\right) * G\right) * H$
(b) Give an algorithm to insert and delete an element in an array.
(c) List the operations on a stack and write a C snippet for each.
(d) Write an algorithm to inset an element after a given node in Doubly Linked List.
(e) For the below given binary tree, write the preorder and postorder traversal sequence. Also write the sequence of preorder and postorder traversal.



168915

(f) Write an algorithm to search a particular element in a singly unsorted linked list.

Q.3 **Answer Any Two out of Three** **(16)**

(a) Evaluate the below given postfix expression with the help of a stack AB + CD −/ where A= 2, B = 3, C= 1, D=5

(b) Draw the tree T, supposing the following 8 numbers are inserted in order into an empty Binary Search Tree.Show each step 50, 33, 44, 22, 77, 35, 60, 40 ,write on algorithm to insert on element into binary search tree.

(c) Write a C program to create a queue using linked organisation and perform insert, delete and display operation on it.

SECTION-II

Q.4 **Answer Any Six out of Eight** **(18)**

(a) Explain adjacency matrix and path matrix with the help of a graph.

(b) Define hashing Use the hash function f $[(x * 10)/2]$ to insert 125 at its location.

(c) Write various asymptotic notation and explain how to determine the efficiency of an algorithm.

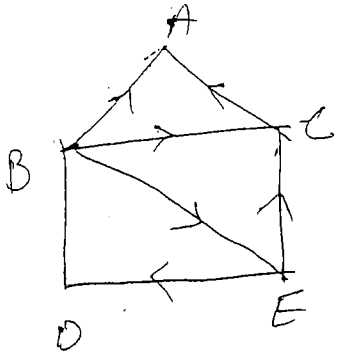
(d) Sort following numbers using insertion sort 10, 2, 35, 60, 75, 5, 99, 70

(e) Define : (i) Weighted graph (ii) Directed graph (iii) Multi graph

(f) Give various applications of file structure.

(g) Describe Indexed Sequential file.

(h) Write the adjacency list for the following given graph.



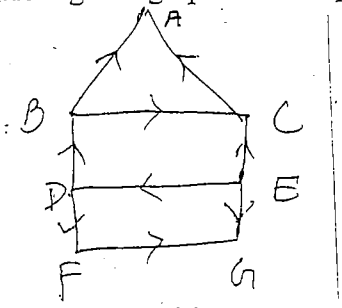
Q.5 **Answer Any Four out of Six** **(16)**

(a) Sort the following numbers using Radix sort. Show each pass. 25, 11, 101, 28, 150, 8, 7

(b) Write an algorithm for selection sort and explain with a small example.

(c) Compare Hieraraical Network and relational database.

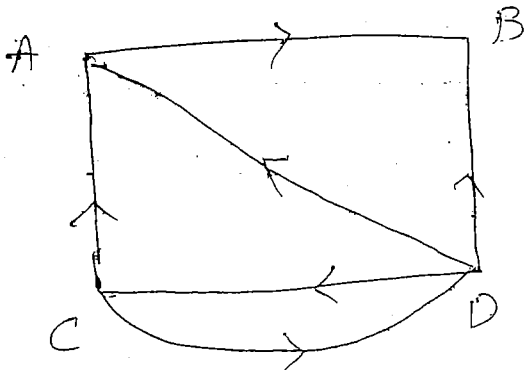
(d) For the below given graph find the path matrix.



(e) Explain the DFS algorithm to traverse all nodes of a graph.

168915

(f) For the below given graph find the shortest path matrix with the help of Dijstras algorithm.



(16)

Q.6 **Answer Two out of Three**

(a) Write a C program to sort 'n' numbers using merge sort.

(b) Write an algorithm for Breadth first search and explain it with example.

(c) Explain the typical software organisation in file management system.

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168915

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLTYECHNIC

AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY- 2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | SEMESTER: III/IV

MAXIMUM MARKS: 100 | PROGRAMME: I.T/ COMP

COURSE: DATABASE MANAGEMENT SYSTEM | CODE: 168918

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) Attempt **ALL** Questions from Section I & Section II.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 **Solve Any Six of following** **(18)**

(a) Discuss the merits and demerits of Hierarchical data model.
(b) Discuss disadvantages of file system as data storage medium.
(c) Describe Foreign key constraint.
(d) Define term. Give Needs of Data Abstraction and explain briefly.
(e) With the help of examples, explain terms Data Definition, Data Manipulation and Data Control Languages.
(f) Write the aggregate functions in SQL with proper examples.
(g) Explain briefly fixed length and variable length records with respective file organisation.
(h) Give characteristics of E-R model.

Q.2 **Solve Any Four of following** **(16)**

(a) Explain natural and Cartesian Join with syntax and suitable example query.
(b) With suitable example describe 'having 'and 'distinct' clause. How is 'having' different from 'where' clause?
(c) With the help of diagram explain generalization with respect to database. How is it related to aggregation?
(d) Write with suitable example, the constraints applicable on DB tables.
(e) Consider a following table-Employee(Emp-id, First _name, Last _name)write the SQL query for-
  (i) Get First_ name from Employee table in upper case
  (ii) Select first 3 characters of Last _name from Employee table
  (iii) Get length of Frist_ name from Employee Table
(f) Consider a suitable students` Table structure: Write SQL queries for –
  (i) Find all students whose names start with 'M '
  (ii) Find all students born after year 1985
  (iii) Write SQL statements to remove the data from table and to remove the schema.

Q.3 **Write Any Two** **(16)**

(a) Explain different operation to retrieving Data, Sorting Data and grouping data with help of suitable examples.

(b) Explain in detail the physical storage media.

(c) Give the roles of DBA? Write in detail various Database Users and roles.

SECTION-II

Q.4 **Solve Any Six out of Eight.** **(18)**

(a) Compare shadow based recovery scheme with log based recovery scheme.

(b) Explain the purpose of check point mechanism.

(c) Explain the rules that can be inferred using Armstrong Axioms.

(d) What are ACID properties of a transaction? Explain each property in brief.

(e) Since every conflict serializable schedule is view serializable why do we emphasize conflict serializability rather than view seriaziability?

(f) Explain the difference between three storage types of volatile non-volatile and stable in terms of I/o cost.

(g) Describe term Cascade less schedule why is cascade less a desirable property.

(h) During its execution a transaction passes through various phases. Until it commits or aborts .List all possible sequence of states through which a transaction may pass. Explain why each state may occur?

Q.5 **Solve Any Four out of Six.** **(16)**

(a) Describe the process of query processing and optimization.

(b) With suitable example explain the concept of deadlock. What techniques can be used to avoid deadlock?

(c) Describe the working of lime stamp ordering protocol in detail.

(d) Give the difference between implicit and explicit locking with respect to granularity locking

(e) Enlist the desirable properties of decomposition. What do you mean by dependency preservation?

(f) Explain the phantom phenomenon. Why can this phenomenon lead to an incorrect concurrent execution despite the use of two phase locking protocol?

Q.6 **Solve Any Two out of Three** **(16)**

(a) Define the term normalization. Enlist and describe the various normal forms and how to achieve those normal forms with the help of suitable example.

(b) Describe two phase locking rigorous two phase locking and two phase locking. Compare and state the drawbacks and benefits of each method of backing.

(c) Give an example of serializable schedule. What is a recoverable schedule? Are there any circumstances in which it would be useful to allow non-recoverable schedules?

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY- 2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | SEMESTER: IV
MAXIMUM MARKS: 100 | PROGRAME: CSE/IT
COURSE: FUNDAMENTAL OF OPERATING SYSTEMS | CODE: 168916

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) Attempt all questions each from Section I & Section II.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 Attempt Any Six out of Eight **(18)**

(a) List the services of operating systems for process management.
(b) Discuss the role of disk controller and drivers in file management.
(c) Explain the concept of binary semaphore.
(d) Give the difference between Process and Thread.
(e) Discuss single process monitor results in low CPU utilisation and memory capacity.
(f) List the classical programmes used in concurrent programming.
(g) What is convoy effect?
(h) Explain the conditional critical region (CCR) considered as good instruments for describing and designing process synchronisation in real time systems.

Q.2 Attempt Any Four out of Six **(16)**

(a) Explain any one method of Fire Allocation.
(b) Discuss address translation in paging.
(c) Explain process control block and enlist its contents.
(d) Discuss the first algo. For mutual exclusion and discuss its advantages.
(e) Discuss the fixed partitioning methods for memory assignment.
(f) Compare and contrast page replacement algorithm: - FIFO and LRU.

Q.3 Attempt Any Two of out Three **(16)**

(a) Differentiate between paying and segmentation. Explain least recently used page replacement policy (LRU)
(b) What is mutual exclusion? Explain producer / consumer problem with semaphore.
(c) Write briefly notes on :
  (i) Hardware support for mutual exclusion
  (ii) Multi level 'Q' scheduling

SECTION-II

Q.4 **Solve Any Six out of Eight.** **(18)**

(a) Enlist various biometric authentication techniques. Explain how they prove uniqueness of the authenticated party.

(b) What are the stages of virus? Exploit.

(c) Explain 'FLYNN`S' classification of multiprocessor system.

(d) Write the steps of RSA algorithm.

(e) Enumerate the different types of multiprocessor operating system.

(f) Explain the following term with respect to access control matrix
(i) tickets (ii) Capabilities

(g) Write in brief about the "Wound and wait" and 'wait and die 'scheme in distributed concurrency control.

(h) What is a bit map what role does it pay in space indexed allocation of sick.

Q.5 **Solve Any Four out of Six** **(16)**

(a) What are different methods of non-caliginous allocation of disk space? Explain in detail chained and indexed allocation.

(b) With the help of neat diagram explain the cross bar connection in multiprocessor systems. Compare the same with hypercube connection.

(c) Explain 'wave scheduling' in detail where and how is it used?

(d) Justify the security of digital signature algorithm.

(e) Differentiate between mandatory access control and discretionary access control. Describe access control matrix.

(f) What are distributed operating system? What is the importance of lampposts algorithm in distributed systems? Explain the working of Lamport algorithm.

Q.6 **Solve Any Two out of Three** **(16)**

(a) With the help of a neat diagram explain the working of 'CHAN6 & ROBERT algorithm for the election of successor made in distributed systems.

(b) Using a neat diagrams describe and compare the working of hypercube connection, multistage connection.

(c) What are the different types of penetration attempts made to breach security in computer systems with the help of a neat diagram explain with working of Lattice model of Information flow.

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLTYECHNIC

AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY-2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | SEMESTER: III

MAXIMUM MARKS: 100 | PROGRAME: INFORMATION TECH

COURSE: PROGRAMME IN JAVA | CODE: 160901

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) Attempt **ALL** questions from Section-I and Section-II.
(3) All questions are compulsory.
(4) Illustrate your answers with neat sketches, wherever necessary.
(5) Use of Mathematical and Steam tables and pocket calculator (non-prog.) is permissible.
(6)Figures to the right indicate full marks.
(7) Assume suitable additional data, if necessary.

SECTION-I

Q.1 **Attempt Any Six out of Eight** **(18)**

(a) Justify the statement "Java is a platform Independent Language.
(b) Define the following terms : (i) Class (ii) Object reference
(c) With suitable example explain the working of new operator in Java.
(d) Describe the process of Garbage Collection in Java.
(e) State the different applications of final keyword in Java.
(f) Give the significance of PATH and CLASSPATH variables in Java.
(g) Compare concrete class and abstract class.
(h) Enlist types of Inheritance available in Java. Write down applications of Inheritance.

Q.2 **Attempt Any Four out of Six** **(16)**

(a) Describe the following characteristics of Java : (i) Secure (ii) Robust
(b) Enlist access specifiers of Java and describe them in brief.
(c) Explain the concept of passing object as parameter and returning object from a method with suitable program.
(d) Explain the following keywords of Java: (i) Package (ii) this
(e) Compare method over loading and method overriding with suitable programs.
(f) Write a choice based program to perform +,−, * & / operations on two numbers entered from keyboard.

Q.3 **Attempt Any Two out of Three** **(16)**

(a) Write a Java application to implement a super class person. Derive two classes student and faculty from person class. Person class has id, name, email and date of birth instance members. Student has discipline and year of admission instance members. Faculty has experience and basic salary instance members. Faculty class also defines one member method named calculate salary ( ) which calculates total salary from the given allowances. Faculty is getting the HRA of 12% of basic pay, medical allowance of 8% of basic pay and Travelling allowance of Rs. 1000/-

Write class definitions, constructors and appropriate methods for all classes. Supply a test program that creates one instance of each derived class and test all methods.

(b) Explain " One Interface Multiple Methods " way of Java with suitable example program.

(c) Define a class named Book, having instance members i.e. title, author, publisher and price. Write a Java program to instantiate some objects using array of objects concept. Provide addBook ( ), display Books( ) and searchBook( ) method functionalities in the same class and test them all.

SECTION-II

Q.4 **Attempt Any Six out of Eight** **(18)**

(a) Explain the terms with program (i) throw (ii) catch

(b) Explain the following methods with example
(i) index Of( ) (ii)compare To ( )

(c) Explain different layout manager available in Java. Describe any one in brief.

(d) Write a program to display name and priority of a main thread. Modify there parameters and display again.

(e) Discuss the role of Graphics Class in Java.

(f) Define the following terms: (i) Event class (ii) Event

(g) Explain to string ( ) method with suitable program.

(h) Write a Java Programme to handle exception related to array index going beyond the limit.

Q.5 **Attempt Any Four out of Six** **(16)**

(a) Write an applet to play an audio clip. The audio to be played should be passed as a parameter to applet.

(b) Explain the working of following methods : (i) Sleep ( ) (ii) notifyAll ( )

(c) Draw hierarchy of AWT classes. Explain working of each class in brief.

(d) Explain the advantage of synchronized keyword with suitable program.

(e) Describe Event Delegation Model.

(f) Write a program to find out square root of a given number. Take user input through buffered stream.

Q.6 **Attempt Any Two out of Three** **(16)**

(a) Explain skeleton Architecture of an Applet. Write an applet to draw the following objects

(b) Create two threads each thread should be provided with one string. Write a Java Program to display numbers of characters and words of string by each thread. Also display total count.

(c) Explain the following terms with suitable example programs :
(i) Finally keyword (ii) Adapter class

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SHRI BHAGUBHAI MAFATLAL POLTYECHNIC

AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY- 2018

SEAT NO:_____

TIME ALLOWED: 03 HOURS | SEMESTER: III

MAXIMUM MARKS: 100 | PROGRAMME: INFO. TECH

COURSE: COMPUTER PERIPHERALS and DEVICES | CODE: 160904

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) Attempt **ALL** Questions from Section I & Section II.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 **Attempt Any Six of following .p** **(18)**

(a) What is mouse? Enlist the types of mouse.

(b) With the help of diagram, explain working of joystick.

(c) Draw functional block diagram of flatbed scanner.

(d) Give preventive maintenance for keyboard.

(e) List any three advantages of Laser Printer over dot matrix printer.

(f) Define following terms w.r.t. LCD:

(i) Resolution

(ii) Refresh rate

(iii) Response time

(g) Write the working of seven segment display.

(h) What is measurement? Give applications of measurement system.

Q.2 **Attempt Any Four of following.** **(16)**

(a) Describe basic characteristics of measuring devices.

(b) Describe physical properties of tape drive.

(c) With a neat diagram describe working of capacitive switch in keyboard.

(d) Explain laser printer along with its advantages and disadvantages.

(e) What role does a card Reader play? Explain its working.

(f) Write a note on light pen.

Q.3 **Attempt Any Two of following.** **(16)**

(a) Compare between CGA, VGA and EGA.

(b) What are different types of handheld devices? Describe any two in details.

(c) List the different hard disk drive components and explain their functions.

SECTION-II

Q.4 **Solve Any Six out of Eight.** **(18)**

(a) Differentiate DC voltmeter and DC Ammeter in construction.

(b) Define Oscilloscope. List its application.

(c) What is modem? Where it is used?

(d) The full scale deflection current of a moving coil meter is 200 . The internal resistance of the meter is 2 KΩ. Find the maximum voltage meter can read directly.

(e) Compare oscilloscope and spectrum analysis.

(f) Explain synchronous and Asynchronous serial transmission.

(g) What is the function of delay line in oscilloscope?

(h) Define Emulators.

Q.5 **Solve Any Four out of Six.** **(16)**

(a) Draw block diagram of Oscilloscope and explain its functioning.

(b) Draw and explain RS 232c interface with TTL.

(c) Explain the working principle of Galvanometer with suitable diagram (no derivation required)

(d) Draw block diagram of spectrum analyser and explain its working.

(e) Explain in brief working of Dual Bean and Dual Trace Oscillation.

(f) Explain how we can increase frequency range of signal generator?

Q.6 **Solve Any Two out of Three.** **(16)**

(a) With neat diagram explain the opening principle of PMMC also show deflection produced is directly proportional to current.

(b) Explain working of storage oscilloscope with neat diagram.

(c) Write short note on IEEE488.

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SHRI BHAGUBHAI MAFATLAL POLTYECHNIC
AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY-2018

SEAT NO._____

TIME ALLOWED: 03 HOURS **SEMESTER: IV**
MAXIMUM MARKS: 100 **PROGRAME: INFORMATION TECH.**
COURSE: DATA COMMUNICATION AND NETWORKING **CODE: 160907**

INSTRUCTIONS:
(1) Answer to the two sections must be written in separate answer books.
(2) Attempt **ALL** questions from Section-I and Section-II.
(3) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(4) Illustrate your answers with neat sketches, wherever necessary.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) The student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 **Attempt Any Six out of Eight** **(18)**

(a) For n devices in a network, what is the number of cable links required for a mesh, ring, bus & star topology?

(b) What are the three criteria necessary for effective & efficient network?

(c) Compare TCP/ IP & OSI reference model.

(d) How can a composite signal be decomposed into its individual frequencies.

(e) List three different technique in serial transmission & explain the differences.

(f) Describe refraction & reflection in fibre optic cables?

(g) How does sky-propagation differ from line-of sight propagation?

(h) List important features of bridge. Enlist types of bridges also.

Q.2 **Attempt Any Four out of Six** **(16)**

(a) Using suitable diagram, Explain CM & CMTS of cable TV network.

(b) What is LATA? Explain types using suitable diagram.

(c) Compare & contrast a traditional cable network with hybrid fiber coaxial- network.

(d) Name Three types of transmission impairment.

(e) Give the difference between port address, logical address & physical address?

(f) Describe five components of a data communications system.

Q.3 **Attempt any Two out of Three.** **(16)**

(a) Explain TCP/IP reference model with suitable diagram. What is encapsulation of PDU?

(b) Explain tow formulas developed to calculate Data rate?

(c) List types of transmission media. Explain any two transmission media types using suitable diagram.

SECTION-II

Q.4 **Attempt any Six.** **(18)**

(a) Describe TCP used in transport layer.

(b) Explain LAN with diagram.

(c) Why is ARP request broadcast but ARP reply is unicast.

(d) What is address tables?

(e) How the communication is done in FTP?

(f) What is time-division multiple access?

(g) Define-
(i) Unicast (ii) Multicast (iii) Broadcast
Give one example for each.

(h) Define TELNET.

Q.5 **Attempt any Four.** **(16)**

(a) Draw & explain the working of bridges.

(b) Compare IPv_4 and IPv_6 (four points)

(c) What is NIC? State three functions of NIC.

(d) Explain RARP.

(e) Explain virtual LANs.

(f) Describe the working of CSMA/CD protocol.

Q.6 **Attempt any Two.** **(16)**

(a) Explain OSI reference model with its layered structure.

(b) Describe Wi Fi repeater. State the situation under which repeater is necessary in network.

(c) With the help of suitable diagram, explain DHCP in detail.

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AUTONOMOUS SEMESTER EXAMINATION APRIL/MAY- 2018

SEAT NO._____

TIME ALLOWED: 03 HOURS | SEMESTER: IV

MAXIMUM MARKS: 100 | PROGRAME: INFORMATION TECH.

COURSE: COMPUTER GRAPHICS | CODE: 168917

INSTRUCTIONS:

(1) Answer to the two sections must be written in separate answer books.
(2) Attempt all questions each from Section I & Section II.
(3) Illustrate your answer with neat sketches, wherever necessary.
(4) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible.
(5) Figures to the right indicate full marks.
(6) Assume suitable additional data, if necessary.
(7) Student should read the name and code of the subject and confirm that the question paper received is as per subject registered.

SECTION-I

Q.1 Attempt any six of following. **(18)**

(a) Give the 3-D transformation matrix for –
i) Translation ii) Scaling

(b) Translate a polygon with coordinates A (2, 5), B (7, 10) and (10, 2) by 3 unit in x direction and 4 unit in y direction

(c) Scale the polygon with coordinates A (2, 5), B (7, 10) and C (10, 2) by 3 unit in x direction and 2 units in y direction.

(d) Write short note on – shearing transformation.

(e) List any two advantages and disadvantages of DDA line drawing algorithm.

(f) Define following coordinate systems-
i) Three dimensional Cartesian reference system.
ii) Polar coordinate system.

(g) Compare Vector Scan display and raster scan display (any three points).

(h) List any three advantages of interactive graphics.

Q.2 Attempt any four of following. **(16)**

(a) Find a 2D transformation of triangle P (1, 0), Q (0, 1), R (1, 1) by rotating 45^0 about the origin and ten translating one unit in x and y direction?

(b) Explain Homogeneous coordinates. Give its significance?

(c) Consider the line form (0, 0) to (4, 6). Use the simple DDA algorithm to rasterize this line.

(d) Discuss in brief the two types of circle drawing techniques with help of diagram.

(e) Write short note on-
i) Joysticks ii) Light Pen

(f) Explain Shadow-Mask technique for producing colour display.

Q.3 **Attempt any two of the following.** **(16)**

(a) Derive the 2D transformation matrix for rotation about an arbitrary point? Also perform a counter clockwise 45^0 rotation of triangle A (2, 3), B (5, 5), C (4, 3) about point (1, 1).

(b) Write an algorithm for midpoint ellipse drawing?

(c) Describe working of direct-view storage tubes with diagram? Also state its advantages and disadvantages.

SECTION-II

Q.4 **Attempt any Six of following.** **(18)**

(a) Define :-

i) Point clipping. ii) Line clipping. iii) Polygon clipping.

(b) List the advantages & disadvantages of Z-buffer algorithm.

(c) Give the properties of B-spline curve.

(d) Differentiate between window and viewport.

(e) Explain interior clipping and exterior clipping.

(f) Write the significance of dithering techniques in graphics.

(g) List advantages and disadvantages of half-toning.

(h) Give the applications of raster scan graphics.

Q.5 **Attempt any four** **(16)**

(a) Explain the process of viewing transformation.

(b) Describe the painter's algorithm for hidden surface removal.

(c) Explain constant intensity shading algorithm.

(d) Explain two types of inside test for polygon.

(e) Explain various techniques for character generation.

(f) Describe random access frame buffer with its advantages and disadvantages.

Q.6 **Attempt any two** **(16)**

(a) Describe various operations carried out on the segments. Write the algorithms for create & delete segments.

(b) Explain gourmand shading algorithm.

(c) Apply the Sutherland Cohen line clipping algorithm to clip a line P_1 (40, 15), P_2 (75, 45) against a window A (50, 10), B (80, 10), C (80, 40), D (50, 40).