Total No. of Printed Pages:2

SUBJECT CODE NO:- K-12

FACULTY OF ENGINEERING AND TECHNOLOGY

S.E. (All Branches) Examination Oct/Nov 2016

Engineering Mathematics -IV

(Revised)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
i. Questions numbers 1 and 6 are compulsory.
ii. Solve any two questions from remaining of each section.
iii. Figures to the right indicate full marks.
iv. Assume suitable data, if necessary.

Section A

Q.1 Solve any five:- 10

a) Find the analytic function $f(x) = u + i\vartheta$, whose imaginary part is $\vartheta = \sin hx \cos y$.

b) Find the harmonic conjugate of $u = 4xy + x + 1$.

c) Evaluate $\int_0^{1+\pi i} e^z dz$.

d) Evaluate $\int_{0,1}^{(2,5)} (3x + y)dx + (2y - x)dy$, along $y = x^2 + 1$.

e) Find the residue of $f(x) = \frac{1}{(z^2-1)^3}$ at each pole.

f) Find the image of the circle |Z| = 1, under the transformation W =$\log z$.

g) Solve $\frac{\partial^2 u}{\partial x^2} = 0$, where $u\ (0, y) = y^2$,and $u(l, y) = 1$.

OR

Find the z- transform of $K^2, K \geq 0$.

h) Solve $\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y}$, where $u\ (x, 0) = 4e^{-x}$.

OR

Find the z – transform of $f(K) = 4^K, K < 0$
$= 3^K, K \geq 0$

Q.2 a) If $u = a\ (1 + cos\theta)$, find ϑ so that $u + i\vartheta$ is analytic. 05

b) Evaluate $\int_c \frac{(e^z sin2z-1)}{z^2(z+2)^2} dz$ where c is $|z| = \frac{1}{2}$. 05

c) Solve$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$, subject condition $u(0, y) = 0$, $u(\pi, y) = 0$, $u(x, 0) = 100$ and u(x,∞)=0 05

OR

Find the z- transform of $\sin h\frac{K\pi}{2}$. 05

Q.3 a) Show that $u = e^x cosy + x^2 - y^2$ is harmonic. Find harmonic conjugate, also find corresponding analytic function. 05

b) Evaluate $\int \frac{z+2}{z} dz$, where c is left half of the circle |Z| =2. 05

c) Solve $\frac{\partial^2 y}{\partial t^2} = a^2 \frac{\partial^2 y}{\partial x^2}$, subject to the conditions $y(0, t) = y(l, t) = 0$, $y(x, 0) = 0$ and $\left(\frac{\partial y}{\partial t}\right)_{t=0} = \lambda x(l - x)$. 05

OR

Find the inverse Z – transform of $\frac{z^2}{z^2+9}$ 05

Q.4 a) Find the image of the circle |Z-3| = 5 under the transform W=$\frac{1}{Z}$. 05

b) Evaluate $\oint_c \frac{2Z+1}{Z^2-Z-2} dz$, where C is |Z| =3, by Cauchy residue theorem. 05

c) Solve $\propto^2 \frac{\partial^2 u}{\partial x^2} = \frac{\partial u}{\partial t}$, with the boundary conditions $\frac{\partial u}{\partial x}\ (0, t) = 0, \frac{\partial u}{\partial x}\ (l, t) = 0$ and $u(x, 0) = Kx$. 05

OR

Solve $Y_{K+1} - Y_{K-1} = u(k), y(0) = 0$, by Z- transform. 05

Q.5 a) Find the bilinear transformation which maps the points Z=0, $-i$, $2i$ into the points W= $5i$, ∞ , $\frac{-i}{3}$ respectively. 05

b) Expand $f(z) = \frac{z^2-1}{(z+2)(z+3)}$ in a Laurent's series for 2< |Z| < 3. 05

c) Evaluate $\int_0^{2\pi} \frac{d\theta}{13+12cos\theta}$, by residue theorem. 05

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Section B

Q.6 Solve any five:- 10

a) Find the Laplace transform of $\frac{\sin 4t}{t}$.

b) Find the Laplace transform of $\left[\frac{d}{dt}\left(t^3 e^{-3t}\right)\right]$.

c) Find the Laplace transform of $[a\cos^2 2bt]$.

d) Find the inverse Laplace transform of $\frac{1}{s}\left(\frac{s-a}{s+a}\right)$

e) Find the inverse Laplace transform of $\left[\frac{s}{(2s+1)^2}\right]$.

f) Find the inverse Laplace transform of $\frac{Se^{-2s}}{S^2+25}$

g) Find f(x) , if its Fourier sine transform is $e^{-a\lambda}$.

h) Find the Fourier transform of

$$f(x) = 0, \infty < x < a$$
$$= x, a \le x \le b$$
$$= 0, x > b$$

Q.7

a) Evaluate $\int_0^\infty \frac{e^{-t}\sin\sqrt{3t}}{t}\,dt$. 05

b) Find the inverse Laplace transform of $\frac{1}{2s}\log\left(\frac{s^2+36}{s^2+16}\right)$ 05

c) Solve $\frac{\partial u}{\partial t} = K\frac{\partial^2 u}{\partial x^2}$, subject to the conditions 05

1) u= 0 , when x =0, t $\ge$ 0
2) $u = e^{-ax}$, when t =0 , x > 0 and
3) $u(x,t)$ Is bounded.

Q.8

a) Find the Laplace transform of $e^{4t}\int_0^t t\cos t\ dt$. 05

b) Find inverse Laplace transform of $\frac{s}{s^4+8s^2+16}$ by convolution theorem. 05

c) Find the Fourier sine transform of $\cos hx - \sin hx$ 05

Q.9

a) Find the Laplace transform of periodic function. $f(t) = \left(\frac{\pi+t}{2}\right)^2, 0 < t < 2\pi\ and\ f(t) = f(t+2\pi)$. 05

b) Solve $\frac{d^2y}{dt^2} - 6\frac{dy}{dt} + 9y = t^2, e^{3t}, y(0) = 2, y'(0) = 6$ by Laplace transform method. 05

c) Solve the integral equation $\int_0^\infty f(x)\sin px\,dx = 1-p, 0 \le p \ge 1$ 05

0, P>1

Q.10

a) Express the following function in terms of Heaviside unit step function and hence find their Laplace transform. 05

$$f(t) = (t-a)^4, t > a$$
$$= 0, 0 < t < a$$

b) Solve $\frac{dx}{dt} + y = 0, \frac{dy}{dt} - x = 0, x(0) = 1, y(0) = 0$ 05

c) Find the Fourier transform of $f(x)$, where 05

$$f(x) = \cos x, if\ 0 < x < 1$$
$$= 0, \text{Otherwise.}$$

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Total No. of Printed Pages:2

SUBJECT CODE NO:- K-36

FACULTY OF ENGINEERING AND TECHNOLOGY

S.E. (CSE/IT) Examination Oct/Nov 2016

Microprocessors

(Revised)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) Question number 1 and 6 are compulsory.
ii) Attempt any two from remaining questions from each section.

Section A

Q.1 Attempt any five from the following. 10

(a) List the 16-bit segment registers used with register addressing mode by MOV, PUSH, SUB, MOVSB instruction.
(b) What determines the size of memory space that a processor can access?
(c) What is the propose of segment register in 8086 Microprocessor?
(d) Write any two instructions using register relative addressing mode.
(e) Identify addressing modes of following.
i) JMP NEAR PTR [Bx]
ii) MOV AX, FILE [BX+DI]
iii) MOV ARRAY [SI], BL
iv) MOV BL, DX
(f) What is real mode memory addressing?
(g) What is the difference between LT & NOP instruction?
(h) What is Macro?

Q.2 (a) Explain the use of special and general propose registers of 8086 micro processor with example. 08
(b) What is procedure? What is the use of procedure? Explain advantages. 07

Q.3 (a) Explain logical instructions of 8086 microprocessor with example. 08
(b) Write a program to find largest number from the array containing 15 elements. 07

Q.4 (a) What is the significance of flag register? Draw flag register for 8086 MP & explain the function of each flag. 08
(b) With suitable diagram explain microprocessor based personal computer system. 07

Q.5 (a) Explain static RAM and dynamic RAM. 08
(b) Explain machine control and miscellaneous instruction of 8086 microprocessor in detail. 07

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Section – B

Q.6 Attempt any FIVE from the following. 10

(a) What is the difference between Isolated I/O and memory Mapped I/O.
(b) What is the function of strobe and input buffer full signal.
(c) What is the function of queue status bits QsO and QS1 of 8086 microprocessor?
(d) What is flash memory?
(e) How to differentiate between minimum and maximum mode of 8086 microprocessor?
(f) What is the function of A1 and A0 pins of 8255 PPI?
(g) Give any 3 application of 8254 in personal computer system?
(h) Draw simplified diagram for read bus cycle of 8086 microprocessor.

Q.7 (a) Why Demultiplexing of buses is necessary for memory and I/O interfaces ,also illustrate how the buses are buffered for very large system. 08

(b) Why we need to decode addresses? Explain 74LS373 pin diagram . 07

Q.8 a) Explain different methods of interfacing I/O to the 8086 Microprocessor. 08

b) What is the need of bus controller in maximum mode system of 8086 microprocessor? Draw block diagram of 8088 bus controller and explain the function of 07

i) Command signal generator
ii) Control Logic

Q.9 (a) With suitable diagram explain basic output interface. 08

(b) With suitable example explain MODE 1 strobed input operation of 8255 PPI. 07

Q.10 a) Explain following modes of 8254 with suitable diagram: 08

1. Mode 0
2. Mode 2
3. Mode 3
4. Mode 4

b) What is I/O part address decoding? Explain decoding of 8 bit I/O address and 16 bit I/O addresses. 07

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Total No. of Printed Pages:2

SUBJECT CODE NO:- K-66
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E. (CSE/IT) Examination Oct/Nov 2016
Computer Graphics
(Revised)

[Time:Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B i) Q.N1 and Q.No.6 are compulsory.
ii) Solve any two questions from Q.2 to Q. 5 and any two questions from Q.7 to Q.10.
iii) Assume suitable data, if necessary.

Section A

Q.1 Answer the following. (Attempt any five) 10

a) What do you mean by computer Graphics and its application?
b) Discuss how world to screen coordinate mapping happens.
c) Define Affine Transformation.
d) Explain in brief image formation methodologies.
e) Define Random and Raster scan display.
f) Explain picking and its different modes.
g) Distinguish window port and view port.
h) What is RGB color model? Explain.

Q.2 a) Explain different types of imaging system with suitable example. 08

b) Write down and explain the details of camera specification in 3-dimensional API. 07

Q.3 a) List out the different open GL primitives, giving examples of each with suitable diagram. 08

b) What is meant by color formation? Explain additive and subtractive color, indexed color concept. 07

Q.4 a) What are the various classes of logical input devices that are supported by open GL? Explain the functionality of each of these classes. 08

b) Write open GL code to design following menu : 07

View
Go To →

FIRST PAGE
PREVIOUS PAGE
NEXT PAGE

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Q.5 a) Write explanatory note on current Transformation matrix. 08

b) Consider the square A(1,0) , B(0,0) , C(0,1) and D(1,1) . Rotate the square ABCD by 45^0 clockwise about A (1,0). 07

Section – B

Q.6 Answer the following .(Attempt any five) 10

a) What are the features that characterize 3-cimensional object?
b) What do you mean by viewing?
c) Define flat shading.
d) Explain frustum? Write function for specifying perspective camera view.
e) Define the term mesh.
f) What is antialiasing ?
g) Define following : i) Dithering ii) Halftoning
h) Write a short note on angle of reflection and angel of incidence.

Q.7 a) What is transformation? Explain functions used in open GL for all types of transformations with syntax. 08

b) Explain polygon filling using scanline polygon fill algorithm. 07

Q.8 a) Briefly discuss the following along with the functions used for the purpose in open GL . 08

i) Perspective projection
j) Orthogonal projection

b) Discuss in brief classical and computer viewing with suitable example . 07

Q.9 a) Explain phong lighting model. Indicate the advantages and disadvantages. 08

b) What are different polygon clipping techniques? Explain any one in detail. 07

Q.10

a) Derive equation for perspective projection and describe the specifications of a perspective camera view in Open GL. 08

b) Explain in detail Z –buffer algorithm. 07

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Total No. of Printed Pages:2

SUBJECT CODE NO:- K-163

FACULTY OF ENGINEERING AND TECHNOLOGY

S.E. (CSE/IT) Examination Oct/Nov 2016

Object Oriented Programming Using C++

(Revised)

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B i) Q.No.1 from section A and Q.No.6 from section B are compulsory.
ii) Solve any two questions from each section from remaining questions.
iii) Assume suitable data if necessary.

Section A

Q.1 Solve <u>any five</u>. 10

a) State characteristic of static data member.
b) Give structure of C++ program.
c) Describe new and delete operator.
d) Write any four rule of operator overloading.
e) Explain syntax of class?
f) When do we use protected visibility specifier to a class member?
g) How do we invoke constructor function?
h) Identify the error in following program

```
# include <iostream .h>
struct Room
{
   int width;
   int length;
   void set value (int w, int l)
   { width =w; length=l;}
   };
    Void main ()
   {   Room ObjRoom;
     ObjRoom.setValue (12, 1.4);
   }
```

Q.2 a) Explain concept of friend function with suitable example. 08
b) Explain recursive function. Write program to calculate factorial of number. 07

Q.3 a) Write a C++ program to read employee details, such as empid, name, dept, salary, joining date for 10 employees. Make use of array of object. 07
b) What are abstract classes? Explain with suitable example. 08

Q.4 a) Write a program in C++ to overload pre increment and post increment operator using friend function. 08
b) Explain concept of constructor overloading. 07

Q.5 a) Write a program in C++ to demonstrate use of multiple inheritances. 08
b) What is inheritance? What are its advantages & disadvantages? 07

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Section B

Q.6 Solve any five. 10

a) What is meant by virtual base class?
b) Define exception.
c) List out some important manipulator.
d) What is difference between static and dynamic binding?
e) How to detect end of file?
f) How parameters are passed to base class constructor?
g) Define dynamic object?
h) What do you mean by template instantiation?

Q.7 a) What is polymorphism? Explain its types with example. 10

b) What is containers and containership? How it differs from inheritance? 05

Q.8 a) Write a C++ program to implement template to find minimum of two data items of type int, float, char and double. 08

b) Explain stream class hierarchy in detail. 07

Q.9 a) Write a program in C++ to demonstrate the hierarchy of execution of default constructor & destructor in multilevel inheritance. 08

b) Write a program to demonstrate multiple exceptions. 07

Q.10 a) What are the rules for virtual function? 07

b) Explain the following functions. 08

1) seekg ()
2) seekp ()
3) tellg ()
4) tellp ()

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Total No. of Printed Pages:3

SUBJECT CODE NO:- K-185
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E.(ALL-BRANCHES) Examination Oct/Nov 2016
Engineering Mathematics - III
(Revised)

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B
i. Q.No.1 and Q.No.6 are compulsory.
ii. Solve any two out of Q. 2, 3, 4 & 5.
iii. Solve any two out of Q. 7, 8, 9& 10.
iv. Use of Non-programmable calculator is allowed.
v. Figures to the right indicate full marks.
vi. Assume suitable data, if necessary.

Section A

Q.1 Solve any five 10

a) Find C.F. of $\frac{d^2x}{dt^2} + 3a\frac{dx}{dt} - 4a^2x = 0$
b) Solve $(D^3 - 3D^2 + 3D - 1)y = 0$
c) Find P.I of $(D+2)(D-1)^2y = e^{-2x}$
d) Find P.I of $(D^2 - 4)y = x^2$
e) If the probability of a defective mobile phone is 0.2, find the
   I. Mean
   II. The standard deviation for the distribution of mobile phones in a total of 200.
f) Suppose 3% of bolts made by machine are defective the defects occurring at random during production if bolts are packaged 50 per box find Poisson approximation to it that a given box will contain 5 defectives.
g) There is no skewness in the distribution if ----------.
h) Draw the electrical circuit that gives damped free oscillations.

Q.2 a) Solve $(D^2 + 13D + 36)y = e^{-4x} + cos2x$ 05

b) Find the Karl Pearson's coefficient of skewness for the following 05

Years under	10	20	30	40	50	60
No. of persons	15	32	51	78	97	109

c) An alternating $emfE \quad \sin\omega t$ is applied to an inductance L and capacitance C in series. Show that ,the current in the circuit is $\frac{EW}{(n^2-w^2)L}(coswt - cosnt)$ where $\eta^2 = \frac{1}{LC}$ 05

Q.3 a) Solve by method of variation of parameters. $(D^2 + 2D + 1)y = 4e^{-x}\log x$ 05

b) Apply the method of the least squares to fit a parabola $y = a + bx + cx^2$ for the data. 05

X	-1	0	0	1
Y	2	0	1	2

c) Solve $x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} + y = \sin(logx^2)$ 05

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Q.4 a) An underground mine has 5 pumps installed for pumping out storm water. The probability of any one of the pumps failing during the storm is $\frac{1}{8}$. what is the probability that 05

I. At least 2 pumps will be working

II. All pumps will be working during a particular storm.

b) A body executes damped forced vibrations given by the equation $\frac{d^2x}{dt^2} + 2K\frac{dx}{dt} + b^2x = e^{-kt}\sin wt$. solve the equation for both the cases, when $w^2 \neq b^2 - k^2$ and $w^2 = b^2 - k^2$. 05

c) Solve $(2x+1)\frac{d^2y}{dx^2} - \frac{dy}{dx} + \frac{y}{2x+1} = \frac{3x+4}{2x+1}$ 05

Q.5 a) The first four moments of a distribution about the value 4 of the variable are −1.5, 17,-30 and 108. Calculate the first four moments about the mean and find β_1 and β_2. 05

b) Solve the equation $EI\ \frac{d^2y}{dx^2} + Py = \frac{-wl^2}{8}\sin\left(\frac{\pi x}{l}\right)$ for a strut of length $'l'$ freely hinged at each end. Prove that the deflection y at the centre is $\frac{wl^2}{8(Q-P)}$ $where$ $Q = \frac{EI\pi^2}{l^2}$ 05

c) Solve by general method $(D^2 + 3D + 2)y = e^{e^x}$ 05

Section – B

Q.6 Solve any five 10

a) Find the first approximate value of the root $(ie. x_1)$ by Newton – Raphson method for $\log_e x - x + 3 = 0$.

b) Find the values of x, y, z in the first iteration by Gauss Seidel Method for

$8x + 3y + 2z = 13$

$x + 5y + z = 7$

$2x + y + 6z = 9$

c) Find f(1) for data

X	0	2	3
F(x)	-4	2	14

d) Find grad $\emptyset$ at (1,1,-1) if $\emptyset = e^{2x-y+z}$.

e) Prove that $\bar{F} = (y^2 cosx + z^3)i + (2y\ sinx - 4)j + (3xz^2 + 2)K$ is conservation field.

f) If $\bar{A}(t) = ti - t^2j + (t-1)K$

$\bar{B}(t) = 2t^2i + 6tk$

Evaluate $\int_0^2 \bar{A}.\bar{B}\ dt$.

g) If $\bar{r} = xi + yj + zk$ then find $\nabla.\bar{r}$.

h) Write formula of Runge Kutta IVth order method to solve $\frac{dy}{dx} = f(x,y), y(x_0) = y_0$

Q.7 a) Find the root of the equation $e^{-x} - x = 0$ by Newton –Raphson method (correct to three decimal places). 05

b) Find the directional derivation of $\emptyset = xy^2 + yz^3$ at the point (2,-1, 1) in the direction of the normal to the surface $xlogz - y^2 = -4$ at (-1,2,1). 05

c) If $\bar{F} = (5xy - 6x^2)i + (2y - 4x)j$, evaluate $\int_c \bar{F}.d\bar{r}$ along the curve C in $x - y$ plane, $y = x^3$ from the point (1, 1) to (2, 8). 05

Q.8 a) Solve by Gauss Seidel method 05

$28x + 4y - z = 32$

$x + 3y + 10z = 24$

$2x + 17y + 4z = 35$

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b) Verify Green's theorem for $\bar{F} = x^2 i + xyj$ and C is a triangle having vertices A (0, 2), B (2, 0) and C (4, 2). 05

c) Find $\nabla^4(e^r)$. 05

Q.9

a) Given that $\frac{dy}{dx} = 2 + \sqrt{xy}$ and y(1)=1 find approximate value of y at $x = 1.2$ using Euler's modified method (take $h = 0.2$) 05

b) Use Lagrange's interpolation to find the value of y when x=10 for the data given below. 05

X:	5	6	9	11
Y:	12	13	14	16

c) Using stoke's theorem evaluate $\int_c [(x + y) + (2x - z)dy + (y + z)dz]$ where C is the boundary of the triangle with vertices (2,0,0) (0,3,0) and (0,0,6). 05

Q.10

a) Evaluate $\int_c \bar{F}.d\bar{s}$ where 05
$\bar{F} = yi + xj + z^2 k$ over the cylindrical region bounded $by\ x^2 + y^2 = 9, z = 0$ and $z = 2$.

b) From the following table find the value of $\frac{dy}{dx}$ at $x = 2.03$. 05

X:	1.96	1.98	2.00	2.02	2.04
Y:	0.7825	0.7739	0.7651	0.7563	0.7473

c) Use fourth order Runge Kutta method to find y at $x = 0.1$ given that $\frac{dy}{dx} = 3e^x + 2y, y(0) = 0\ and\ \ h = 0.1$. 05

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Total No. of Printed Pages:2

SUBJECT CODE NO:- K-311
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E.(CSE/IT) Examination Oct/Nov 2016
Digital Electronics
(Revised)

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B
i) Q.No.1 and Q.No.6 are compulsory.
ii) Figure to the right indicates full marks.
iii) Assume suitable data if necessary.

Section A

Q.1 Solve any five. 10

a) Draw the logic diagram for following expression.
$y = (A + B)(\bar{A} + \bar{B})$
b) Sketch the following equation by using NOR gate only.
$y = (A + B)(A + C)$
c) Explain multiplexer with example.
d) Define demultiplexer.
e) Convert following expression in POS form.
$F(ABCD) = \sum(0,3,9,14)$
f) Compare combinational circuits & sequential circuits.
g) Explain minterm & maxterm with example.
h) Design a 4-input NAND gate by using 2-input NAND gate only.

Q.2 a) Simplify the following expression using k-map. 08
$f = \sum m(0,1,5,6,8,9,11,13) + d\,(7,10,12)$ 07
b) Convert JK Flip Flop to D flip Flop.

Q.3 a) Solve the following expression using Quine Mc Cluskey technique. 08
$F(ABCD) = \pi M(1,3,5,7,9,11,13,15)$
b) Differentiate between analog signals and digital signals. 07

Q.4 a) Implement following expression using 8:1 MUX. 08
$F(A\,B\,C\,D) = \sum m(0,2,3,6,8,9,12,14)$
b) Prove that OR-AND configuration is equivalent to NOR-NOR configuration. 07

Q.5 a) Design & implement circuit for 4-bit BCD to gray code converter. 08
b) What is the importance of logic gates in designing digital circuits? 07

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Section – B

Q.6 Solve any five. 10

a) Explain accuracy & precision factor for ADC.
b) Enlist types of shift register.
c) How many flip-flops will be needed to build following counters?
   i. MOD –6
   ii. MOD-11
d) Compare synchronous & asynchronous counters.
e) What do you mean by A/D & D/A converter?
f) Write applications as counters.
g) Draw truth table of SR flip flop.
h) Draw 4-bit SISO right shift register.

Q.7 a) Design ring counter. 08
b) Explain working of shirt register IC 74166. 07

Q.8 a) Design 4-bit synchronous counter using JK flip-flop. 08
b) Explain dual slop A/D corrector. 07

Q.9 a) Explain & differentiate between PAL & PLA. 08
b) Explain applications of shift registers. 07

Q.10 a) The content as 4-bit shift register is initially 1101. The register is shifted 6 times to the right with the serial input being 101101. 08
What is the content of shift register after each shift?
b) Explain A/D converter using voltage to sequency conversion. 07

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Total No. of Printed Pages:2

SUBJECT CODE NO:- K-213
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E.(CSE/IT) Examination Oct/Nov 2016
Computer Networks-I
(Revised)

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B i) Q.No.1 and Q.No.6 are compulsory.
ii) Attempt any two questions from question no.2 to Q.no.5 & Q.7 toQ.10 of each section.

Section A

Q.1 Attempt any five 10

a) Define the three criteria needed for effective data communication.
b) Differentiate between serial and parallel transmission.
c) What is the propagation time if the distance between two points is 12000km. Assume the propagation speed to be 2.4×10^8m/s?
d) What does the Shannon capacity has to do with data communication?
e) What is the difference between single bit errors of burst error?
f) What is checksum?
g) Define FDM.

Q.2 a) Explain three criteria necessary for effective & efficient network. 08

b) Explain any two types of transmission impairments. 07

Q.3 a) How do layers of internet model correlate to the layers of the OSI model? 08

b) Why we need to detect & correct errors. Explain error correction in detail? 07

Q.4 a) If the data frame is 110101011 and generator is x^4+x+1. What would be the transmitted frame? 08

b) Explain unipolar line coding scheme in digital to digital conversion. 07

Q.5 Write short note on (any three) 15

a) Linear Block code
b) TCP/IP protocol suite
c) NRZ coding
d) Packet switched network
e) DSSS

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Section-B

Q.6 Attempt any five 10

a) What is ICANN?
b) Differentiate between fixed size framing & variable size framing.
c) Define flow control.
d) State difference between a HUB & switch.
e) What is ALOHA?
f) Find the class of following IP addresses 1) 14.23.120.8 2) 252.5.15.111.
g) What is Piconet?

Q.7 a) Compare the window size, number of bits used for frame numbering & size of buffer for the three ARQ techniques. 08

b) Explain the IPV6 format with the help of neat diagram. 07

Q.8 a) Discuss how and why the performance of slotted ALOHA is better than pure ALOHA. 08

b) Explain Bluetooth architecture in detail. 07

Q.9 a) Compare selective repeat & Go back N protocol in detail. 08

b) Explain the reasons why we have switched from IPV4 to IPV6. 07

Q.10 Write short note on (any three) 15

a) HDLC protocol
b) Token passing
c) Switch
d) Fast Ethernet
e) Frequency reuse principle

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Total No. of Printed Pages:2

SUBJECT CODE NO:- K-244
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E.(CSE/IT) Examination Oct/Nov 2016
Data Structures using C
(Revised)

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B i) Q.No.1 from section A and Q.No.6 from section B are compulsory.
ii) Assume suitable data, if necessary.
iii) Solve any two questions from each section from remaining questions.

Section A

Q.1 Solve any five of the following. 10

a) What is pointer? Write two operators used with pointers.
b) Define algorithm. Write any two criterions must be satisfied by any algorithm.
c) Define time and space complexity.
d) Develop a structure with variable name person having three fields: name, age and salary.
e) Consider two polynomials
$A(x) = 2x^{1000} + 1$
$B(x) = x^4 + 10x^3 + 3x^2 + 1$
Give its array representation.
f) Write advantages of dynamically allocated arrays.
g) Explain stack full & stack empty condition.
h) Give header and element node structure for sparse matrices.

Q.2 a) Write C function to evaluate a postfix expression 09
Evaluate $x = a/b - c + d * e$ where
$a = 4, b = c = 2, d = e = 3.$
b) What is an array? Give representation of single & multidimensional array. 06

Q.3 a) Write an ADT spare matrix which shows following operations: Create, Transpose, Add & Multiply. 07
b) Shows how to represent polynomials using linked list. Add A & B using linked representation 08
$A = 10x^4 + x^2 + x + 5$
$B = x^3 + x + 2$

Q.4 a) Write a c program to sort given element using selection sort. 07
b) What are various criteria's use to judge a program? Also explain how to get space & time complexity of any function. 08

Q.5 a) Define Queue. Write an ADT queue. Explain role of front & rear ends. 07
b) Write C function to perform following operation on singly linked list. 08
1) Inserting a node infront of list
2) Deleting a node from list

Section B

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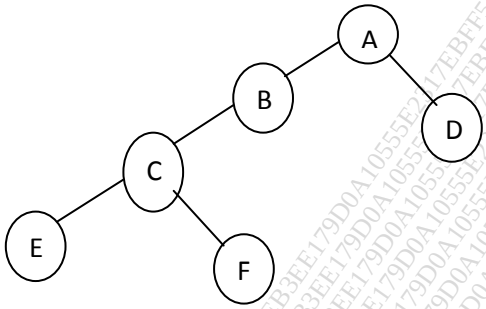
Q.6 Solve any five 10

a) Explain bottom-up splay tree.
b) Construct four possible Binary search Tree for key: 5, 10, 15.
c) Explain the following terms:
   1) Cycle 2) Complete Graph
d) Show that number of distinct ways of multiplying 3 matrices using trees.
e) Write two properties of Red-Black tree.
f) Define single ended and double ended priority queue.
g) Construct threaded binary tree given tree.



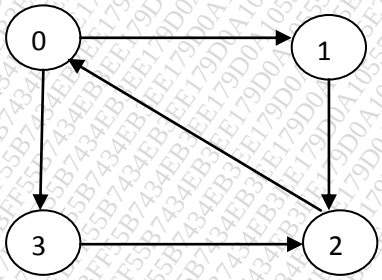
h) Explain array representation of binary tree.

Q.7 a) Define forest. How to transform a forest into a binary tree. Explain forest traversal techniques. 08

b) Define binominal heap. How to perform insert, delete min & meld operations on binomial heap? Give one example. 07

Q.8 a) Explain graph representation techniques i) Adjacency matrix ii) Adjacency list 08

Obtain representation for the following graph



b) Start with an empty red-black tree & insert the following keys in the given order 15,14,13,10,9,8,4. 07

Q.9 a) Define height balanced tree. Assume that insertions are made in the order mercury, Jupiter, Venus, Neptune, Saturn, Earth. 08

b) Define leftist tree. Explain height- biased leftist tree & weight biased leftist tree with example. 07

Q.10 a) Define binary tree. Write an ADT for Binary tree. Give its properties. 09

b) Write a note on disjoint set union and find (i). 06

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Total No. of Printed Pages:1

SUBJECT CODE NO:- K-277
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E.(CSE/IT) Examination Oct/Nov 2016
Unix & Shell Programming
(Revised)

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B i)Question No.1 from section A and Question No.6 from section B are compulsory.
ii)Solve any two from remaining questions from each section.

Section A

Q.1		Describe any Five:	10
	i)	Wc-Command	
	ii)	Cp-and mv command	
	iii)	Kernal	
	iv)	chown-command	
	v)	mkdir, rmdir	
	vi)	Environmental variables	
	vii)	PIPE.	
Q.2	a)	Describe the structure of Unix file system?	08
	b)	Explain ls-command with various option?	07
Q.3	a)	How user can change the permissions of file using chmod command?	08
	b)	What is hard link? How user can create hard link?	07
Q.4	a)	Explain different modes of vi-editor in details.	07
	b)	Describe shell interpretive cycle in details.	08
Q.5	a)	Explain job-control facility for process in detail.	08
	b)	Explain three different standard files for redirection in UNIX.	07

Section B

Q.6		Describe any Five.	10
	i)	Head	
	ii)	tail	
	iii)	Enlist built in variable used by awk.	
	iv)	Pr	
	v)	set-command in shell	
	vi)	split function in perl.	
	vii)	Join function in perl.	`
Q.7	a)	Describe grep command with its option and give suitable example?	08
	b)	Explain positional parameter and write a shell script to demonstrate it.	07
Q.8	a)	Write and explain the use of cut, paste and sort command?	07
	b)	Explain sed-command with its option and give suitable example?	08
Q.9	a)	Explain Structure of awk script with example.	07
	b)	Write a shell script to demonstrate the use of case command.	08
Q.10	a)	Explain chop and chomp function in perl with example.	07
	b)	What is associative array in perl? explain with example.	08

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