BTS.V-11.14-0840 Reg.No. | | | | | | | | |

A

B.Tech. Degree V Semester Examination November 2014

IT/CS/EC/CE/ME/SE/EE/EI/EB/FT 501 ENGINEERING MATHEMATICS IV

(2006 Scheme)

Time : 3 Hours Maximum Marks : 100

PART A

(Answer *ALL* questions)

(8 x 5 = 40)

I. (a) Obtain the distribution function and mean of the total number of heads occurring in three tosses of an unbiased coin.

(b) A random variable X has density function $P(x) = \frac{1}{\pi\left(1+x^2\right)}, -\infty < x < \infty$.

Find the probability that x^2 lies between $\frac{1}{3}$ & 1.

(c) Determine the coefficient of correlation between X and Y for the two regression lines 3x+2y=26 and 6x+y=31.

(d) A sample of 900 members is found to have a mean of 3.4 cm. Can it be reasonably regarded as a random variable from a large population with mean 3.25cm and S.D 1.61cm.

(e) Prove that $1+\mu^2\delta^2 = \left[1+\frac{\delta^2}{2}\right]^2$.

(f) Apply Lagrange's formula to evaluate $f(1)$ from the following data

x:	−1	0	2	3
$f(x)=y$:	−8	3	1	12

(g) Evaluate $\int_4^{5.2} \log x dx$ using Sinpson's $\frac{1}{3}^{rd}$ rule taking $h = 0.2$

(h) Solve by Euler's method, $\frac{dy}{dx} = x + y$; $y(0) = 1$.

Find $y(0.2)$, $y(0.4)$ and $y(0.6)$

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PART B

(4 x 15 = 60)

II. (a) Derive the mean and variance of Poisson distribution.

(b) In a normal distribution 17% of the items are below 30 and 17% of the items are above 60. Find the mean and standard deviation.

OR

III. (a) Fit a curve of the form $y = ae^{bx}$ to the following data by the method of least squares

x	:	0	5	8	12	20
y	:	3	1.5	1	0.55	0.18

(b) Derive the mean and variance of binomial distribution.

(P.T.O.)

IV. (a) Define (i) significance level (ii) type I & II errors (iii) point estimation in sampling theory.

(b) A machine is supposed to produce washers of mean thickness of 0.12cm. A sample of 10 washers was found to have mean thickness of 0.12cm and S.D 0.008. Test whether the machine is working in proper order at 5% of significance level.

OR

V. (a) A random sample of size 15 is taken from $N(\mu, \sigma^2)$ has $\bar{X} = 3.2$ and $S^2 = 4.24$. Obtain a 90% confidence interval for σ^2.

(b) The mean of simple random samples of sizes 1000 and 2000 are 67.5 and 68 cm respectively. Can the samples be regarded as drawn from same population of S.D 2.5cm.

VI. (a) Represent $x^4 - 12x^3 + 42x^2 - 30x + 9$ and its successive forward difference in factorial polynomials taking h = 1.

(b) Prove that $\left(\frac{\Delta^2}{E}\right)e^x$, $\frac{Ee^x}{\Delta^2 e^x} = e^x$, taking h as the interval of differencing.

OR

VII. (a) Use Lagrange's interpolation formula to fit a polynomial to the data

x :	0	1	3	4
y :	-12	0	6	12

(b) Evaluate $\int_0^1 \frac{dx}{1+x^2}$ using Simpson's $\frac{3}{8}$ rule taking $h = \frac{1}{6}$

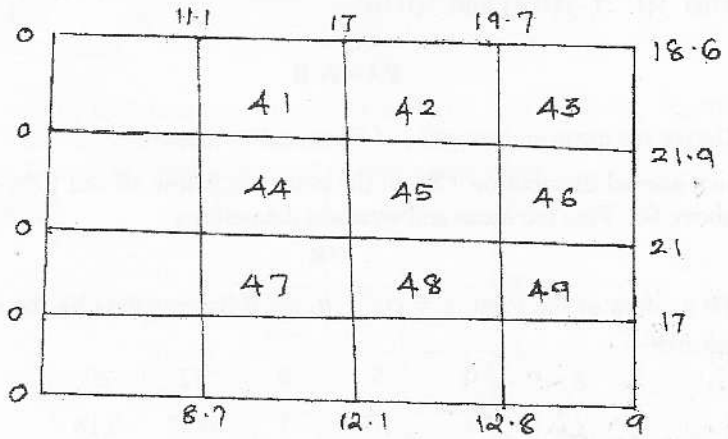
VIII. (a) Apply Runge-kutta fourth order formula to evaluate y(0.1) where $\frac{dy}{dx} = x^2 + y^2$; $y(0) = 1$

(b) Apply Newton's divided difference formula to evaluate $f(2)$ from the following table

x :	4	5	7	10	11	13
f(x) :	48	100	294	900	1210	2028

OR

IX. Solve the Laplace equation.



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D

B.Tech. Degree V Semester Examination November 2014

CS/IT 502 SYSTEM PROGRAMMING
(2006 Scheme)

Time : 3 Hours Maximum Marks : 100

PART A
(Answer *ALL* questions)

$(8 \times 5 = 40)$

I. (a) Discuss the instruction format and addressing mode used in machine dependent assembler.
(b) Define the term 'program relocation' in machine dependent assemblers.
(c) Write short notes on absolute loaders.
(d) Explain the concept of relocating loader.
(e) Define the term 'macro' with a suitable example.
(f) Write notes on macro expansion with a suitable example.
(g) Explain the purpose of 'user interface' in operating systems.
(h) Discuss the importance of 'hierarchical structure' operating system designing option.

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PART B

$(4 \times 15 = 60)$

II. (a) Explain the purpose of 'program blocks' in machine independent assemblers. (7)
(b) Explain the purpose of control sections and program linking in machine independent assemblers. (8)

OR

III. With the help of pass I and pass 2 algorithm explain the two pass assembler. (15)

IV. Explain the linking loader implementation (hint: pass I and pass 2 in linking loaders). (15)

OR

V. What is meant by dynamic loaders? Illustrate the working of dynamic loaders with the help of a suitable example. (15)

VI. (a) Define the term 'recursive macro expansions' with a suitable assembly language program. (8)
(b) Explain conditional macro expansions with a suitable assembly language program. (7)

OR

VII. State and explain the data structures and algorithm required for macro pre-processors. (15)

VIII. (a) State and explain the concept of virtual machines in operating systems. (7)
(b) Explain the role of distributed operating system. (8)

OR

IX. (a) Illustrate with suitable diagrams the term 'Object Oriented Operating Systems'. (8)
(b) State and explain the concept multiprocessor operating systems. (7)

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B

B. Tech. Degree V Semester Examination November 2014

CS/IT 503 SOFTWARE ENGINEERING

(2006 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer *ALL* questions)

(8 x 5 = 40)

I. (a) What are the disadvantages of prototyping model?

(b) Suggest any two popular structured analysis tools and its notations.

(c) Explain any two types of coupling in detail.

(d) Explain any one structured design technique.

(e) What is system testing?

(f) Explain SCM in detail.

(g) Explain any two management functions, in detail.

(h) Write a note on testing workbenches.

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PART B

(4 x 15 = 60)

II. Clearly distinguish water fall and prototyping models.

OR

III. Explain how spiral model incorporates the pros of both waterfall and prototyping models.

IV. What are the various design heuristics? Compare cohesion and coupling too.

OR

V. What are the characteristics of a good UI design?

VI. Compare CMM and ISO standards.

OR

VII. Explain format of a test plan. Also explain different types of testing.

VIII. Explain, in detail, five functions of management with its various activities and issues.

OR

IX. Explain the significance of CASE and its classifications. Also explain any one CASE tool, in detail.

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A

B.Tech. Degree V Semester Examination November 2014

IT 504 COMPUTER GRAPHICS AND ANIMATION

(2006 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

I. (a) Discuss the various application areas of computer graphics.

(b) Briefly explain DPA line drawing algorithm.

(c) Explain with example the composite transformations.

(d) Explain Cohen Sutherland line clipping algorithm.

(e) List out various properties of Bezier curves..

(f) What are splines? How splines are represented?

(g) Explain any one color model.

(h) What are the basic 3D transformations? Give their homogeneous matrix representations.

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PART B

(4 × 15 = 60)

II. Explain midpoint circle algorithm. Trace the algorithm to draw the circle with radius 20 and circle centre (10, 30). (15)

OR

III. (a) Explain Bresenham's line drawing algorithm. (8)

(b) Explain functioning of CRT with a neat diagram. (7)

IV. What is window and viewport? Explain window to viewport transformation. Is it a composite transformation? Justify your answer. (15)

OR

V. Explain the various 2D transformations with its homogeneous matrix representations. (15)

VI. (a) Compare Bezier curves and B-splines. What are Beta splines? (10)

(b) What are the different types of 3D display methods? (5)

OR

VII. Write short notes on the following: (15)

(i) Constructive solid geometry methods.

(ii) Fractal geometry methods.

(iii) Sweep representations.

VIII. Explain any two visible surface detection methods in detail (15)

OR

IX. (a) Explain phong shading and Goraud shading. (10)

(b) Write short notes on illumination models. (5)

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B

B.Tech. Degree V Semester Examination November 2014

IT/CS 505 DATABASE MANAGEMENT SYSTEMS

(2006 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

I. (a) Why would you choose a database system instead of a file system?

(b) What is logical data independence and why it is important?

(c) List out some hashing techniques.

(d) Discuss fixed length and variable length records with example.

(e) Define the five basic operators of relational algebra with an example each.

(f) Differentiate between a database schema and a database instance with example.

(g) Why concurrency control techniques are needed?

(h) Differentiate data warehouse and data mining.

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PART B

(4 × 15 = 60)

II. (a) Explain the concept of specialization and generalization with suitable example. (10)

(b) Write short note on Enhanced Entity-Relationship (EER) and object modeling. (5)

OR

III. Design an E-R diagram for an online bookstore. (15)

IV. Explain how to organize records in files. (15)

OR

V. (a) What is a data dictionary and what type of information it stores? (5)

(b) Differentiate spanned and unspanned records. (10)

VI. Consider the following relation schemes: (15)

Project (Project#, Project_name, chief_architect)

Employee (Emp#, Empname)

Assigned_To(Project#, Emp#)

Give expression in Tuple calculus and Domain calculus for each of the queries below:

(i) Get the employee numbers of employees who work on all projects.

(ii) Get the employee numbers of employees who do not work on the COMP123 project.

OR

VII. (a) Define first normal form, second normal form, and third normal form with suitable examples. (8)

(b) Define trivial, nontrivial dependencies. (7)

VIII. Discuss the main database recovery techniques. (15)

OR

IX. What is a deadlock? Discuss on deadlock detection and recovery. (15)

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C

B. Tech. Degree V Semester Examination November 2014

IT 506 KNOWLEDGE ENGINEERING

(2006 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer *ALL* questions)

(8 x 5 = 40)

I. (a) Explain unification algorithm with the help of an example.
(b) State and explain Baye's theorem.
(c) Write short notes on:
(i) Heuristic search (ii) Intelligent agent
(d) Define production system. What are the advantages of production system?
(e) Explain the iteration and recursion construct in LISP with example.
(f) Explain supervised learning.
(g) Describe the major applications of artificial neural network.
(h) What do you mean by S-expressions in LISP?

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PART B

(4 x 15 = 60)

II. (a) What is resolution? Explain the algorithm for resolution in predicate logic with an example. (10)
(b) State the inference rules of propositional logic. (5)

OR

III. State and explain how a FOPL expression is converted into clausal form. (15)

IV. Explain BFS and DFS techniques with proper algorithms. (15)

OR

V. (a) Explain the different levels of knowledge used in language understanding. (5)
(b) Explain the procedure of minimax in game playing with the help of an example. (10)

VI. Explain the list manipulations functions used in LISP with example. (15)

OR

VII. Explain input, output and local variables in LISP with examples. (15)

VIII. Explain back propagation training algorithm in artificial neural network. (15)

OR

IX. (a) What are Hopfield networks? Explain. (7)
(b) Draw and explain the model of an artificial neuron. (8)

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