B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Fifth Semester

Branch : Aeronautical Engineering/Computer Science/Electrical and Electronics Engineering

EN 010 502 – PRINCIPLES OF MANAGEMENT (AN, CS, EE)

(New Scheme – 2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Define : Vision.

2. What is personal management?

3. State the limitations of production.

4. State the importance of financial management.

5. What is pricing?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. State the objectives of management.

7. State the importance of manpower planning.

8. State the advantages of project planning.

9. State the methods of financing.

10. What is channels of distribution?

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. (a) Explain about the management concepts in detail.

Or

(b) Write in detail about the organizational structure.

Turn over

12. (a) Explain the importance of training and development.

Or

(b) Explain the labour welfare and its benefits.

13. (a) Explain the functions of production management in detail.

Or

(b) Briefly explain the production process and its types.

14. (a) Explain in detail about the cost management.

Or

(b) Write in detail about the factors affecting working capital.

15. (a) Explain the duties of sales managers and state the importance of packaging.

Or

(b) Explain the advertising and other sales promotions in detail.

(5 × 12 = 60 marks)

F 3635

(Pages : 2)

Reg. No..................................

Name..................................

B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Fifth Semester

Branch : Computer Science and Engineering/Information Technology

CS 010 503 / IT 010 506 – DATABASE MANAGEMENT SYSTEMS (CS, IT)

(New Scheme – 2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. List the importance of database management systems.
2. State the entity integrity.
3. State the merits of Oracle tools in DBMS.
4. Define : Super key.
5. What are the distributed databases?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain the entity types with an example.
7. Explain DIVISION operation in relational algebra with an example.
8. State the storage organization in Oracle.
9. State the limitations associated with DBMS design.
10. State the issues associated with database recovery.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. (a) Explain in detail about the components of DBMS.

Or

(b) Write in detail about the database systems and its limitations.

Turn over

12. (a) Explain in detail about the relational model concepts and its merits.

Or

(b) Explain the importance of using SQL.

13. (a) Explain the basic structure of Oracle systems.

Or

(b) Explain in detail about the indexing and hashing concepts.

14. (a) Explain in detail about the relational database system.

Or

(b) Write in detail about the Boyce codd normal form.

15. (a) Explain the ACID properties of transaction.

Or

(b) Explain the functions DDBMS.

(5 × 12 = 60 marks)

B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Fifth Semester

Branch : Computer Science and Engineering

CS 010 504—DIGITAL SIGNAL PROCESSING (CS)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours   Maximum : 100 Marks

Part A

Answer **all** *questions. Each question carries 3 marks.*

1. What is the relationship between Z-transform and DFT ?

2. What are the differences and similarities between DIF and DIT algorithms ?

3. What are the desirable and undesirable features of FIR Filters ?

4. Distinguish analog and digital filters ?

5. List out the applications of DSP ?

$(5 \times 3 = 15 \text{ marks})$

Part B

Answer **all** *questions.*
Each question caries 5 marks.

6. Discuss the properties of Z-transform ?

7. Write down the complexity of DFT calculation.

8. Write down the expression of Hanning window? Explain it.

9. Explain linear phase realization ?

10. Explain briefly about RADAR.

$(5 \times 5 = 25 \text{ marks})$

Part C

Answer **all** *questions.*
Each question caries 12 marks

11. (a) Discuss in detail the important properties of the Discrete Fourier Transform..

Or

(b) Find the system function and the Impulse response of the System described by the difference equation

$$y (n) = x (n) + 2 x (n - 1) - 4 x (n - 2) + x (n - 3).$$

Turn over

12. (a) Compute the 8 pt DFT of the sequence $x(n) = \{1, 2, 3, 4, 4, 3, 2, 1\}$ using DIT FFT.

Or

(b) Perform the circular convolution of the following *two* sequences :

$x_1[n] = \{2, 1, 2, 1\}$ and $x_2[n] = \{1, 2, 3, 4\}$.

13. (a) Design an ideal high pass filter with a frequency response.

$$H_d\left(e^{jw}\right) = \begin{cases} 1 \ for \ \dfrac{\pi}{4} \le |\omega| \le \pi \\ 0 \ for \ |\omega| \le \dfrac{\pi}{4} \end{cases}$$

Find the values $h(n)$ N = 11. Find H(Z).

Or

(b) Obtain cascade and parallel realization for the system having difference equation :

$y(n) + 0.1\, y(n-1) - 0.2\, y(n-2) = 3\, x(n) + 3.6\, x(n-1) + 0.6\, x(n-2)$.

14. (a) Explain impulse invariant method of designing IIR filter.

Or

(b) Discuss in detail about Butterworth approximations.

15. (a) Explain video compression in detail.

Or

(b) With neat sketch explain the architecture of TMS320C54.

(5 × 12 = 60 marks)

F 3658

Reg. No.................................

Name.................................

B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Fifth Semester

Branch : Computer Science and Engineering / Information Technology

CS 010 505 /IT 010 504 – OPERATING SYSTEMS (CS, IT)

(New Scheme – 2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 3 marks.

1. What is operating system?

2. What is process concept?

3. What is the process synchronization?

4. Write the importance of memory management?

5. What is file concept?

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*

Each question carries 5 marks.

6. State the operating system operations.

7. Write the interprocess communication.

8. State the deadlock characterization.

9. Explain the page replacement algorithms.

10. Write the directory implementation in detail.

(5 × 5 = 25 marks)

Part C

Answer **all** *questions.*

Each question carries 12 marks.

11. (a) Explain in detail about the time sharing and real time systems.

Or

(b) Write the system structures in detail.

Turn over

12. (a) Explain in detail about the process management.

Or

(b) Explain the process scheduling.

13. (a) Write the Peterson's solution and synchronization hardware in detail.

Or

(b) Briefly explain the methods for handling deadlocks.

14. (a) Explain in detail about the multi level paging.

Or

(b) Write in detail about the contiguous memory allocation.

15. (a) Explain the directory structure in detail.

Or

(b) Write the disk scheduling in detail.

(5 × 12 = 60 marks)

F 3668

Reg. No..............................

Name..................................

B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Fifth Semester

Branch : Computer Science and Engineering

CS 010 506 – ADVANCED MICROPROCESSORS AND PERIPHERALS (CS)

(New Scheme – 2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Define : Data transfer.

2. What is called a flat memory model?

3. What is IDE?

4. What are the I/O ports?

5. What is flash memory?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. State the flag manipulation in 8086.

7. Write the additional features 80286.

8. State the functions and operations of SMPS.

9. Write the features of the Blu-ray disc.

10. Explain the importance of memory management.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each full question carries 12 marks.

11. (a) Explain in detail about the 8086 microprocessor architecture with neat sketch.

Or

(b) Write the instruction sets of 8086 in detail.

Turn over

12. (a) Explain in detail about the additional features of Pentium processors.

Or

     (b) Write in detail about the latest processors of Intel and AMD.

13. (a) Explain the components and its functions associated with the motherboard.

Or

     (b) Briefly explain the hard disc interfacing technology and state the limitations.

14. (a) Explain in detail about the optical storage technology and its advantages.

Or

     (b) Write in detail about the magnetic storage technology in detail.

15. (a) Explain the advanced memory technologies in detail.

Or

     (b) Explain the working principle of read and write operations from a flash memory and state the influencing parameters of speed of computation.

                                                           (5 × 12 = 60 marks)

F 3191

Reg. No...............................

Name.................................

B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Fifth Semester

Branch : Computer Science and Engineering

FILE STRUCTURES AND ALGORITHMS (R)

(Old Scheme – Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 4 marks.

1. What is meant by the term file organization?

2. Describe binary search. How does it differ from linear search?

3. What is meant by an indexing field? What is its utility as far as an index is concerned?

4. Write notes on interpolation search techniques.

5. What are the desirable properties of a hash function? List some commonly used hash functions.

6. Explain the midsquare method of hashing.

7. What is meant by a height balanced tree? Explain with an example.

8. What is a B+ tree? In what respect is it different from a B tree?

9. What is the need for compaction of memory blocks?

10. What is meant by the best fit memory allocation scheme? How is it different from the worst fit allocation scheme?

(10 × 4 = 40 marks)

Part B

Answer **all** *questions.*

Each question carries 12 marks.

11. (a) Explain the concept of heap files. List the advantages and disadvantages of the same.

Or

(b) What is meant by the primary and secondary keys of a file? Write notes on retrieving secondary keys in files.

Turn over

12.   (a)   Explain the single level ordered indexing approach for files.

Or

     (b)   Describe the strategy used for indexing files on multiple keys.

13.   (a)   Explain static hashing. List and explain some static hashing schemes.

Or

     (b)   What is meant by collision? Explain some of the commonly used collision resolution schemes.

14.   (a)   Describe the concept of a threaded binary tree. Explain the algorithms for inserting and deleting elements from the same.

Or

     (b)   What is meant by a multiway search tree? Write notes on B+ tree. Explain the process of searching, inserting and deleting data values in a B+ tree with suitable examples.

15.   (a)   Compare and contrast the fixed and variable block storage maintenance methods. List and explain the algorithms for allocation and deallocation of memory in each case.

Or

     (b)   Describe the concept of buddy system storage management. Explain how storage allocation and deallocation is performed under this scheme.

                                                         (5 × 12 = 60 marks)

F 3622   (Pages : 4)   Reg. No...............................

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Fifth Semester

Branch : Computer Science and Engineering/Information Technology

EN 010 501-B—ENGINEERING MATHEMATICS—IV (CS, IT)

(Regular/Improvement/Supplementary)

[New Scheme—2010 Admission onwards)

Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Evaluate $\Delta (\sin 2x \cos 4x)$.

2. Find the Z-transform of $a^n \cos n\theta$.

3. Let a be a numeric function such that $a_r = \begin{cases} 2, & 0 \le r \le 3 \\ 2^{-r} + 5, & r \ge 4 \end{cases}$. Determine Δa and ∇a.

4. Evaluate $\int_0^{1+i} \left(x^2 - iy \right) dz$ along the path $y = x^2$.

5. Explain the arrival pattern of customers.

                                                  (5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Using Newton's divided difference formula, Evaluate $f(8)$ and $f(15)$ given :

x :	4	5	7	10	11	13
y :	48	100	294	900	1210	2028

7. Use convolution theorem to find the inverse Z-transform of $\dfrac{8z^2}{(2z-1)(4z+1)}$.

8. Find the particular solution of the difference equation $a_r + 5a_{r-1} + 6a_{r-2} = 3r^2$.

9. If $f(\xi) = \int_C \dfrac{3z^2 + 7z + 1}{z - \xi} dz$, where C is the circle $|z| = 2$, find the values of $f(3)$, $f'(1-i)$ and $f''(1-i)$.

10. State and explain Little's formula. What are its applications ?

                                                  (5 × 5 = 25 marks)

                                                  Turn over

Part C

Answer all questions.
Each full question carries 12 marks.

11. (a) Using Newton's forward interpolation formula, find y at $x = 8$ from the following table :—

x :	0	5	10	15	20	25
y :	7	11	14	18	24	32

(6 marks)

(b) Evaluate $\int_0^4 e^x \, dx$ by Simpson's rule, given that $e = 2.72$, $e^2 = 7.39$, $e^3 = 20.09$. $e^4 = 54.6$ and compare it with the actual value.

(6 marks)

Or

12. (a) From the following table, calculate $\dfrac{dy}{dx}$, $\dfrac{d^2y}{dx^2}$ and $\dfrac{d^3y}{dx^3}$ at $x = 1.5$

x :	1.5	2.0	2.5	3.0	3.5	4.0
y :	3.375	7.0	13.625	24.0	38.875	59.0

(6 marks)

(b) Apply (i) Trapezoidal rule ; and (ii) Simpson's $\dfrac{1}{3}$ rule, to find an approximate value of $\int_{-3}^{3} x^4 \, dx$ by taking six equal subintervals. Compare it with the exact value.

(6 marks)

13. (a) Find $Z^{-1}\left(\dfrac{4z}{z-1^3}\right)$ by the long division method.

(6 marks)

(b) Solve $y_{n+1} + 4y_{n+1} + 3y_n = 3^n$ with $y_0 = 0$, $y_1 = 1$.

(6 marks)

Or

14. (a) Find the inverse Z-transform of $\dfrac{2(z^2 - 5z + 6.5)}{(z-2)(z-3)^2}$ for $2 < |z| < 3$.

(6 marks)

(b) Solve $y_{n+2} - 2y_{n+1} + y_n = 3n + 5$.

(6 marks)

15. (a) Determine the generating function of the numeric function a_r,

where $a_r = \begin{cases} 2^r, & \text{if } r \text{ is even} \\ 2^{-r}, & \text{if } r \text{ is odd} \end{cases}$.

(6 marks)

(b) Solve the difference equation $a_r - 5a_{r-1} + 6a_{r-2} = 2^r + r$.

(6 marks)

Or

16. (a) Determine the discrete numeric function corresponding to the generating function $A(z) = (1+z)^n + (1-z)^n$.

                                                                                    (6 marks)

    (b) Determine the particular solution for the difference equation $a_r - 3a_{r-1} + 2a_{r-2} = 2^r$.

                                                                                    (6 marks)

17. (a) Expand $\dfrac{1}{z^2 - 3z + 2}$ in the region (i) $|z| < 1$; (ii) $1 < |z| < 2$; (iii) $|z| > 2$; (iv) $0 < |z - 1| < 1$.

                                                                                    (9 marks)

    (b) Determine the poles of the function $f(z) = \dfrac{z^2}{(z-1)^2 (z+2)}$ and the residue at each pole.

                                                                                    (3 marks)

                                    Or

18. (a) Evaluate by contour integration $\displaystyle\int_{-\infty}^{\infty} \dfrac{x^2}{(x^2+1)(x^2+4)} \, dx$.   (9 marks)

    (b) Expand the function $\dfrac{1}{z+1}$, about $z = 1$ in Taylor's series.   (3 marks)

19. (a) In a supermarket, the average arrival rate of customers is 10/hr. The average time taken at the bill and cash desk is 4.5 min. This time is exponentially distributed :

        (i) How long will be customer expect to wait for service at the cash desk ?

        (ii) What is the chance that the queue length will exceed 5 ?

        (iii) What is the probability that the cashier is working ?

                                                                                    (7 marks)
    (b) Explain the different service disciplines in the case of a queuing system.   (5 marks)
                                    Or

20. (a) In a railway marshalling yard, goods trains arrive at a rate of 30 trains per day. Assuming that the inter-arrival time follows an exponential distribution and the servicetime distribution is also exponential with an average 36 minutes. Calculate the following :—

        (i) The mean queue size.

        (ii) The probability thats the queue size exceeds 10.

        (iii) If the input of trains increases to an average 33 per day, what will be the change in (i) and (ii).

                                                                                    (7 marks)

                                                                            Turn over

(b) A T.V. repairmen finds that the time spent on his job has an exponential/distribution with mean 30 minutes. If the repaired set arrive on an average of 10 per 8-hour day with Poisson :

(i) What is the repairmen's idle time each day ?

(ii) What is the average queue length ?

(iii) Find average number of jobs in the system.

(5 marks)

[5 × 12 = 60 marks]

10. (a) Solve the following transportation problem by Vogel's approximation method :

	W_1	W_2	W_3	W_4	W_5	Availability
F_1	4	3	1	2	6	40
F_2	5	2	3	4	5	30
F_3	3	5	6	3	2	20
F_4	2	4	4	5	3	10
Requirement	30	30	15	20	5	

(b) The cost matrix of transporting one unit of a product from the sources P, Q and R to the destinations X, Y and Z. Compute the optimum allocations and minimum cost of transportation using MODI method.

	X	Y	Z	Supply
P	16	20	12	200
Q	14	8	18	160
R	26	24	16	90
Demand	180	120	150	

(5 × 20 = 100 marks)

F 3165   (Pages : 4)   Reg. No..............................

Name.....................................

B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Fifth Semester

Branch : Computer Science and Engineering/Information Technology

ENGINEERING MATHEMATICS—IV (R, T)

(Old Scheme—Supplementary/Mercy Chance)

[Prior to 2010 Admissions]

Time : Three Hours   Maximum : 100 Marks

*Answer **all** full questions.*

Each full question carries 20 marks.

1. (a) Explain any *five* operating parameters of a queuing system.

(b) The arrival rate of customers in a super market is 10 per hour. The average time taken at the bill and cash desk is 4.5 minutes; this time is exponentially distributed.

   (i) How long will the customer expect to wait for service at the cash desk ?

   (ii) What is the chance that the queue length will exceed 5 ?

   (iii) What is the probability that the cashier is working ?

Or

2. The arrival rate of telephone calls at a telephone booth are according to Poisson distribution, with an average time of 9 minutes between two consecutive arrivals. The length of telephone call is assumed to be 3 minutes.

   (a) Determine the probability that a person arriving at the booth will have to wait.

   (b) Find the average queue length that is formed from time to time.

   (c) The telephone company will install a second booth when convinced that arrival would expect to have to wait at least four minutes for the phone. Find the increase in flow rate of arrivals which will justify a second booth.

   (d) What is the probability that an arrival will have to wait for more than 10 minutes before the phone is free ?

   (e) What is the probability that he will have to wait for more than 10 minutes before the phone is available and the call is also complete ?

   (f) Find the fraction of a day that the phone willbe in use ?

3. (a) Using Falsi method, find the root of $\cos x = 3x - 1$ that lies between 0 .5 and 1.0. carry out 3 iterations.

Turn over

(b) Solve the following system of linear equations by Gauss-Seidel iteration method :

$$10x_1 - 2x_2 - x_3 - x_4 = 3$$
$$-2x_1 + 10x_2 - x_3 - x_4 = 15$$
$$-x_1 - x_2 + 10x_3 - 2x_4 = 27$$
$$-x_1 - x_2 - 2x_3 + 10x_4 = -9$$

Carry out 4 iterations.

Or

4. (a) Find the smallest positive root of $x^2 |\sin \sqrt{x}| = 5$ using Bisection method. Carry out 4 iterations.

(b) Solve the system of equations by Jacobi's method :

$$5x + 2y + z = 12$$
$$x + 4y + 2z = 15$$
$$x + 2y + 5z = 20.$$

5. (a) Given the following table of values. Find $f(9)$ using Newton's divided difference formula :

x	5	7	11	13	17
$f(x)$	150	393	1454	2366	5203

(b) Apply Lagrange's interpolation. Find the value of x corresponding to $f(x) = 15$ from the following table :

x	5	6	9	11
$f(x)$	12	13	14	16.

Or

6. (a) Evaluate $\int\limits_0^{0.3} \left(1 - 8x^3\right)^{3/2} dx$ using Simpson's 1/3 rule taking 6 equal parts.

(b) Find the missing value using backward difference formula :

x	0	1	2	3	4
y	1	3	9	—	81.

Explain why the result differs from $3^3 = 27$?

7. (a) Maximize $Z = 5x_1 + 4x_2 + x_3$

subject to $6x_1 + x_2 + 2x_3 \le 12$
$$8x_1 + 2x_2 + x_3 \le 30$$
$$4x_1 + x_2 - 2x_3 \le 16, \ x_1, x_2, x_3 \ge 0.$$

(b) Using graphical method, solve the LPP :

Maximize $Z = 2x_1 + 3x_2$

subject to $x_1 - x_2 \le 2$
$$x_1 + x_2 \ge 4, x_1, x_2 \ge 0.$$

Or

8. (a) Use the dual simplex method to solve the LPP :

Minimize $Z = 3x_1 + x_2$

subject to $x_1 + x_2 \ge 1$
$$2x_1 + 3x_2 \ge 2, \ x_1, x_2 \ge 0.$$

(b) Solve by using Big-M method, the LPP :

Maximize $Z = -2x_1 - x_2$

subject to $3x_1 + x_2 = 3$
$$4x_1 + 3x_2 \ge 6$$
$$x_1 + 2x_2 \le 4, \ x_1, x_2 \ge 0$$

9. (a) Solve the following transportation problem :

	D_1	D_2	D_3	D_4	D_5	Available
O_1	1	2	1	4	5	30
O_2	3	3	2	1	4	40
O_3	4	2	5	9	6	70
O_4	3	1	7	3	4	20
Requirement	25	40	30	15	50	

(b) Solve the following Assignment Problem :
(4 workers and 4 machines)

Machines

		A	B	C	D
	1	10	25	15	20
	2	15	30	5	15
Workers	3	35	20	12	24
	4	17	25	24	20

Or

Turn over