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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2015

Fifth Semester

Branch : Information Technology

IT 010 505 – LANGUAGE TRANSLATORS (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. Define Linkers.
2. What is error detection?
3. What is meant by type conversion? Give an example.
4. Distinguish intermediate and direct code generator.
5. Define code optimization.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Define transition diagram. What are the advantages of transition diagram?
7. Write a short note on recursive descent parsing.
8. Explain parameter passing with suitable example?
9. Write down the specifications of machine.
10. Explain briefly about global data flow analysis.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each full question carries 12 marks.

11. (a) Explain in detail about error reporting and implementation.

Or

- (b) Write a short note on : (i) Assemblers ; (ii) Linkers and loaders.

Turn over

12. (a) Explain : (i) Top down parsing ; (ii) Bottom up parsing.

Or

(b) Explain LR parsers in detail.

13. (a) Define activation tree and activation record. Explain the different field of activation tree and record in detail.

Or

(b) Explain the various data structures used for represent the symbol table.

14. (a) Write a note on : (i) Code generators ; (ii) Register allocation.

Or

(b) Discuss in detail about implementation issues in code generation.

15. (a) Explain code improving transformation in detail.

Or

(b) Explain loop optimization in detail.

(5 × 12 = 60 marks)

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2015

Fifth Semester

Branch : Information Technology

IT 010 503 – DATA COMMUNICATION (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 are the components of Data Communication? Explain.
2. Why multiplexing is necessary? Explain.
3. What is Isochronous transmission? Explain.
4. Bring out the advantages and disadvantages of using fiber optic cables.
5. List some security issues in Data Communication.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. With figure, explain the principle of Token Ring.
7. Explain Frequency shift keying techniques with figures.
8. Explain different types of data flow in Data Communication.
9. What are multidrop lines? Explain.
10. Compare the performance of FDMA and TDMA.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each full question carries 12 marks.

11. (a) With figure, explain the OSI layer.
(b) Explain types of data representation in Data Communication.

Or

12. Discuss in detail Wireless LAN highlighting working, technology and applications.

Turn over

13. What is the basic concepts of multiplexing? With figures, explain Time Division Multiplexing.
Or
14. Discuss in detail Shannon's theorem and its limitations.
15. With diagrams, explain different types of data transmission.
Or
16. What is Noise? Explain in detail different types of noise.
17. Discuss in detail components of computer communication.
Or
18. Explain various guided media transmission with significant figures.
19. Explain CDMA principle of working and also give a briefing of its frame structure with diagram.
Or
20. Write notes on :
- (a) Localization.
 - (b) GPRS.

(5 × 12 = 60 marks)

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2015

Fifth Semester

Branch : Information Technology

IT 010 502 – MICROPROCESSORS AND MICROCONTROLLERS (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 the function of TF flag of 8086?
2. Define Assembler directives.
3. Differentiate between I/O mapped I/O and memory mapped I/O.
4. Define a microcontroller.
5. What is key bounce?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain the physical memory organization in 8086.
7. Bring out the difference between jump and loop instructions.
8. Explain key code format of 8279.
9. Explain the I/O port structure of 8051.
10. State various modes available for timer in 8051.

(5 × 3 = 15 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. (a) Draw and discuss the read and write cycle timing diagram of 8086 in minimum mode.

Or

- (b) Write a neat sketch, explain the architecture of 8086.

Turn over

12. (a) Write a program for the addition of a series of 8-bit numbers. The series contains 100 numbers.

Or

- (b) Draw and discuss in detail the interrupt structure of 8086.

13. (a) Draw and discuss the internal architecture of 8251.

Or

- (b) Explain the following :

(i) DMA controller 8257.

(ii) Operating modes of 8253.

14. (a) With example, discuss the different addressing modes supported by 8051.

Or

- (b) Discuss the register set of 8051 microcontrollers.

15. (a) Draw and explain how to interface a stepper motor with 8051.

Or

- (b) With a neat sketch, explain the interfacing of external memory with 8051.

(5 × 12 = 60 marks)

B.TECH. DEGREE EXAMINATION, NOVEMBER 2015**Fifth Semester**

Branch : Information Technology

MICROPROCESSORS (T)

(Old Scheme—Supplementary/Mercy Chance)

[Prior to 2010 Admissions]

Time : Three Hours

Maximum : 100 Marks

Part A*Answer all questions.**Each question carries 4 marks.*

1. List the flags of 8086.
2. What are the differences between segment register and general purpose register ?
3. What is based indexed addressing ? Give examples.
4. List any four operations performed by data transfer instructions.
5. What are the differences between the minimum mode and maximum mode operation of 8086 ?
6. What are the roles of S_0 , S_1 , S_2 and Queue status bits QS_0 and QS_1 w.r.t. 8086 ?
7. List the different data types supported by 80386.
8. Explain the branch prediction feature of pentium processor.
9. List the programmable registers of 8237.
10. List the five operating modes of 8254.

(10 × 4 = 40 marks)

Part B*Answer all questions.**Each full question carries 12 marks.*

11. (a) Explain the programming model of 8086 with the help of neat diagrams.

(6 marks)

- (b) Explain the concept of memory segmentation in 8086 and its advantages.

(6 marks)

Or

12. Explain the different addressing modes of 8086 with the help of examples in each type.

Turn over

13. Write an ALP to find the largest number from an unordered array of sixteen 8-bit numbers stored sequentially in the memory locations starting at offset 0500 H the segment 2000 H.

Or

14. Describe, with suitable examples the different logic instructions of 8086 and their functioning.
15. Neatly sketch and explain the read and write cycle timing diagrams for minimum mode operation of 8086.

Or

16. Describe with necessary diagrams, how a 4 K RAM chip is interfaced to 8086 ? Clearly explain an address decoding scheme, starting from 2000.
17. Draw and explain the internal architecture and the functions of each part of a general purpose microcontroller.

Or

18. Using a block diagram, explain the pentium CPU architecture and also explain the super scalar organization.
19. The 8255 control register and ports are assigned below as :

CR – 7003 H

PA – 7000 H

PB – 9001 H

PC – 9002 H

Design a system with 8255 port connection to read the status of 8 switches and displays the compliments of that in another 8 LED's. Write the program for the same.

Or

20. Draw the internal block diagram of 8279 keyboard and display control and explain. Describe a circuit for a 4 seven-segment display interface.

(5 × 12 = 60 marks)

19. (a) A bank has two tellers working on savings accounts. The first teller handles withdrawals only. The second teller handles deposits only. It has been found that the service time distributions for both deposits and withdrawals are exponential with mean service time 3 minutes per customer. Depositors are found to arrive in a Poisson fashion throughout the day with mean arrival rate of 16 per hour. Withdrawers also arrive in a Poisson fashion with arrival rate 14 per hour. (i) What would be the effect of the average waiting time for the customers if each teller could handle both withdrawals and deposits. (ii) What would be the effect, if this could only be accomplished by increasing the service time to 3.5 minutes ?

(7 marks)

(b) In a super market, the average arrival rate of a customer is 10 in every 30 minutes following a Poisson process. The average time taken by the Manager to list and calculate the Purchase is 2.5 minutes, which is exponentially distributed.

(i) What is the Probability that the queue length exceeds 6 ?

(ii) What is the expected time spent by a customer in the system ?

(5 marks)

Or

20. (a) Customers arrive at a watch repair shop according to a Poisson process at a rate of one hour 10 minutes and the service time is an exponential random variable with mean 8 minutes. Find the average number of customers, the average waiting time a customer spends in the shop W_s , and the average time a customer spends in the Waiting for service W_q .

(6 marks)

(b) Patients arrive at a clinic according to Poisson Distribution at a rate of 30 patients per hour. The waiting room does not accommodate more than 14 patients. Examination time per patient is exponential with mean rate of 20 per hour.

(i) Find the effective arrival rate at the clinic.

(ii) What is the Probability that an arriving patient will not wait ?

(iii) What is the expected waiting time until a patient is discharged from the clinic ?

(6 marks)

[5 × 12 = 60 marks]

B.TECH. DEGREE EXAMINATION, NOVEMBER 2015**Fifth Semester**

Branch : Computer Science Engineering / Information Technology

EN 010 501 B—ENGINEERING MATHEMATICS—IV (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. Evaluate $\Delta (e^{2x} \log 3x)$.2: Find the Z-transform of $(n + 1)^2$.3. Let a and b be two numeric functions such that $a_r = r + 1$ and $b_r = \alpha^r$ for all $r \geq 0$. Determine $\Delta(ab)$.4. Find the value of the integral $\int_0^{1+i} (x - y + ix^2) dz$ along the straight line from $z = 0$ to $z = 1 + i$.5. Prove by Little's formula $E(W_s) = \frac{1}{\lambda} E(N_s)$.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Express $y = 2x^3 - 3x^2 + 3x - 10$ in terms of fractional polynomials and hence show that $\Delta^3 y = 12$.7. Find the Z-transform of $na^n \sin n\theta$.8. Determine the particular solution of the difference equation $a_r + a_{r-1} = 3r2^r$.

Turn over

9. Evaluate the following integral using Cauchy's integral formula $\int_C \frac{4-3z}{z(z-1)(z-2)} dz$, where C

is the circle $|z| = \frac{3}{2}$.

10. Find (i) The average number L_s of customers in the system by (M|M|1):(∞ |FIFO) model.
(ii) The average number L_q of customers in the queue.

(5 × 5 = 25 marks)

Part C

Answer all questions.
Each full question carries 12 marks.

11. (a) Use Newton's divided difference formula to find $f(x)$ from the following data :

x	:	0	1	2	4	5	6
$f(x)$:	1	14	15	5	6	19

(6 marks)

(b) Express $y = x^4 - 12x^3 + 24x^2 - 30x + 9$ and its successive differences in factorial notation.

Hence show that $\Delta^5 y = 0$.

(6 marks)

Or

12. (a) Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using (i) Trapezoidal rule (ii) Simpson's $\frac{1}{3}$ rule (iii) Simpson's $\frac{3}{8}$ rule.

(6 marks)

(b) Using Newton's forward formula, find the value of $f(1.6)$, if :

x	:	1	1.4	1.8	2.2
y	:	3.49	4.82	5.96	6.5

(6 marks)

13. (a) Find $Z^{-1} \left(\frac{z^2}{(z+2)(z^2+4)} \right)$ by the method of residues. (6 marks)

(b) Solve $6y_{n+2} - y_{n-1} - y_n = 0$ with $y(0) = 0, y(1) = 1$. (6 marks)

Or

14. (a) Find $Z^{-1} \left(\frac{z}{z^2 + 2z + 4} \right)$ by the method of residues. (6 marks)

(b) Solve $y_{n+2} + 6y_{n+1} + 9y_n = 2^n$ with $y_0 = y_1 = 0$. (6 marks)

15. (a) Show that the generating function for a_r , where $a_r = \binom{2r}{r}$ is $(1-4z)^{-1/2}$. (6 marks)

(b) Solve the recurrence relation $a_r + 6a_{r-1} + 9a_{r-2} = 3$, given that $a_0 = 0$ and $a_1 = 1$. (6 marks)

Or

16. (a) Determine the discrete numeric function corresponding to the generating function

$$A(z) = \frac{1}{(1-z)(1-z^2)(1-z^3)}$$

(6 marks)

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

17. (a) Find all possible Taylor's and Laurent's series expansions of the function $\frac{1}{(z+1)(z+2)^2}$ about the point $z = 1$. (7 marks)

(b) Evaluate the residues at the poles of the function $f(z) = \frac{z^2 - 2z}{(z+1)^2(z^2+4)}$. (5 marks)

Or

18. (a) Show that the function $z |z|$ is not analytic anywhere. (3 marks)

(b) Evaluate by contour integration, $\int_0^\infty \frac{dx}{x^6 + 1}$. (9 marks)

Turn over

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2015

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. Differentiate between participation and cardinality constraint.
2. Explain referential integrity in SQL.
3. Explain the need of indexing in database systems.
4. Define a prime attribute.
5. What are the ACID properties of transactions?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain :
 - (a) Data Model.
 - (b) Metadata.
 - (c) Key attribute.
 - (d) Subordinate entity.
 - (e) Database Schema.
7. Write notes on correlated queries with an example.
8. Why is it preferable to use a dense index rather than a sparse index?
9. Explain Armstrong's axioms of functional dependency. Why they are called sound and complete?
10. Explain the wait-for-graph used for deadlock detection.

(5 × 5 = 25 marks)

Turn over

Part C*Answer all questions.**Each full question carries 12 marks.*

11. (a) Explain the database system structure with a neat diagram.

Or

- (b) (i) Explain:

1. Recursive Relationships.
2. Specialization.

- (ii) Develop an ER diagram for an employee database.

(6 + 6 = 12 marks)

12. (a) What is a join operation? Explain the different types of join operations in relational algebra.

Or

- (b) What are the properties of a relational database? Explain the different constraints on relational database tables.

13. (a) Explain the storage organization in oracle with a neat diagram.

Or

- (b) Write notes on : (i) Triggers ; (2) Assertions.

14. (a) Briefly explain the database design process with a neat diagram.

Or

- (b) (i) Differentiate 3NF and BCNF with example.
(ii) How is BCNF more stricter than 3NF?

(8 + 4 = 12 marks)

15. (a) (i) What are conflict serializable schedules? Explain with examples.

- (ii) Explain the two-phase locking protocol.

*(8 + 4 = 12 marks)**Or*

- (b) (i) Explain timestamp-based protocols for concurrency control.

- (ii) What are the different types of distributed databases?

*(6 + 6 = 12 marks)**[5 × 12 = 60 marks]*