F 6387

B.TECH. DEGREE EXAMINATION, NOVEMBER 2013

Fifth Semester

Branch : Information Technology

IT 010 505—LANGUAGE TRANSLATORS (IT)

(New Scheme—Regular/Improvement/Supplementary)

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.
Each question carries 3 marks.

1. What are compiler-compilers ?

2. Define LL (1) grammar.

3. What are polymorphic functions ?

4. What are the advantages of using Intermediate code Generation over direct code generation ?

5. What is constant folding ? Give an example.

(5 × 3 = 15 marks)

Part B

Answer all questions.
Each question carries 5 marks.

6. Why the use of Context Free Grammars is not preferred over Regular expressions for defining the Lexical Syntax of a language ?

7. Eliminate left recursion from the following grammar :

$$S \rightarrow S + E \mid F$$
$$E \rightarrow E * F \mid F$$
$$F \rightarrow (S) \mid id.$$

8. What are activations records ? What are the different fields of an activation record ?

9. What is peephole optimisation ? What are its characteristics ?

10. What is global data flow analysis ? Explain.

(5 × 5 = 25 marks)

Turn over

Part C

Each full question carries 12 marks.

11. (a) Explain the following terms :

    (i) Interpreter.   (ii) Macroprocessor.

    (iii) Linker.   (iv) Loader.

Or

    (b) Construct an NFA for the following Regular expression, using thompson's construction :

$$(a\,|\,b)^*\ abb\ (a\,|\,b)^*$$

12. (a) Construct the LR (1) items for the grammar :

$$S \to CC$$
$$C \to cC\,|\,d.$$

Or

    (b) Explain the error recovery strategies in LR passing.

13. (a) Describe the various data structures used for representing the symbol Table.

Or

    (b) What are the different parameter passing methods ? Explain.

14. (a) What is a three-address code ? What are its types ? How is it implemented ?

Or

    (b) What are basic blocks ? Explain the different structure - preserving transformations on basic blocks.

15. (a) Explain the various loop optimisation techniques.

Or

    (b) What is live-variable analysis ? Explain the algorithm for live-variable analysis.

                                        (5 × 12 = 60 marks)

B.TECH. DEGREE EXAMINATION, NOVEMBER 2013

Fifth Semester

Branch—Information Technology

OPERATING SYSTEM CONCEPTS (T)

(Old Scheme—Supplementary/Mercy Chance)

Time : Three Hours   Maximum : 100 Marks

Answer **all** *the questions.*

Part A

Each question carries 4 marks.

1. What is the difference between a job and a process ?

2. What do you mean by time sharing ?

3. Explain convoy effect.

4. Explain the feedback queue scheduling.

5. Explain logical address space, physical address space and virtual address.

6. What are the functions of Memory management unit ?

7. What are the different file permissions in UNIX ? Explain briefly.

8. Draw the basic block diagram of I/O organization.

9. Mention the advantages of distributed systems.

10. Where do you find a stub procedure ? What is its specific purpose ?

(10 × 4 = 40 marks)

Part B

Each question carries 12 marks.

11. (a) Discuss the functions of different subsystems of Operating systems.

Or

(b) Explain the salient features of Windows operating systems.

12. (a) Consider the following set of processes :—

Process		Burst time (milli seconds)	Priority
P_1	...	10	3
P_2	...	1	1

Turn over

Process		Burst time (milli seconds)	Priority
P$_3$	...	2	3
P$_4$	...	1	4
P$_5$	...	5	2

The process are assumed to have arrived in the order P$_1$, P$_2$, P$_3$, P$_4$ and P$_5$ all at time 0. Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms : FCFS, SJF, non-preemptive priority (a smaller priority implies a higher priority), an RR (quantum = 1). What is the turn around time and waiting time of each process for each of the scheduling algorithms ?

Or

(b) What are the major drawbacks of busy wait implementation of semaphore primitives ? Explain a technique to alleviate these drawbacks.

13. (a) Explain the hardware support required for paging.

Or

(b) Explain how memory management is achieved in Solaris.

14. (a) Explain the different disk scheduling algorithms.

Or

(b) With a neat schematic diagram, explain about file organization and access.

15. (a) What is a distributed system ? Compare Networking Operating System and Distributed System OS.

Or

(b) Discuss about the cluster computer architectures. Explain the features of win2000 cluster server.

(5 × 12 = 60 marks)

B.TECH. DEGREE EXAMINATION, NOVEMBER 2013

Fifth Semester

Branch—Information Technology

MICROPROCESSORS (T)

(Old Scheme—Supplementary/Mercy Chance)

Time : Three Hours   Maximum : 100 Marks

Answer all questions.

Part A

Each question carries 4 marks.

1. List various types of flags used in 8086.

2. Briefly explain segmented memory used in 8086. List out the advantages.

3. What is meant by minimum and maximum mode of operation of 8086.

4. Explain Bus buffering and Latching used in 8086 system.

5. Explain the function of the following instructions ; (i) LOOPZ ; (ii) INT N.

6. Write short notes on DEBUG tool used with 8086 system.

7. Write an ALP 10 move a byte string, 16 bytes long, from location 2000_H to 3000_H.

8. What are the different types of data transfer schemes used to 8086 ?

9. Compare the features of 80286, 80386 and 80486 processors.

10. Explain the operating modes of 8254 timer.

(10 × 4 = 40 marks)

Part B

Each full question carries 12 marks.

11. Explain the internal architecture of 8086 with neat diagram.

Or

12. Explain the function of each pin/signal of 8086 in maximum and minimum mode of operation.

13. Write an ALP to separate the Even and Odd numbers from a given series of 10 numbers.

Or

14. Briefly explain the types of instructions available in 8086 ? Give examples with syntax and usage in each type.

15. Draw and explain read and write cycle timing diagrams of 8086 processor system.

Or

16. Discuss different schemes used for memory interface in 8086 system.

17. Compare the features of 8086 processor and pentium processor.

Or

18. Draw and explain the architecture of 8051 microcontroller.

19. Draw and explain the internal block diagram of 8255 and its operating modes.

Or

20. Explain the internal block diagram of 8237 DMA controller and also explain the DMA type of data transfer.

(5 × 12 = 60 marks)

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

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

B.TECH. DEGREE EXAMINATION, NOVEMBER 2013

Fifth Semester

Branch : Information Technology

IT 010 503—DATA COMMUNICATION (IT)

(New Scheme—Regular/Improvement/Supplementary)

Time : Three Hours

Maximum : 100 Marks

Part A

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

1. List the layers in OSI seven layer model.

2. Compare FSK and PSK systems.

3. What are the differences between thermal noise and shot noise ?

4. Distinguish between step index and graded index optical fibers.

5. What are the types of handover used in satellite based mobile phone operation.

(5 × 3 = 15 marks)

Part B

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

6. Explain Token Bus network principle of operation.

7. A signal is given as $(\cos 200 \, \pi t + \cos 300 \, \pi t)$. Calculate the minimum sampling rate so that the signal can be reconstructed from its samples.

8. Mention the different types of noises in communication and describe thin sources.

9. List and briefly mention the functions of the components of a computer network.

10. What are the differences between the bearer services and tele-services in GSM ? Explain with suitable diagrams.

(5 × 5 = 25 marks)

Turn over

Part C

Answer any **one** *full question from each module.*
Each full question carries 12 marks.

Module 1

11. What are the benefits of adopting ring topology for LAN ? With reference to token ring LAN discuss the following :

    (i)   Ring latency.

    (ii)   Frame format.

    (iii)   Priority mechanism.

Or

12. Discuss clearly the functions of each layer in the ISO-OSI model.

Module 2

13. With neat block diagram, explain the 10-channel TDM system. Compare its performance with FDM.

Or

14. With necessary diagrams, explain the method of generation and detection of FSK signal.

Module 3

15. Define and explain the principles of synchronous, asynchronous and isochronous communication schemes comparing their merits. Give fields of application of each one.

Or

16. Explain the principles of packet switched data network and describe the following related to it :

    (i)   Datagram.

    (ii)   Virtual circuit.

    (iii)   Logical channel.

Module 4

17. With necessary block diagrams, explain the cable TV network. Explain (i) Wavetraps ; and (ii) Scrambling and their applications.

Or

18. Explain the wave propagation modes in an ideal step index fibre and list the causes of optical pulse broadening during transmission along the fibre. List the advantages of optical fibre communication.

Module 5

19. Define and explain the functions necessary for network operation and maintenance contained in operation sub-system of GSM.

Or

20. (a) Illustrate CDMA's basic function before it is applied to signals, with an example.

    (b) Draw and explain the TDMA frame structure in GSM.

(7 + 5 = 12 marks)

[5 × 12 = 60 marks]

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

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

B.TECH. DEGREE   EXAMINATION, NOVEMBER 2013

Fifth Semester

Branch : Information Technology

IT 010 502—MICROPROCESSORS AND MICROCONTROLLERS (IT)

(New Scheme—Regular/Improvement/Supplementary)

Time : Three Hours

Maximum : 100 Marks

Part A

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

1. How address latching is done in 8086 based system ?

2. Identify the addressing modes in the following instructions :—

   (i) AAM ;   (ii) MOV [SI], AL ;

   (iii) MOVX @ DPTR, A.

3. List the different wiring techniques for the SCSI signals.

4. How does the status of $\overline{EA}$ pin affect the access to internal and external program memory ?

5. How do you decide the edge and level triggered configurations of external interrupts INTO and INT1 ?

(5 × 3 = 15 marks)

Part B

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

6. Draw the logical circuit for memory read, write and IO read, write signals derived from 8086 ?

7. Explain the following instructions :—

   (i) DEC ;   (ii) JGE ;

   (iii) NEG ;   (iv) SHR ;

   (iv) CLD.

8. Explain different methods of data communication and architectural features of 8251.

9. How are port latch and port pins of 8051 different ? How does 8051 interpret that a latch or port pin has to be read ?

10. Explain the different interrupt signals available in 8051 and also give their priority levels.

(5 × 5 = 25 marks)

Turn over

Part C

Answer any **one** *full question from each module.*
Each full question carries 12 marks.

MODULE 1

11. Draw the circuit diagram for the minimum mode configuration of 8086. Explain its advantages over maximum mode.

Or

12. (a) Explain base plus index addressing mode with an example and show the calculation of physical address for the same.

(6 marks)

(b) Explain memory segmentation in 8086. List its advantages and applications. (6 marks)

MODULE 2

13. (a) What is assembler directive ? Explain the following :—

(i) ASSUME ;　　　(ii) SEGMENT ;

(iii) SIZE.

(7 marks)

(b) Explain the interrupt cycle of 8086. (5 marks)

Or

14. Write a 8086 ALP with adequate comments to sort a byte array in descending order using bubble sort. Explain the logic of your program with a neat flow chart.

MODULE 3

15. (a) Explain the control word and different modes of operation of 8255. (6 marks)

(b) Describe, with neat sketches, the architecture of 8259 with its important features. (6 marks)

Or

16. Design and draw the circuit to interface 8086 with a buffer or latching device to interface 8 LED's to get a status of '10101010' with a IO address of 8000 H using OUT DX, AL instruction.

MODULE 4

17. (a) Explain byte level and bit level logical operations of 8051. (6 marks)

(b) List and explain different addressing modes of 8051, giving examples. (6 marks)

Or

18. (a) Explain different flags in 8051. (4 marks)

(b) Which of the following instructions do not affect any of the PSW flags ?

(i) data transfer ;

(ii) arithmetic and logic instructions ;

(iii) program branching instructions ;

(iv) boolean manipulation instructions.

(4 marks)

(c) Write a sequence of instructions that sets the AC flag. (4 marks)

MODULE 5

19. Write an assembly language program to transmit "HELLO" serially using 8051 serial communication with a baud rate of 9600. Assume necessary data suitably.

Or

20. In a typical application, it is required to generate a pulse of variable duration and variable amplitude. Design a suitable 8051 based system for this application with a pulse triggering mechanism. Give the circuit and program.

[5 × 12 = 60 marks]