



# PUNJAB TECHNICAL UNIVERSITY JALANDHAR

Max. Marks: 90

Time: 90 Mins.

## Entrance Test for Enrollment in Ph.D. Programme

### Important Instructions

- Fill all the information in various columns, in capital letters, with blue/black ball point pen.
- Use of calculators is not allowed. Use Blue/Black ball point pen for attempting the questions.
- All questions are compulsory. No negative marking for wrong answers.
- To attempt a question, make a tick mark (✓) at the right option/answer.
- Each question has only one right answer.
- Questions attempted with two or more options/answers will not be evaluated.

Stream (Engg./Arch./Pharm./Mgmt./App.Sci./Life Sci.)

Applied Sciences

Discipline

Computer Applications

Name

Father's Name

Roll No.

Date: **15-01-2011**

Signature of Candidate

Signature of Invigilator

Q. 1 The probability that a number selected at random between 100 and 999 (both inclusive) will not contain the digit 7 is:

- (a) 16/25
- (b) 27/75
- (c)  $(9/10)^3$
- (d) 18/25

Q. 2 The number of elements in the power set P(S) of the set:  $S = \{\{\phi\}, 1, \{2, 3\}\}$  is

- (a) 4
- (b) 2
- (c) 8
- (d) None of the above

Q. 3 A bag contains 10 white balls and 15 black balls. Two balls are drawn in succession. The probability that one of them is black and the other is white is

- (a) 4/5
- (b) 2/3
- (c) 1/2
- (d) 1/3

Q. 4 Let  $(Z, *)$  be an algebraic structure, where Z is the set of integers and the operation \* is defined by  $n*m = \text{maximum}(n, m)$ . Which of the following statements is true for  $(Z, *)$ ?

- (a)  $(Z, *)$  is a monoid
- (b)  $(Z, *)$  is a group
- (c)  $(Z, *)$  is an abelian group
- (d) None of the above

Q. 5 The probability that it will rain today is 0.5. The probability that it will rain tomorrow is 0.6. The probability that it will rain either today or tomorrow is 0.7. What is the probability that will rain today and tomorrow?

- (a) 0.3
- (b) 0.35
- (c) 0.25
- (d) 0.4

Q. 6 The number of equivalence relations on the set  $\{1, 2, 3, 4\}$  is

- (a) 16
- (b) 15
- (c) 24
- (d) 4

Q. 7 How many input words are in an AND gate's truth table

- (a) 4
- (b) 3
- (c) 8
- (d) 16

Q. 8 Flip flop outputs are always

- (a) complementary
- (b) independent of each other
- (c) the same
- (d) same as inputs

Q. 9 The advantage of CMOS technology over nMOS is

- (a) lower power dissipation
- (b) smaller chip size
- (c) greater speed
- (d) fewer masks for fabrication

Q. 10 The operation which is commutative but not associative is

- (a) AND
- (b) OR
- (c) EX-OR
- (d) NAND

Q. 11 In the following fig. what is the Boolean equation? How many ABCD input words are in the truth table?

- (a)  $Y = AB + CD, 16$
- (b)  $Y = AB + CD, 16$
- (c)  $Y = (A+B)(C+D), 8$
- (d)  $Y = AB + CD, 8$

Q. 12 What is the highest address in a 48K memory?

Express in hexadecimal and decimal form

- (a) 7FFFH, 64, 387
- (b) BFFFH, 49, 151
- (c) BFFFH, 49, 152
- (d) 7FFFH, 64, 386

Q. 13 Which of the following arrays is defined in the statements:

Double accounts [50] [20] [80];

- (a) accounts is a three-dimensional, 80,00-element integer array.
- (b) accounts is a three-dimensional, 80,000-element floating-point array.
- (c) accounts is a three-dimensional, 80,000-element string constants.
- (d) accounts is a three-dimensional, 80,000-elements double-precision array.

Q. 14 Which of the following initializes the elements of the first row to 0 and the second row to 1?

- (a) static int table [2][3]={0,0,0,1,1,1};
- (b) static int table [2][3]={ {0,0,0}, {1,1,1} };
- (c) static int table [2][3]={ {0,0,0}, {1,1,1} };
- (d) All of the above

Q. 15 Which of the following arrays defined in the statements:

#define N 30

- (a) a is one-dimensional, 30-element integer array.
- (b) a is one-dimensional, 30-element floating-point array.
- (c) a is one dimensional, 30-element character array
- (d) a is one-dimensional, 30-element double-precision array

Q. 16 The logical bitwise operator is

- (a) bitwise AND (&)
- (b) bitwise XOR(^)
- (c) bitwise OR (|)
- (d) All of the above

Q. 17 The actual arguments cannot be

- (a) expressions
- (b) a constant or a variable
- (c) other functions
- (d) of a different type from the corresponding formal arguments

Q. 18 Database management systems are intended to

- (a) eliminate data redundancy
- (b) establish relationships among records in different files
- (c) manage file access
- (d) maintain data integrity

Q. 19 Data integrity control

- (a) is used to set upper and lower limits on numeric data
- (b) requires the use of passwords to prohibit unauthorized access to the file.
- (c) has the data dictionary keep the date and time of last access, last backup and most recent modification for all files.
- (d) all of the above

Q. 20 A data dictionary is a special file that contains

- (a) the names of all fields in all files
- (b) the data types of all fields in all files
- (c) the widths of all fields in all files
- (d) all of the above

Q. 21 Sort/report generators

- (a) are faster than index/report generators
- (b) require more disk space than index/report generators
- (c) do not need to sort before generating a report.
- (d) both (a) and (b)

Q. 22 To have a file hold a list, it is necessary to

- (a) identify the records in the list.
- (b) identify the name, width and type of the fields of each record.
- (c) decide which fields will be used as sort or index keys.
- (d) all of the above

Q. 23 A list in which all additions to the list are made at one end and all deletions from the list are made at the other end is called.

- (a) queue
- (b) rooted list
- (c) stack
- (d) all of the above

Q. 24 A list representation in which the order of the elements is determined by an explicit link field in each element, rather than by the sequential position is

- (a) Array
- (b) Sequential list
- (c) Linked list
- (d) None of the above

Q. 25 A variable whose size is determined at compile time and cannot be changed at run time is:

- (a) static variable
- (b) dynamic variable
- (c) not a variable
- (d) none of the above

Q. 26 The most common hash functions use the .....to compute hash address.

- (a) Division method
- (b) Union method
- (c) Subtraction method
- (d) None of the above

Q. 27 The minimum number of edges in a connected cyclic graph on n vertices is

- (a) n-1
- (b) n
- (c) n+1
- (d) None of the above

Q. 28 Which of the following transmission systems provides the highest data rate to an individual device?

- (a) Computer bus
- (b) Telephone lines
- (c) leased lines
- (d) voice band modem

Q. 29 A protocol is a set of rules governing a time sequence of events that must take place

- (a) between peers
- (b) between an interface
- (c) between modems
- (d) across an interface

Q.30 What is the main difference between DDCMP and SDLC?

- (a) DDCMOP does not need speicla hardware to final the beginning of a message.
- (b) DDCMP has a message header
- (c) SDLC has a IP address
- (d) SDLC does not use CPC.

Q 31 Session layer checkpoints.....

- (a) allow just a portion of a file to be resent.
- (b) control the addition of headers
- (c) detect and recover errors
- (d) are involved in dialog control

Q.32 Exryption and decryption are functions of the ..... layer.

- (a) transport
- (b) session
- (c) application
- (d) presentation

Q. 33 A packet sent from a node with IP address 198.123.46.20 to all nodes on network 198.123.46.0 requires a ..... address

- (a) multicast
- (b) unicast
- (c) broadcast
- (d) (a) or (b)

Q. 34 Which of the following program is used to copy files to or from another UNIX timesharing system over a single link?

- (a) VMTP
- (b) TFTP
- (c) UUCP
- (d) UART

Q. 35 Which of the following device copies electrical signals from one Ethernet to another?

- (a) bridge
- (b) repeater
- (c) hub
- (d) passive hub

Q. 36 What is the usual number of bits transmitted simultaneously in parallel data transmission used by microcomputers?.

- (a) 16
- (b) 8
- (c) 9
- (d) 4

Q. 37 The term 'duplex' refers to the ability of the data receiving stations to echo back a confirming message to the sender. In full duplex data transmission, both the sender and the receiver

- (a) cannot talk at once
- (b) can receive and send data simultaneously
- (c) can send or receive data one at a time
- (d) can do one way data transmission only.

Q. 38 Lex is a

- (a) Programming language
- (b) Pattern recognition language
- (c) Assembly language
- (d) None of the above

Q. 39 Ambiguous grammar has ..... derivations.

- (a) Two leftmost
- (b) Two right most
- (c) One left and One rightmost
- (d) (a) and (c)

Q. 40 Recursive descent parsing technique is a

- (a) Two down parsing
- (b) Bottom up parsing
- (c) Left to Right parsing
- (d) Horizontal parsing

Q. 41 The computational technique used to computer the disk storage address of individual records is called.

- (a) bubble memory
- (b) key fielding
- (c) dynamic reallocation
- (d) hashing

Q. 42 Capacity planning

- (a) does not depend on the monitoring tools available
- (b) is independent of the operating system
- (c) requires detailed system performance information
- (d) is not needed in small installations

Q. 43 Which of the following commands is used to assign executable permission to the owner of the file named 'note'

- (a) chmod ugo+w note
- (b) chmod u+w note
- (c) chmod u+x note
- (d) chmod g+x note

Q. 44 Which command is used to assign executable permission to all of the files named "letter"?

- (a) chmod ugo+rw letter
- (b) chmod ugo+r letter
- (c) chmod u+x letter
- (d) chmod ugo+x letter

Q. 45 If the file doesn't have any permission for any category, then this expression takes the form

- (a) d
- (b) -r r r
- (c) c
- (d) -r-x r-x

Q. 46 The first set of the three permission (rw) pertains to the owner of the file, indicating that the owner has

- (a) executable permission only
- (b) both read and executable permissions
- (c) write and executable permissions
- (d) both read and write permissions

- Q. 47 Which operator will be used with chmod command to assign absolute permission?  
(a) +  
(b) =  
(c) c  
(d) %
- Q. 48 During system study, data can be collected through  
(a) questionnaires  
(b) on-site observations  
(c) interviews  
(d) all of the above
- Q. 49 Waterfall model has \_\_\_\_\_ steps or phases  
(a) 5  
(b) 4  
(c) 8  
(d) 6
- Q. 50 Waterfall model is a \_\_\_\_\_ model.  
(a) Linear  
(b) Iterative  
(c) Rapid  
(d) Interactive
- Q. 51 Prototyping model begin with:  
(a) Test prototype  
(b) Coding  
(c) Requirement gathering  
(d) None of the above
- Q. 52 Prototyping is preferred by  
(a) Customer  
(b) Developer  
(c) None  
(d) Both
- Q. 53 The files required to maintain general ledger records include:  
(a) inventory file  
(b) detail postings file  
(c) chart of accounts file  
(d) all of the above
- Q. 54 The prime concern of financial control is:  
(a) meeting payroll commitments  
(b) accounting for the liabilities incurred  
(c) providing financial status information  
(d) all of the above
- Q. 55 Considering all types of business, accounts receivable systems are not closely interrelated with the  
(a) cost accounting system  
(b) payroll system  
(c) sales order system  
(d) purchasing system
- Q. 56 CBCT stands for:  
(a) Customer Bank Credit Terminal  
(b) Commercial Banking Credit Terminal  
(c) Customer Bank Communication Terminal  
(d) Commercial Bank Communication Terminal
- Q. 57 In which area are job openings expected in decline in the future?  
(a) computer operator  
(b) data-entry operator  
(c) system programmer  
(d) application programmer
- Q. 58 Which of the following affects the extend to which you are involved with the system development life cycle in your company?  
(a) your job description  
(b) size of the organization  
(c) your relevant experience  
(d) none of the above
- Q. 59 The background and experience of analyst include:  
(a) a background in systems theory and organization behaviour  
(b) competence in system tools and methodologies and a practical knowledge of one or more programming and database languages  
(c) familiarity with the makeup and inner workings of major application areas such as financial accounting, personnel administration, marketing and sales, operations management, model building and production control  
(d) all of the above
- Q. 60 Advantages of database system is (are)  
(a) storage space duplication is eliminated  
(b) all applications share centralized files  
(c) data are stored once in database and are easily accessible when needed  
(d) all of the above
- Q. 61 The drawback(s) of a database is (are)  
(a) the cost of specialized personnel  
(b) all application share centralized files.  
(c) the need of protect sensitive data from unauthorized access  
(d) both (a) and (c)
- Q. 62 In phase 1 of the system development life cycle, which of the following aspects are usually analyzed?  
(a) outputs  
(b) controls  
(c) input (transactions)  
(d) all of the above
- Q. 63 Which of the following is not a communication command  
(a) write  
(b) mail  
(c) mesg  
(d) grep
- Q. 64 Which of the following keys is used to replace a single character with new text?  
(a) S  
(b) r  
(c) s  
(d) C

Q. 65 The command that can be used to restrict incoming messages to a user is

- (a) mesg
- (b) halt
- (c) grep
- (d) sleep

Q. 66 Which of the following special shell variable is used to process number of the last background job?

- (a) \$!
- (b) \$0
- (c) \$ \$
- (d) S\*

Q. 67 The octal representation 652 indicates

- (a) Write permission for others
- (b) Execute permission for the owner
- (c) Read and write permission of groups
- (d) All of the above

Q. 68 What are x and y in the following macro definition?

```
macro      Add x,y
           Load y
           Mul x
           Store y
```

end macro

- (a) Variables
- (b) Actual parameters
- (c) Identifiers
- (d) Formal parameters

Q. 69 A linker is given object modules for a set of programs that were compiled separately. What information need not be included in an object module.

- (a) object code
- (b) relocation bits
- (c) names and locations of all external symbols defined in the object module
- (d) absolute addresses of internal symbols

Q. 70 Which of the following capabilities is required for a system program to execute more than one program at a time.

- (a) compiling
- (b) word processing
- (c) virtual memory
- (d) multitasking

Q. 71 A critical region is

- (a) a program segment that has not been proved bug-free
- (b) a program segment where shared resources are accessed
- (c) a program segment that often causes unexpected system crashes.
- (d) one which is enclosed by a pair of P and V operations on semaphores

Q. 72 Which of the following addressing modes, facilitates access to an operand whose location is defined relative to the beginning of the data structure in which it appears?

- (a) ascending
- (b) index
- (c) sorting
- (d) indirect

Q. 73 The master list of an indexed file

- (a) is sorted in ascending order
- (b) contains only a list of keys and record numbers
- (c) has a number assigned to each record
- (d) both (b) and (c)

Q. 74 The model for a record management system might be

- (a) handwritten list
- (b) a rolodex card file
- (c) a business form
- (d) all of the above

Q. 75 A relational database management (RDBMS) package manages data in more than one file at once. How does it organize these file? As

- (a) tables
- (b) relations
- (c) tuple
- (d) both (a) and (b)

Q. 76 The distinguishable parts of a record are called

- (a) files
- (b) data
- (c) fields
- (d) database

Q. 77 A number of related records that are treated as a unit is called

- (a) file
- (b) field
- (c) data
- (d) batch

Q. 78 \_\_\_\_ assist traditional auditors both in the review of computer controls and in the production of audit information through the use of computers.

- (a) CDP
- (b) DPMA
- (c) CISA
- (d) EDP auditor

Q. 79 The analysis and design of application systems are the responsibility of a \_\_\_\_

- (a) Programmer
- (b) Computer Operator
- (c) System Analyst
- (d) Data Entry Operator

Q. 80 \_\_\_\_ Write computer programs that performs jobs specified by the user.

- (a) Programmer
- (b) System Analyst
- (c) Data Entry Operator
- (d) Computer Operator

Q. 81 \_\_\_\_\_ is not a part of SAP

- (a) Accounting
- (b) Human Resources
- (c) Sales
- (d) Customer Banking

Q. 90 Which of the following special shell variables is used to process number of the current shell?

- (a) \$!
- (b) \$0
- (c) \$\$
- (d) \$\*

Q. 82 ERP system has evolved from:

- (a) MIS
- (b) DPS
- (c) TPS
- (d) Both MIS, TPS

Q. 83 OLAP is acronym for:

- (a) Online Analytical Project
- (b) Online Analytical Processing
- (c) Online Application Process
- (d) None of the above

Q. 84 Decision support systems are based on \_\_\_\_\_ analysis.

- (a) Query and Reporting
- (b) Data mining
- (c) OLAP
- (d) All of the above

Q. 85 The rule(s) to follow in constructing decision table is (are):

- (a) a decision should be given a name
- (b) the logic of the table is independent of the sequence in which conditions rules are written, but the action takes place in order in which the events occur
- (c) standardized language must be used consistently
- (d) all of the above

Q. 86 An open rectangle:

- (a) defines a source or destination of system data
- (b) identifies data flow
- (c) represents a process that transforms incoming data flow(s) into outgoing data flows
- (d) is a data store-data at rest, or a temporary repository of data.

Q. 87 While constructing a data dictionary, the analyst considers:

- (a) each data flow in the DFD has one data dictionary entry
- (b) definitions must be readily accessible by name
- (c) there should be no redundancy in the data definition
- (d) all of the above

Q. 88 Software availability is more sensitive to

- (a) MTTF
- (b) MTTR
- (c) MTBF
- (d) both (a) and (c)

Q. 89 Clean room approach involves:

- (a) Formal methods
- (b) Informal methods
- (c) Evolutionary methods
- (d) both (a) and (b)