AMCAT Previous Papers
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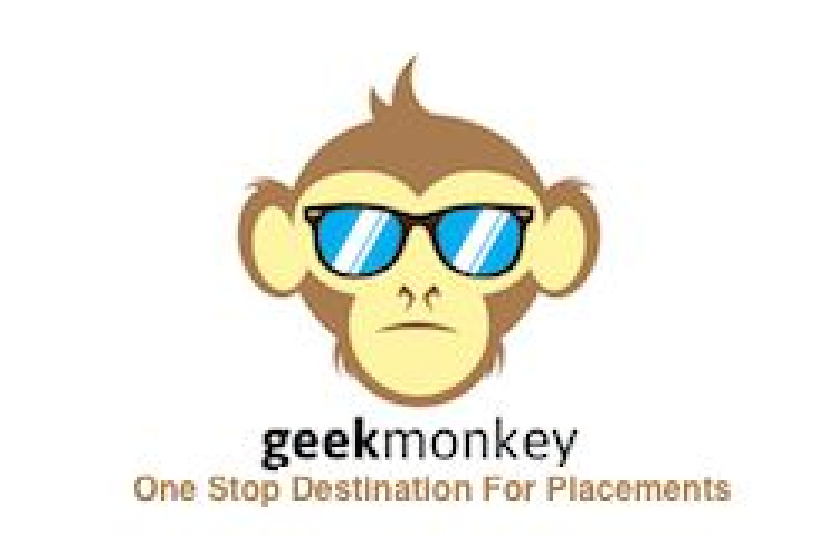
Computer Science Core

AMCAT Previous Year Papers and study materials



QUANTS-

Topics	Subtopics	Expected Questions
Basic Mathematics	• Divisibility • HCF and LCM • Numbers, decimal fractions and power	6 - 8 Questions
Applied Mathematics	• Profit & Loss ,Simple & Compound Interest • Time, Speed and Distance • Work & Time • Ration & Allegation	8 - 10 Questions
Engineering Mathematics	• Logarithms • Permutation and Combinations • Probability	8 - 10 Questions

COMPUTER Programming

Topics	Subtopics	Expected Questions
Basic Programming	• Data Types • Iteration, Recursion, Decision • Procedure, functions and scope	10 - 12 Questions
Data Structures	• Arrays, Linked Lists, Trees, Graphs • Stacks, Queues • Hash Tables • Heaps	6 - 8 Questions
OOPs	• Polymorphism • Abstraction • Encapsulation	4 - 6 Questions
Miscellaneous	• Searching and Sorting • Complexity Theory • Core Computer Science	4 - 5 Questions

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ENGLISH

Topics	Subtopics	Expected Questions
Vocabulary	• Synonyms • Antonyms • Sentence based Synonyms • Sentence based Antonyms	7 - 8 Questions
Grammar	• Subject-Verb Agreement • Tenses and Articles • Prepositions and Conjunctions • Speech and Voices	10 - 12 Questions
Comprehension	• Inferential and Literal Comprehension • Contextual Vocabulary • Comprehension ordering	5 Questions

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Computer Science

Topics	Subtopics	Expected Questions
OPERATING SYSTEM & COMPUTER ARCHITECTURE	• Basics of OS • Computer Architecture • Process Management and Synchronisation • Memory and I/O Management	10-11 Questions
DBMS - DataBase Management Systems	• Data model • Relational Algebra and SQL • Normalisation, Architecture, Indexing	8-9 Questions

Computer Networks	• Basics of networking and communication • OSI, TCP/IP layers and protocols • Network Devices and Routing Algorithms	5 -6 Questions

AMCAT Score vs Correct Questions

Score	300	400	500	550	600	650	700	750	820
English(18 Ques)	5	9	11	13	14	15	16	17	18 Ques
Quants(16 Ques)	6	8	10	11	12	14	14	15	16 Ques
Reasoning(14 Ques)	2	5	7	9	11	12	12	13	14 Ques
Computer Programming(25 Ques)	6	9	11	15	20	20	21	22	25 Ques
Computer Science(26 Ques)	6	10	15	17	19	20	21	23	26 Ques

If you take lesser time than designated for a question for e.g. if there are 16 question in quants and total time is 18 mins.

Thus, total time for one question = 67 seconds.

If for quants any question is solved 10 seconds before i.e 57 seconds you get +15 points.

Similarly, if it is solved after 77 seconds - 5 points.

AMCAT Score vs Percentile(if percentile 100 then score 820/800)

Percentile	<50	50-60	60-70	70-80	80-90	90-95	95+
English Score(800)	470	495	525	540	560	620	670
Quants Score(800)	480	500	550	575	615	640	685
Logical Score(800)	460	495	515	535	570	600	680
Computer Programming Score(800)	350	390	435	480	520	565	595
Computer Science Score(800)	380	415	440	470	500	535	580

OPERATING SYSTEM & COMPUTER ARCHITECTURE

Question 1

In ____ if a parent process terminates, then all of its children processes must also be terminated

A process termination

B serial termination

C parallel termination

D **cascading termination**

Question 2

Number of tuples in a relation is called _____ and number of attributes is called _____

A domain, cardinality

B degree, cardinality

C **cardinality, degree**

D domain, degree

Question 3

Places(location,name, type) Choose the correct option Which of the following queries can be used to retrieve name and type from table “Places”(given in the passage), where column ‘location” has value Delhi and output should be in the alphabetically increasing order of column “name’?

A SELECT name, type FROM Places WHERE locationDelhi SORT BY 1;

B SELECT name, type FROM Places WHERE location’Delhi’ SORT BY name;

C **SELECT name, type FROM Places WHERE location=’Delhi’ ORDER BY 1;**

D SELECT name, type FROM Places WHERE location=’Delhi’ ORDER BY 2;

E SELECT name, type FROM Places WHERE location’Delhi SORT BY 2;

Question 4

What are necessary conditions for deadlock? 1. Mutual exclusion (where at least one resource is non-sharable) 2. Hold and wait (where a process holds one resource and waits for other resource) 3. No preemption (where the resources cant be preempted) 4. Circular wait

A Only 1 & 2

B Only 1 & 3

C Only 2 & 4

D Only 1 & 2 & 4

E **All the above**

Question 5

If a process is executing in its critical section, then no other processes can be executing in their critical section. This condition is called

A **mutual exclusion**

B critical exclusion

C synchronous exclusion

D asynchronous exclusion

Question 6

For a deadlock to arise, which of the following conditions must hold simultaneously ? (choose all that apply)

A **Mutual exclusion**

B Starvation

C **Hold and wait**

D **No preemption**

E **Circular wait**

Question 7

Consider the following set of processes, the length of the CPU burst time given in milliseconds : Process Burst time P1 6 P2 8 P3 7 P4 3 Assuming the above process being scheduled with the SJF scheduling algorithm :

A The waiting time for process P2 is 3ms.

B The waiting time for process P2 is 0ms.

C **The waiting time for process P2 is 16ms.**

D The waiting time for process P2 is 9ms.

Question 8

Orders are processed in the sequence they arrive if _____ rule sequences the jobs.

A earliest due date

B slack time remaining

C **first come, first served**

D critical ratio

Question 9

A solution to the problem of indefinite blockage of low – priority processes is :

A Starvation

B Wait queue

C Ready queue

D **Aging**

Question 10

One of the disadvantages of the priority scheduling algorithm is that :

A it schedules in a very complex manner

B its scheduling takes up a lot of time

C **it can lead to some low priority process waiting indefinitely for the CPU**

D None of these

AMCAT Computer Science Computer Architecture

Question 1

Choose the correct option. Which of the following statements is/are true about the Seek time in the disk ? 1. Time needed to move the disk amr to the desired cylinder. 2. It is also called positioning time. 3. It is aslo called random access time.

A Only 1

B Only 2

C Both 1 and 2

D Both 1 and 3

E **All 1,2 and 3**

Question 2

Which of the following statements are true? 1)Transfer of data from Main Memory to Cache Memory is known as mapping process 2) Associative Memory stores both address and data of memory word 3)If the word is not found in the Cache and is in main memory, it is a miss 4) Content Addressable Memory and Associative Memory are same

A Both 1 and 3

B Both 2 and 3

C Both 1 and 4

D 1,2 and 3

E **All-1,2, 3 and 4**

Question 3

```
Group A                        Group B
A. Next fit allocation      1. Processor sharing
B. Mapping of address       2. Contiguous memory allocation
C. Round-robin scheduling   3. Memory management unit
D. Push migration           4. Load balancing
```

A A-3,B-4,C-1,D-2

B **A-2. B-3. C-1, D-4**

C A-2,B-1,C-4,D-3

D A-4,B-2,C-3,D-1

Question 4

GroupA A. Contiguous allocation B. Linked list allocation C. FAT allocation Group B 1. Extra memory consume 2. Slow random access 3. Disk fragmentation

A **A-1, B-2, C-3**

B A-3, B-2. C-1

C A-1,B-3,C-2

D A-2, B-1, C-3

Question 5

Group A A. Hit ratio B. Pages C. Frames D. External fragmentation Group B 1. Logical memory 2. Compaction 3. Translation look-aside buffer 4. Physical memory

A A-2, B-4, C-1,D-3

B **A-3, B-1,C-4, D-2**

C A-2;B-1.;C-4; D-3

D A-1; B-3; C-4; D-2

Question 6

Calculate the number of frames the memory will have if the page size is 4 bytes and the physical memory of 16 bytes.

A **4 frames each 4 bytes**

B 6 frames each 1 bytes

C 2 frames each 8 bytes

D 1 frame 16 bytes

AMCAT Computer Science Process Management and Synchronisation

Question 1

There are 5 processes P1, P2. P3, P4 and P5 which are processed by Preemptive Priority scheduling algorithm. In what sequence the processes would be scheduled, if lower number in the priority column in the given table denotes the higher priority?

```
Pro A Pri B(in ms)
 P1 0 3      10
 P2 0 1       1
 P3 2 5      2
 P4 2 4      1
 P5 3 2      5

Process> Pro
Arrival Time>A
Priority >Pri
Burst Time in Milliseconds (ms)>B
```

A P2-P1-P1-P5-P1-P1-P4-P3

B P2-P1-P5-P1-P1-P4-P3

C P2-P1-P1-P5-P4-P1-P3

D **P2-P1-P1-P5-P1-P4-P3**

Question 2

In ----------, if a parent process terminates, then all of its children processes must also be terminated.

A process termination

B serial termination

C parallel termination

D **cascading termination**

Question 3

Which of the following is/are true? 1 Banker's algorithm is used for the avoidance of deadlock 2 Resource-allocation graph is used for a system with multiple instances of each resource type

A **Only 1**

B Only 2

C Both 1 and 2

D Neither 1 or 2

Question 4

Which of the following statements is/are incorrect' 1. A thread can acquire more than one lock(Mute). 2. Deadlock will occur if a non-recursive mutex is locked more than once. 3. Mutex Is a signalling mechanism used to synchronise access to a resource.

A Only 1

B Only 2

C Only 3

D **Both 1 and 2**

Question 5

A semaphore S is an integer variable that, apart from initialization, is accessed only through two standard atomic operations What are those operations?

A test() and set()

B **wait() and signal()**

C lock() and unlock()

D test() and flag()

Question 6

Bankers Algorithm is a technique of _____

A **deadlock avoidance**

B deadlock prevention

C deadlock detection

D deadlock creation

Question 7

Round robin scheduling falls under the category of :

A Non Preemptive

B **Preemptive**

C Mutli Preemptive

D None of these

Question 8

The most optimal scheduling algorithm is :

A FCFS – First come First served

B **SJF – Shortest Job First**

C RR – Round Robin

D None of these

Question 9

Consider the following page reference string : 1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 6
i) For LRU page replacement algorithm with 4 frames, the number of page faults is :

A 14

B 8

C 11

D **10**

Question 10

For FIFO page replacement algorithms with 4 frames, the number of page faults is :

A 16

B **14**

C 11

D 15

AMCAT Computer Science Memory and I/O Management

Question 1

```
A.windows95       1.FAT16
 B.DOS            2.Redundancy
 C.RAID           3. NTFS
 D.UNIX o.s        4.Time sharing
```

Match the given operating system terms in GroupA with their chracteristics in GroupB

A A-3 B-1 C-2 D-4

B **A-3 B-4 C-1 D-2**

C A-4 B-3 C-1 D-2

D A-1 B-3 C-2 D-4

Question 2

Consider the following reference string - 4.,7,0, 7, 1, 0, 1,2, 1, 2, 7, 1,2, 0 Calculate the difference between the number of page faults encountered when the optimal page replacement policy is used with 4 page frames and 3 page frames respectively

A 0

B **1**

C 2

D 3

Question 3

Group A A. First-Come, First-Serve Replacement Algorithm B. Least Recently Used Replacement Algorithm C. Paging D. Buddy System Group B 1. Coalescing 2. Stack Algorithm 3. Belady's Anomaly 4. Thrashing

A A-2, B-3, C-1, D-4

B **A-3, B-2, C-1, D-4**

C A-3, B-2, C-4, D-1

D A-1, B-2, C-3, D-4

Question 4

Memory management technique in which system stores and retrieves data from secondary storage for use in main memory is called

A fragmentation

B **paging**

C mapping

D none of the mentioned

Question 5

I/O hardware contains

A bus

B controller

C I/O port and its registers

D **all of the mentioned**

Question 6

Run time mapping from virtual to physical address is done by

A **Memory management unit**

B CPU

C PCI

D none of the mentioned

Question 7

The page table contains

A page offset

B **base address of each page in physical memory**

C page size

D none of the mentioned

Question 8

Thrashing _____ the CPU utilization.

A increases

B keeps constant

C **decreases**

D none of these

Question 9

A process is thrashing if :

A it spends a lot of time executing, rather than paging

B it has no memory allocated to it

C **it spends a lot of time paging, than executing**

D None of these

Question 10

The hardware mechanism that allows a device to notify the CPU is called _____.

A polling

B **interrupt**

C driver

D Controlling

AMCAT Computer Science Data model

Question 1

Which of the following queries can be used to find out the rows containing the data about the candidates who took the entrance test more than two years ago?

A SELECT * FROM Candidates WHERE dateOfTest

B **SELECT * FROM Candidates WHERE dateOfTest**

C SELECT * FROM Candidates WHERE dateOfTest

D SELECT * FROM Candidates WHERE dateOfTest>(yy,-2,GETDATE());

Question 2

What will be the output of the following SQL query? SELECT Name, Age FROM tbl_student WHERE Age NOT BETWEEN 12 AND 15;

A Displays only NULL values.

B Does not display NULL values.

C **May display NULL values.**

D Error in the query.

Question 3

A parent Process executes _____ system call to create a child process

A exce()

B **fork()**

C child()

D create()

Question 4

Which of the following is example of Object based logical model ?

A **Entity Relationship Model**

B Hierarchical Model

C Relational Model

D Network Model

Question 5

An entity in A is associated with at most one entity in B, and an entity in B is associated with at most one entity in A.This is called as

A One-to-many

B **One-to-one**

C Many-to-many

D Many-to-one

Question 6

The attribute name could be structured as a attribute consisting of first name, middle initial, and last name . This type of attribute is called

A Simple attribute

B **Composite attribute**

C Multivalued attribute

D Derived attribute

Question 7

In the Relational Model, the number of columns in a table is termed as _____.

A cardinality

B **degree**

C domain

D None of these

Question 8

Which company has developed the hierarchical model?

A **IBM**

B Sun Microsystems

C Oracle

D Microsoft

Question 9

Which is the subset of SQL commands used to manipulate Oracle Database structures, including tables?

A **Data Definition Language(DDL)**

B Data Manipulation Language(DML)

C Both of above

D None

Question 10

What is a view?

A A view is a special stored procedure executed when certain event occurs.

B **A view is a virtual table which results of executing a pre-compiled query. A view is not part of the physical database schema, while the regular tables are.**

C A view is a database diagram.

D None of these

AMCAT Computer Science Relational Algebra and SQL

Question 1

The minimal set of a super key is?

A **candidate key**

B primary key

C foreign key

D secondary key

Question 2

car(car_number,car_type,mfd) owner(name,age,car_number,number) Akshay has 2 tables namely - car and owner (given in the passage), with a common column car_number. Which of the following queries will retrieve car_ type where owner name Is ‘Nikhil’?

A **SELECT car_type FROM car WHERE car_number IN (SELECT car_number FROM owner WHERE name=’Nikhil’);**

B SELECT car_type FROM car WHERE car_number=(SELECT * FROM owner WHERE name= ‘NikhiI’);

C SELECT car _type FROM car WHERE car _number LIKE (SELECT * FROM owner WHERE name=’NikhiI’);

D SELECT car_type FROM car WHERE car_number BETWEEN(SELECT car_number FROM owner WHERE name=’Nikhil’);

Question 3

Which of the following is a fundamental operation in relational algebra ?

A Set intersection

B Natural join

C Assignment

D **None of the mentioned**

Question 4

Which of the following is not a unary operator?

A where

B select

C rename

D **min**

Question 5

If in JOIN operation, conditions of JOIN operation are not satisfied then results of operation is

A **Zero tuples and empty relation**

B zero tuples from two relation

C one tuple from one relation saying null

D two tuples from empty relations

Question 6

Which of the following is not a DML statement?

A Select

B Insert

C **Create**

D Delete

Question 7

Which of the following can be rolledback?

A Truncate

B **Delete**

C Drop

D None

Question 8

A _____ in a table represents a relationship among a set of values.

A Column

B Key

C **Row**

D Entry

Question 9

A relational database consists of a collection of

A **Tables**

B Fields

C Records

D Keys

Question 10

The term _____ is used to refer to a row.

A Attribute

B **Tuple**

C Field

D Instance

AMCAT Computer Science Normalization, Architecture, Indexing

Question 1

Recovery of a database system is done to preserve which of the following ACID properties?

A Isolation

B Atomicity

C **Atomicity and Durability**

D Consistency and Atomicity

E Atomicity, Durability and Consistency

Question 2

Amit hs some knowledge about database normalisation.He has created a table "customer", which has the following characteristics. 1)Table has transitive dependencies. 2)there are no partial dependencies in the table 3)There is no column with redundant data in the table In which normal form is the table?

A 1NF

B **2NF**

C 3NF

D BCNF

Question 3

What does isolation in Acid rules for the transaction in database mean?

A Either the effects of whole transaction is reflected on database or database is rolled back to its original state

B **No transaction can interfere in the end result of another transaction**

C Effects of a successful transaction must persist in a database

D Every individual transaction must leave database in a cosistent state .maintaining the integrity of the database

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Question 7

Tables in second normal form (2NF):

A **Eliminate all hidden dependencies**

B Eliminate the possibility of a insertion anomalies

C Have a composite key

D Have all non key fields depend on the whole primary key

Question 8

A BCNF is:

A Loss less join and dependency preserving

B **Loss less join and not dependency preserving**

C Not loss less join and dependency preserving

D None of these

Question 9

Which forms are based on the concept of functional dependency: a) b) 2NF c) 3NF d) 4NF

A 1NF

B 2NF

C **3NF**

D 4NF

Question 10

Which of the following one is not true

A A relation is in BCNF if it is 4NF

B BCNF is stricter than 3NF

C A relation is BCNF is ever determinant of a relation is candidate key

D **All of these**

Question 1

Group A A. Physical Layer B. Network Layer C. Application Layer D. Data Link Layer Group B 1. Network security 2. Data transmission rate 3. Error detection and control 4. End to end transmission of packets

A A-2, B-1, C-4, D-3

B A-2, B-4, C-1, D-3

C A-3,B-1,C-4,D-2

D **A-4. B-1, C-2, D-3**

Question 2

Which of the following condition is used to transmit two packets over a medium at the same time?

A **Collision**

B Contention

C Asynchronous

D Synchronous

Question 3

Which of the following method can't be used for data communication?

A Simplex

B **Multiplex**

C Half Duplex

D Full Duplex

Question 4

Which of the following is used for error detection in high level TCP/IP protocols?

A Data Sum

B Bit Sum

C **Check Sum**

D Error Sum

Question 5

What is the default subnet mask for a class C network?

A 127.0.0.1

B 255.0.0.0

C 255.255.0.0

D **255.255.255.0**

Question 6

What is the maximum size of header of an IP?

A 32

B 54

C 28

D **60**

Question 7

A distributed network configuration in which all data/information pass through a central computer is?

A Bus network

B **Star network**

C Ring network

D Point-to-point network

Question 8

Which of the following is not the Networking Devices?

A Gateways

B **Linux**

C Routers

D Firewalls

AMCAT Computer Science OSI, TCP/IP layers and protocols

Question 1

Which of the following statements is incorrect?

A Bridge is a combination of hardware and software to link two similar network

B Gateway is a combination of hardware and software to link two different types of network.

C Bridges are faster than Routers

D Gateway operate at network and transport layer of the OSI model

E **Both B and C**

Question 2

Cooperating processes require an Interprocess Communication (IPC) mechanism that will allow them to exchange data and information. Which of the following options is/are the method(s) of Interprocess Communication(IPC)?

A Message passing

B Cooperation

C Shared memory

D Both 2 and 3

E **Both 1 and 3**

Question 3

Gateway works in which layer?

A Physical layer

B Data Link Layer

C **Network layer**

D None

Question 4

Bridge works in which layer?

A Physical Layer

B **Data Link Layer**

C Network Layer

D None

Question 5

MAC Address is the example of?

A Transport Layer

B **Data Link Layer**

C Application Layer

D Physical Layer

Question 6

What is the address size of IPv6 ?

A 32 bit

B 64 bit

C **128 bit**

D 256 bit

Question 7

Repeater operates in which layer of the OSI model?

A **Physical layer**

B Data link layer

C Network layer

D Transport layer

Question 8

Which layers of the OSI model are host-to-host layers? A. B. C. D.

A **Transport, Session, Presentation, Application**

B Network, Transport, Session, Presentation

C Datalink, Network, Transport, Session

D Physical, Datalink, Network, Transport

Question 9

How many layers are in the TCP/IP model?

A **4 layers**

B 5 layers

C 6 layers

D 7 layers

Question 10

Which of the following IP address class is Multicast A. B. Class B C. Class C D. Class D

A Class A

B Class B

C Class C

D **Class D**

AMCAT Computer Science Network Devices and Routing Algorithms

Question 1

Which of the following processes is used for sending data along with the acknowledgement?

A Automatic Repeat Request

B Stop and Wait ARQ

C Go-Backn ARQ

D **Piggybacking**

Question 2

Which of the following statements is true about bus topology?

A **It is a point to point configuration**

B **It is not easy to reconfigure**

C If the backbone link is broken then the network is not incapacitated

D It requires more cable as compared to mesh topology