1 of 100

100 RPSC_March-2016_Paper 1

How many 3-digit numbers can be obtained from {1, 2, 3, 6, 7} given that a digit can be repeated no more than two times.

○ 5! 3!

○ 5^3

○ 120

○ 3^5

2 of 100

101 RPSC_March-2016_Paper 1

How many triangles can be constructed from 5 points in space. It is given that 3 of these points are collinear.

○ 3 + 3 x 2 = 9

○ 5 x 3 = 15

○ $^5C_3 = 10$

○ 5 x 5 x 5 = 125

3 of 100

102 RPSC_March-2016_Paper 1

Boolean function [∼(∼p∧q)∧∼(∼p∧∼q)] ∨ (p∧r) is equal to the Boolean function

○ q

○ p ∧ r

○ p ∨ q

○ p

4 of 100

103 RPSC_March-2016_Paper 1

There is a certain four digit number whose fourth digit is twice the first digit. Third digit is three more than second digit. Sum of the first and fourth digits is twice of the third number. Which number is it ?

○ 4368

○ 4638

○ 2034

○ both (1) and (3) are correct

5 of 100

104 RPSC_March-2016_Paper 1

Which statement is incorrect

- A - B = A + (the 2's-complement of B)
- A - B = 1 + A + (the 1's-complement of B)
- A - B = A + (the 2's-complement of B) + 1
- A - B = (the 1's-complement of B) + A + 1

105 RPSC_March-2016_Paper 1
How many ways to order a 5 distinct card deck

- 120
- 5
- 10
- 15

106 RPSC_March-2016_Paper 1
Let m = "Juan is a math major",

  c = "Juan is a computer science major",

  g = "Juan's girlfriend is a literature major",

  h = "Juan's girlfriend has read Hamlet" and

  t = "Juan's girlfriend has read The Tempest."

Which of the following expresses the statement "Juan is a computer science major and a math major, but his girlfriend is a literature major who hasn't read both The Tempest and Hamlet."

- c ∧ m ∧ (g ∨ (~h ∨ ~t))
- c ∧ m ∧ g ∧ (~h ∧ ~t)
- c ∧ m ∧ g ∧ (~h ∨ ~t)
- c ∧ m ∧ (g ∨ (~h ∧ ~t))

107 RPSC_March-2016_Paper 1
Three persons enter a railway compartment. If there are 5 seats vacant, in how many ways can they take these seats?

- 60
- 20
- 15
- 125

108 RPSC_March-2016_Paper 1

If f(x) and g(x) are defined on domains A, B respectively then the domain of f(x) + g (x) is

○ A∩B

○ A –B

○ A∪B

○ None of these

109 RPSC_March-2016_Paper 1

Negative numbers can be represented in

○ Signed magnitude form

○ 1's complement form

○ 2's complement form

○ All of these

110 RPSC_March-2016_Paper 1

If every non-key attribute is fully functionally dependent on the primary key, then the relation will be in

○ First normal form

○ Second normal form

○ Third normal form

○ Fourth normal form

111 RPSC_March-2016_Paper 1

Which is the correct hierarchy of a database?

○ rows->tablespace->table->database

○ rows->table->tablespace->database

○ database->table->tablespace->rows

○ None of these

112 RPSC_March-2016_Paper 1

Consider the following set of functional dependencies on the scheme (A, B, C)

$A \rightarrow BC$

$B \rightarrow C$

$A \rightarrow B$

AB→C

The canonical cover for this set is

- ○ A → BC and B→C
- ○ A → BC and AB→C
- ○ A → BC and A→B
- ○ A → B and B→C

113 RPSC_March-2016_Paper 1
Tables derived from the ER-Diagram

- ○ Are totally normalised
- ○ Can be further denormalised
- ○ May have multi-valued attributes
- ○ Are always in 1NF

114 RPSC_March-2016_Paper 1
The relationship of DEPARTMENT to the EMPLOYEES is a

- ○ One-to-one relationship
- ○ One-to-many relationship
- ○ Many-to-many relationship
- ○ Many-to-one relationship

115 RPSC_March-2016_Paper 1

Maximum Ozone depletion has been observed in

- ○ Equatorial region
- ○ Tropical region
- ○ North America
- ○ Antarctica

116 RPSC_March-2016_Paper 1
Which of the following scheme is used to ensure atomicity of transactions in database systems

- ○ Time-stamp based Protocol
- ○ Log File

○ Two-phase Locking

○ None of these

18 of 100
117 RPSC_March-2016_Paper 1
In SQL, which command is used to display data from two or multiple tables

○ LIST

○ SELECT

○ SHOW

○ MULTIPLY

19 of 100
118 RPSC_March-2016_Paper 1
The two-phase locking protocol ensures

○ Both serializability and recoverabilty

○ Serializability only

○ Recoverability only

○ None of these

20 of 100
119 RPSC_March-2016_Paper 1
Assume transaction A holds a shared lock R. If transaction B also requests for a shared lock on R.

○ It will result in a deadlock situation

○ It will immediately be rejected

○ It will immediately be granted

○ It will be granted as soon as it is released by A

21 of 100
120 RPSC_March-2016_Paper 1
Which is an invalid transactional ACID property

○ Atomicity

○ Consistency

○ Isolation

○ Duality

22 of 100
121 RPSC_March-2016_Paper 1
In which normal form decomposition of a relationship is lossless join but may not be dependency preserving

○ PJNF

BCNF

3NF

all of these

122 RPSC_March-2016_Paper 1
Which is the correct property of B Tree

Number of keys in each node must be equal number of its children nodes

Number of keys in each node must be one less than the number of its children nodes

Number of keys in each node must be greater than number of its children nodes

Number of keys in each node must be half number of its children nodes

123 RPSC_March-2016_Paper 1

The district of Rajasthan having no river is

Jaisalmer

Bikaner

Churu

Barmer

124 RPSC_March-2016_Paper 1
In any relation with the functional dependency (FD) is A → B , DB → C which of the following holds

B → A

DA → C

DB → A

C → A

125 RPSC_March-2016_Paper 1

The relational algebra expression is equivalent to the following tuple calculus

Expression: $\{t \setminus t \in r \wedge (t[A]=10 \wedge t[B]=20)\}$

$\sigma_{(A=10 \vee B=20)}(r)$

$\sigma_{(A=10)}(r) \cup \sigma_{(B=20)}(r)$

$$\sigma_{(A=10)}(r) \cap \sigma_{(B=20)}(r)$$

$$\sigma_{(A=10)}(r) - \sigma_{(B=20)}(r)$$

126 RPSC_March-2016_Paper 1
The coronation ceremony of Maharana Pratap was held at

- Gogunda
- Chawand
- Chittor
- Kunbhalgarh

127 RPSC_March-2016_Paper 1

Consider a schema R(A, B, C, D) and functional dependencies A→B and C→D.

Then the decomposition of R into R1(AB) and R2(CD) is

- dependency preserving and lossless join
- lossless join but not dependency preserving
- dependency preserving but not lossless join
- not dependency preserving and not lossless join

128 RPSC_March-2016_Paper 1
What is the valid sequence of processing a DBMS query?

- SQL statement->parse->optimize->generate execution
- SQL statement->validate->parse->optimize->generate execution
- SQL statement->parse->validate->optimize->generate execution
- None of these

129 RPSC_March-2016_Paper 1
The SQL statement select * from R, Q is equivalent to

- Select * from R natural join Q
- Select * from R cross join Q
- Select * from R union join Q
- Select * from R inner join Q

130 RPSC_March-2016_Paper 1
Which is a DCL command?

○ Grant

○ Commit

○ Update

○ Rollback

131 RPSC_March-2016_Paper 1
Which one will generate an error?

○ SELECT * FROM emp WHERE empid = 493945;

○ SELECT empid FROM emp WHERE empid= 493945;

○ SELECT empid FROM emp;

○ SELECT empid WHERE empid = 56949 AND lastname = 'SMITH';

132 RPSC_March-2016_Paper 1
Which statement is incorrect

○ A weak entity doesn't have a primary key

○ A relation can have multiple number of unique keys

○ Relational algebra is more expressive than relational calculus

○ In a relation ordering of tuples is not substantial

133 RPSC_March-2016_Paper 1
Which is correct syntax of ALTER TABLE?

○ ALTER TABLE Customer-details
DROP (Contact_Phone);

○ ALTER TABLE Customer-Details
ADD Contact_Phone Char (10);

○ ALTER TABLE Customer-details
MODIFY Contact_Phone Char (12);

○ All of these

134 RPSC_March-2016_Paper 1
Which is correct statement for Triggers?

○ To maintain views

○ To execute action automatically whenever an event occurs.

To implement business rules

All of these

135 RPSC_March-2016_Paper 1
Which is NOT the purpose of normalization of schema

Conversion of data to a canonical form to promote schema integration

Reduction of the number of anomalies that can occur during inserts, deletes, and updates

Elimination of redundant data stored in the database

none of these

136 RPSC_March-2016_Paper 1
The transactional concurrency leads to increase

Integrity
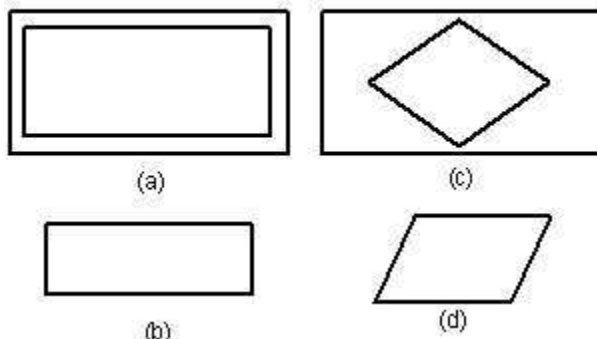
Consistency

Mutual execution

Throughput

137 RPSC_March-2016_Paper 1
The database schema is written in

Data Definition Language

Data Manipulation Language

Data Control Language

Tool Command Language

138 RPSC_March-2016_Paper 1
Which ER Symbol is used to represent weak entity

(a)

(c)

(b)

(d)

a

○ b

○ c

○ d

40 of 100
139 RPSC_March-2016_Paper 1
Which is the correct method to physically store the records in a specified order according to the key field in each record

○ Hash

○ Direct

○ Sequential

○ All of these

41 of 100
140 RPSC_March-2016_Paper 1
The example of derived attribute is

○ Name if age is given as other attribute

○ Age if date of birth is given as other attribute

○ 1 and 2 both

○ None of these

42 of 100
141 RPSC_March-2016_Paper 1
This operation is used when a user is interested in only certain columns of a table

○ Selection

○ Union

○ Join

○ Projection

43 of 100
142 RPSC_March-2016_Paper 1
Which level of database is closest to the user

○ Physical

○ Conceptual

○ Internal

○ External or View based

44 of 100
143 RPSC_March-2016_Paper 1
Which is correct statement for updating in a table instructor salary by 10 percentages?

Update instructor Set salary=salary*1.10;

Update instructor Set salary=110;

Update instructor where salary=salary*1.10;

Update instructor In salary=salary*1.10;

144 RPSC_March-2016_Paper 1
In a relational algebra, the Cartesian product is

Unary operator

Binary operator

Ternary operator

None of these

145 RPSC_March-2016_Paper 1
In a stored procedure, when specifying a string parameter you should use which one of these data types?

CHAR

VARCHAR2

TEXT

REAL

146 RPSC_March-2016_Paper 1
Which statement correctly differentiates between the Relational database (RDB) and Object Oriented database (OODB) models

OODB supports multiple objects in the same database while RDB only supports a single table per database

OODB incorporates methods in which the definition of the data structure is given, while RDB does not

RDB allows the definition of the relationships between the different tables, while OODB does not allow the relationships to be defined between objects

RDB supports indexes, while OODB does not support indexes

147 RPSC_March-2016_Paper 1
Shekhavati Haveli wall paintings are influenced mainly by

Jaipur style

Udaipur style

Kota style

Bundi style

148 RPSC_March-2016_Paper 1
Which statement is correct for SQL?

○ SQL stands for Standard Query language

○ SQL is procedural language

○ SQL is non-procedural language

○ None of these

149 RPSC_March-2016_Paper 1
Which of the following statement is correct for ER and relational models?

○ An attribute of an entity can be composite

○ An attribute of an entity can have more than one value

○ In a row of a relational table, an attribute can have exactly one value or a NULL value

○ All of these

150 RPSC_March-2016_Paper 1
In ER diagram a relationship is represented through.

○ Rectangle

○ Diamond

○ Oval

○ Line

151 RPSC_March-2016_Paper 1
Meta data is the

○ Collection of data

○ Data about data

○ Medical data

○ None of these

152 RPSC_March-2016_Paper 1
Which is containing a list of blocks that have been updated in the database buffer?

○ Latches

○ Swap space

○ Dirty block

○ All of these

153 RPSC_March-2016_Paper 1
Which command is used to delete all the tuples of a table along with structure?

○ Truncate

○ Drop

○ Delete

○ Alter

154 RPSC_March-2016_Paper 1
Which one of the join operation does not preserve non matched tuples?

○ Natural join

○ Left outer join

○ Right outer join

○ Inner join

155 RPSC_March-2016_Paper 1
The IEEE standard for Token Bus Protocol is

○ IEEE 802.2

○ IEEE 802.3

○ IEEE 802.4

○ IEEE 802.5

156 RPSC_March-2016_Paper 1
Which protocol is not correspond to Application layer

○ DNS

○ FTP

○ SMTP

○ RPC

157 RPSC_March-2016_Paper 1
Which protocol is contention based protocol

○ CSMA

○ Ethernet

○ ALOHA

○ All of these

158 RPSC_March-2016_Paper 1
Which of the following pairs is incorrect

○ Application layer- Error detection

○ Transport layer- Reliability

○ Network layer- Address Resolution

○ Data link layer- Framing

159 RPSC_March-2016_Paper 1
Which of the following is NOT a basic element of Ethernet?

○ An Ethernet packet or frame

○ Media access control protocols

○ A router

○ Physical media used to carry the signal

160 RPSC_March-2016_Paper 1
Maximum throughput of Pure Aloha is

○ 36.8% of a given load

○ 26.8% of a given load

○ 18.4% of a given load

○ 46.6% of a given load

161 RPSC_March-2016_Paper 1
Identify the class of IPv4 address 191.1.2.3.

○ Class A

○ Class B

○ Class C

○ Class D

162 RPSC_March-2016_Paper 1
Connection less service in packet switched networks is most suitable for

○ File transfer operation

○ Electronic Mail

○ DNS queries

○ HTTP

163 RPSC_March-2016_Paper 1
Which Project 802 standard provides for a collision-free protocol?

○ IEEE 802.3

○ IEEE 802.4

○ IEEE 802.5

○ Both (2) and (3)

164 RPSC_March-2016_Paper 1
When data and acknowledgment are sent on the same frame, this is called

○ piggybacking

○ backpacking

○ piggypacking

○ a good idea

165 RPSC_March-2016_Paper 1
10Base2 and 10Base5 have different_____

○ signal band types

○ fields on the 802.3 frame

○ maximum segment lengths

○ maximum data rates

166 RPSC_March-2016_Paper 1
Which IPv4 address class has few Net-ID per network?

○ Class A

○ Class B

○ Class C

○ Class D

167 RPSC_March-2016_Paper 1
In CRC there is no error if the remainder at the receiver is_____

○ equal to the remainder at the sender

○ zero

○ nonzero

○ the quotient at the sender

168 RPSC_March-2016_Paper 1
Which is correct statement for need of Time to Live (TTL) field in an IP datagram?

○ It can be used to prioritize packets

○ It can be used to reduce delays

○ It can be used to optimize throughput

○ It can be used to prevent packet looping

169 RPSC_March-2016_Paper 1
A timer is set when_____is sent out

○ a packet

○ an ACK

○ a NAK

○ all of these

170 RPSC_March-2016_Paper 1
The shortest frame in HDLC protocol is usually the_____frame.

○ management

○ supervisory

○ information

○ none of the these

171 RPSC_March-2016_Paper 1
The purpose of Reverse ARP on a network is to find the _____given the_____.

○ Internet address, domain name

○ Internet address, netid

○ Internet address, station MAC address

○ Station MAC address, Intemet address

172 RPSC_March-2016_Paper 1
Ideally the maximum segment length that can be supported by the UTP cable is

○ 100 meters

○ 200 meters

○ 500 meters

○ 600 meters

173 RPSC_March-2016_Paper 1
The size of the congestion Window in the slow start phase of the TCP congestion control algorithm

○ Does not increase

○ Increases linearly

○ Increases quadratically

○ Increases exponentially

174 RPSC_March-2016_Paper 1
A television broadcast is an example of _____ transmission.

○ Half-duplex

○ Full-duplex

○ Simplex

○ Automatic

175 RPSC_March-2016_Paper 1
For Stop-and-Wait ARQ, for 10 data packets sent, _____ acknowledgments are needed.

○ 9

○ 10

○ 11

○ 20

176 RPSC_March-2016_Paper 1
Number of bit used for host id in IPv4 Class A addressing is

○ 8 bits

○ 12 bits

○ 16 bits

○ 24 bits

177 RPSC_March-2016_Paper 1
Which is a correct statement related to IPv6 addressing

○ IPv6 increases the size of the IP address from 32 to 128 bits

○ IPv6 has 40-byte fixed-length header

○ In addition to unicast and multicast addresses IPv6 support anycast addressing

○ All of these

Match the following

IEEE standard	Topology
A) IEEE 802.3	1. Link State
B) IEEE 802.4	2 Token Bus
C) IEEE 802.5	3. FDDI
D) IEEE 802.2	4. Ethernet
	5. Token ring

A	B	C	D
○ 1	2	4	3

A	B	C	D
○ 4	2	5	1

A	B	C	D
○ 4	2	3	5

A	B	C	D
○ 1	4	2	3

The final routing table at node A for the network given is, when each link cost is 1
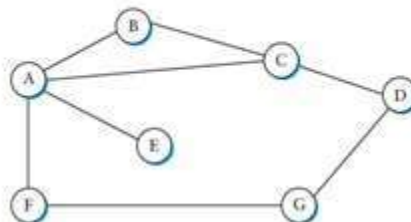
Destination	Cost	NextHop
B	1	B
C	1	C
D	2	C
E	1	E
F	1	F
○ G	2	F

Destination	Cost	NextHop
B	1	B
C	1	C
D	4	C
E	1	E
F	1	F
G	4	F

Destination	Cost	NextHop
B	1	B
C	1	C
D	2	C
E	1	E
F	1	F
G	2	F

Destination	Cost	NextHop
B	0	B
C	0	C
D	3	C
E	0	E
F	0	F
G	3	F

180 RPSC_March-2016_Paper 1
In a Go-Back-N ARQ, if the window size is 63, what is the range of sequence numbers?

○ 0 to 63

○ 1 to 63

○ 0 to 64

○ 1 to 64

181 RPSC_March-2016_Paper 1

Who is the present chief Justice of Rajasthan High Court?

○ Justice Sunil Ambwani

○ Justice Ajit Singh

○ Justice Mahesh Chand Sharma

○ Justice S.K.Mittal

182 RPSC_March-2016_Paper 1

The IEEE 802.3 LAN standards support

○ IEEE 802.3u

○ Fast Ethernet 100BASE-TX

○ Ethernet 10BASE-T

○ All of these

183 RPSC_March-2016_Paper 1
A digital signal system is required to operate at 9600bps, if the signal element encodes a 4 bit word, what is the minimum required bandwidth of the channel?

○ 2000Hz

○ 2200Hz

○ 2300Hz

○ 2400Hz

184 RPSC_March-2016_Paper 1
For an ALOHA system using a 9600-bps channel for sending 120-bit-long packets the possible throughput is

○ 10 pkts per second

○ 14 pkts per second

○ 20 pkts per second

○ 24 pkts per second

185 RPSC_March-2016_Paper 1
A specially programmed router that sits between a site (intranet) and the rest of the network to control the flow of traffic between the Internet and internal networks and systems and works like a guard post in the lobby of a building is referred to as

○ Proxy

○ PIX

○ Firewall

○ All of these

186 RPSC_March-2016_Paper 1
An advantage of packet switching is

○ Better utilization of network links

○ Lower propagation delay

○ Less electro-magnetic interference

○ Delay guarantees in voice communications

187 RPSC_March-2016_Paper 1
Consider an ARQ protocol running over a 20 km point to point fiber link. Assume a propagation speed of 2×10^8 m/s. a suitable timeout value for the ARQ protocol may be:

○ 0.4 ms.

○ 0.3 ms.

○ 0.2 ms.

○ 0.1 ms.

188 RPSC_March-2016_Paper 1
The X.25 protocol encapsulates the following layers

○ Data Link Layer

○ Network Layer

○ Both (1) and (2)

○ None of these

189 RPSC_March-2016_Paper 1
This layer in the OSI model handles terminal emulation

○ Session

○ Presentation

○ Transport

○ Application

190 RPSC_March-2016_Paper 1
Which is untrue for the RPC

○ Allow programs to call procedures located on other machines

○ Avoids the overhead of multiple system calls

○ Allows communication through global variables

○ Provides programmers with a familiar procedural interface

191 RPSC_March-2016_Paper 1

Which is the correct matching of protocol given below with their layer of abstraction

Protocol	Layer
A. CIDR	1. Data Link Layer
B. RIP	2. Network layer
C. FTP	3. Transport layer
D. CSMA/CD	4. Application layer

A	B	C	D
1	2	2	3

A	B	C	D
2	2	4	1

A	B	C	D
2	1	4	2

A	B	C	D
3	2	4	1

192 RPSC_March-2016_Paper 1
Which of the following is the bit oriented protocol

○ Link Access Protocol Balanced (LAPB)

○ Synchronous Data link Control Protocol (SDLC)

○ Link Access Protocol for D channel (LAP-D)

○ All of these

193 RPSC_March-2016_Paper 1
Which is the correct statement related to Ethernet based network

○ Ethernet packet should be at least 64 bytes long for longest allowed segment and Max packet size can be 1500 bytes

○ Ethernet packet should be at least 32 bytes long for longest allowed segment and Max packet size can be 1024 bytes

○ Ethernet packet should be at least 16 bytes long for longest allowed segment and Max packet size can be 64 bytes

○ Ethernet packet should be at least 48 bytes long for longest allowed segment and Max packet size can be 1482 bytes

194 RPSC_March-2016_Paper 1

The state of Rajasthan is divided into how many administrative divisions?

- ○ 5
- ○ 6
- ○ 7
- ○ 8

195 RPSC_March-2016_Paper 1
The Hamming code is used to perform

- ○ Error detection
- ○ Error correction
- ○ Error encapsulation
- ○ both (1) and (2)

196 RPSC_March-2016_Paper 1
Which layer of TCP/IP is responsible for end to end delivery of entire message in a network?

- ○ Application layer
- ○ Presentation layer
- ○ Transport layer
- ○ Network layer

197 RPSC_March-2016_Paper 1
The process that dynamically assigns an IP address to a network device is called?

- ○ DNS
- ○ DHCP
- ○ NAT
- ○ MAC

198 RPSC_March-2016_Paper 1
The modem is used to converts

- ○ Analog , Digital
- ○ Digital, Analog
- ○ PSK,FSK
- ○ Both (1) and (2)

Which of the following is correct for Sliding Window ARQ protocol

○ Source Window= N Destination Window = N

○ Source Window = 1, Destination Window = N

○ Source Window = 1 Destination Window = 1

○ Source Window = N, Destination Window = 1

ANALYST-CUM-PROGRAMMER (DOIT&C) EXAM 2014 PAPER I
Exam Date 17-03-2016
Revised Key Issue Date-18-11-2016
Answer key as per the Question Paper uploaded on Website

Qno	RES		Qno	RES
1	3		51	2
2	1		52	2
3	*		53	3
4	4		54	2
5	*		55	4
6	1		56	3
7	*		57	4
8	1		58	4
9	*		59	1
10	4		60	3
11	2		61	3
12	2		62	2
13	4		63	3
14	4		64	4
15	2		65	1
16	4		66	3
17	2		67	1
18	2		68	2
19	2		69	4
20	3		70	1
21	4		71	2
22	2		72	3
23	2		73	1
24	2		74	4
25	2		75	3
26	3		76	2
27	1		77	4
28	3		78	4
29	3		79	2
30	2		80	*
31	1		81	1
32	4		82	4
33	3		83	4
34	4		84	*
35	4		85	2
36	1		86	*
37	4		87	1
38	1		88	*
39	1		89	3
40	1		90	4
41	2		91	3
42	4		92	2
43	4		93	4
44	1		94	1
45	2		95	3
46	2		96	4
47	2		97	3
48	1		98	2
49	3		99	4
50	4		100	*

* Means deleted