MADE EASY

GATE 2024

COMPUTER SCIENCE & IT

Exam held on
10/02/2024
(Afternoon Session)

Memory based
Questions
& Solutions

Memory based
Questions & Solutions

GATE 2024
CS | **Computer Science & IT**

Exam held on: **10-02-2024**
Afternoon Session

SECTION - A   GENERAL APTITUDE

Q.1 A person sold two different items at the same price. He made 10% profit in one item and 10% loss in the other item. In, selling the person made a total of
(a) 2% loss
(b) 2% profit
(c) 1% loss
(d) 1% profit

Ans. **(c)**

If S.P. is same than overall loss = $\dfrac{x^2}{100} = 1\%$

End of Solution

Q.2 The value of x in given series is
6, 9, 14, x, 30, 41

Ans. **(21)**

$$6 + 3 = 9$$
$$9 + 5 = 14$$
$$14 + 7 = 21$$
$$21 + 9 = 30$$
$$30 + 11 = 41$$

End of Solution

Q.3 $\log\dfrac{(x+y)}{2} = \dfrac{1}{2}\left(\log x + \log y\right)$. The value of $\dfrac{x}{y} + \dfrac{y}{x}$ is

Ans. **(2)**

$$\log\dfrac{(x+y)}{2} = \dfrac{1}{2}\left(\log x + \log y\right)$$

$$\log\left(\dfrac{x+y}{2}\right) = \log\sqrt{xy}$$

$$\dfrac{x+y}{2} = \sqrt{xy}$$

$$x^2 + y^2 + 2xy = 4xy$$

$$x^2 + y^2 = 2xy$$

$$\dfrac{x}{y} + \dfrac{y}{x} = 2$$

End of Solution

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Page
1

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Questions & Solutions

GATE 2024

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Exam held on: **10-02-2024**

Afternoon Session

Q.4 The value of x in given series is
3, 7, x, 15

Ans. **(11)**

$$3 + 4 = 7$$
$$7 + 4 = 11$$
$$11 + 4 = 15$$

End of Solution

Q.5 A cube is to be cut into 8 pieces of equal size and shape. Here each cut should be straight and it should not stop till it reaches the other end of the cube. The minimum number of such cuts required?

Ans. **(3)**

=

End of Solution

Q.6 Increasing order of the intensity
Walk → Jog → Sprint
Bothered → ? → Daunted
(a) Fazed
(b) Phrased
(c) Phased
(d) Fused

Ans. **(a)**

End of Solution

■■■■

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Exam held on : **10-02-2024**

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Algorithms

Q.7 $T(n) = \begin{cases} 5T(n-1) - 6T(n-2) & n \geq 2 \\ 2 & n = 1 \\ 1 & n = 0 \end{cases}$ is equal to

(a) $\theta(n \cdot 3^n)$ (b) $\theta(n \cdot 2^n)$
(c) $\theta(2^n)$ (d) $\theta(3^n)$

Ans. **(c)**

$\underbrace{T(n) = 5T(n-1) - 6T(n-2)}$

$$T(n) = C_1 2^n + C_2 3^n = 2^n$$

At $\qquad x^2 - 5x + 6 = 0$

$$x = \underset{r_1\ \ r_1}{2,\ 3}$$

For $n = 0$ $\qquad 1 = C_1 + C_2$
For $n = 1$ $\qquad 1 = 2C_1 + 3C_2$

$$\{C_1 = 1,\ C_2 = 0\}$$
$$T(n) = 2^n = \theta(2^n)$$

End of Solution

Q.8 How many MST's possible?
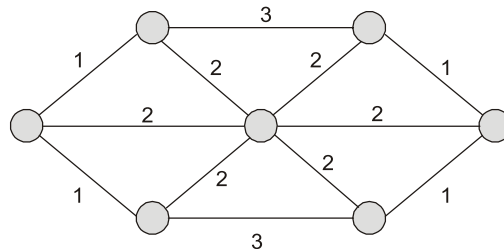
Ans. **(9)**

$$^6C_2 - 3 - 3 = 9$$

End of Solution

Q.9 Given a undirected simple graph having all MST of even weight than
(a) All cycles have even weight edges (OR) all odd weighted edges.
(b) All edges have even weight.
(c) All cycle have even weight edges.
(d) All edges are even or all edges are odd weight.

Ans. **(b)**

End of Solution

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Exam held on : **10-02-2024**

Afternoon Session

Q.10 Distance of an array is number of elements to be replaced to make the array in non-decreasing order.

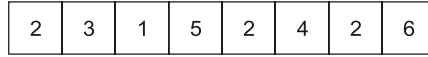| 2	3	1	5	2	4	2	6

Find the minimum distance of the given array.

(a) 2   (b) 3

(c) 4   (d) 6

Ans. **(c)**

$\implies$ Non-decreasing order
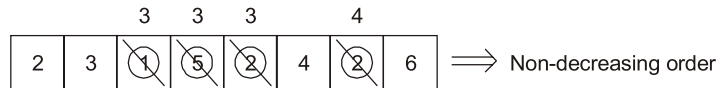
Q.11 If A is adjacency matrix of graph G and A is own inverse.

(a) G is complete graph

(b) G is cycle graph

(c) A is perfect matching in G

(d) There is no graph exist

Ans. **(b)**

Databases

Q.12 FD $X \to Y$ is defined as

1. X is non-empty
2. Y is non-empty
3. $X \cap Y = f$

How many such FD's as possible for attributes R(A, B, C, D)?

Ans. **(50)**

Non-trivial FD:

$$\begin{cases} A \to \{B, C, D\} \\ B \to 2^3 - 1 \\ C \to \\ D \to \end{cases} \quad \begin{cases} AB \to CD \\ AC \\ AD \\ \vdots \\ {}^4C_2 \end{cases} \quad \begin{cases} ABC \to D \\ \vdots \\ {}^4C_3 \end{cases}$$

4 * 7 + 6 * 3 + 4 * 1 = 50

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Questions & Solutions
Exam held on: **10-02-2024**
Afternoon Session

GATE 2024
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Q.13 Given two RDBMS relation person ($\underline{Pid}$, City):

Find the minimum cross joins operations required to find at least three persons from same city?

(a) 2 (b) 4
(c) 3 (d) 1

Ans. **(a)**

Persons		
	Pid	**City**
t_1	p_1	c_1
t_2	p_2	c_1
t_3	p_3	c_1

$$\pi\left(\sigma_{T_1.\text{city} = T_2.\text{city} = T_3.\text{city} \wedge T_1.\text{pid} \neq T_2.\text{pid} \neq T_3.\text{pid}}\left(T_1 \times T_1 \times T_3\right)\right)$$

Cross join = 2

Number of instances = 3

End of Solution

Q.14 There is a relation from weak entity set to strong entity set. Which of the following is true?

(a) Total participation must be both sides.
(b) Total participation must be from strong side.
(c) No total participation from any side.
(d) Total participation must be from weak side.

Ans. **(d)**

Partial   Must be total
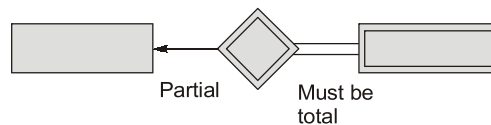
End of Solution

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Exam held on: **10-02-2024**

Afternoon Session

Q.15 Which is true regarding 2PL protocol?
(a) If starts unlocking then cannot lock other variable.
(b) Deadlock possible with 2PL.
(c) 2PL always take serializable schedule.
(d) With 2PL, a transaction always the data item being read or write just before away operation and always releases the lock after the operation.

Ans. **(c)**
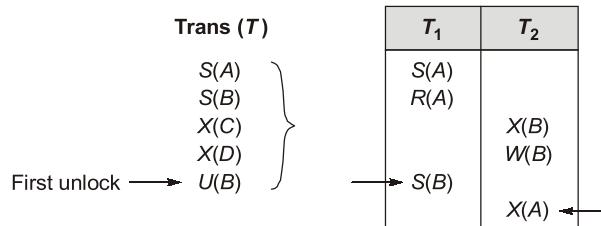
End of Solution

Q.16 Which of the following file organization is/are used for efficient I/O scan order
(a) Heap   (b) Sorted
(c) Unclustered hash index   (d) Unclustered tree index

Ans. **(b)**
Sorted sequence:
$\Rightarrow$ Sequential access
$\Rightarrow$ Seek time

End of Solution

Q.17 Once the DBMS inform the user that a transaction has been successfully completed, it effect persist even if the system (crash before all its changes) are reflected on the disk. This property is called
(a) Atomicity   (b) Consistency
(c) Isolation   (d) Durability

Ans. **(d)**

End of Solution

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Exam held on: **10-02-2024**

Afternoon Session

GATE 2024

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Compiler Design
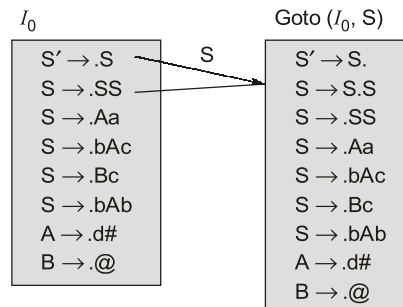
Q.18 Consider the following grammar:

$S \to SS \mid Aa \mid bAc \mid Bc \mid bAb$

$A \to d\#, \ B \to @$

The number of items in closure $[I_0, S]$ if the grammar is parsed by SLR parser.

Ans. **(9)**

I_0

$S' \to .S$
$S \to .SS$
$S \to .Aa$
$S \to .bAc$
$S \to .Bc$
$S \to .bAb$
$A \to .d\#$
$B \to .@$

Goto (I_0, S)

S

$S' \to S.$
$S \to S.S$
$S \to .SS$
$S \to .Aa$
$S \to .bAc$
$S \to .Bc$
$S \to .bAb$
$A \to .d\#$
$B \to .@$

Total 9 items.

End of Solution

Q.19 Match the following:

(P) Lexical Analysis   (1) Abstract Syntax Tree

(Q) Syntax Analysis   (2) Parse Tree

(R) Intermediate Code Generation   (3) Constant Folding

(S) Code Optimization   (4) Tokens

(a) P - 4, Q - 2, R - 1, S - 3

(b) P - 3, Q - 2, R - 1, S - 4

(c) P - 1, Q - 2, R - 3, S - 4

(d) P - 2, Q - 4, R - 1, S - 3

Ans. **(a)**

End of Solution

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Questions & Solutions
GATE 2024
CS | Computer Science & IT
Exam held on: **10-02-2024**
Afternoon Session

Theory of Computation

Q.20 Let M be the S-state NFA with $\in$-transitions

Which one of the following regular expression represents the language accepted by M?
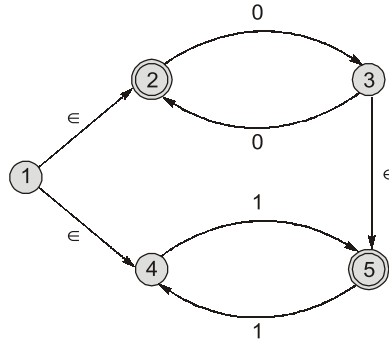
(a) $0^* + (0\ (00)^* + 1)\ (11)^*$
(b) $(00)^* + 1(11)^* + 0(11)^*$
(c) $0^* + (11)^*$
(d) $(00)^* + (1 + (00)^*)(11)^*$

Ans.   **(a)**

2 and 5 are final states.

The given machine accepts all zeros i.e. 0^*.

We can reach the final state 5 by other $0(00)^* + (11)^*$ or $1(11)^*$

$\therefore$ The result is

$$= 0^* + 0(00)^*\ (11)^* + 1(11)^*$$
$$= 0^* + (0\ (00)^* + 1)\ (11)^*$$

End of Solution

Q.21 Consider a CFG with the following 3 rules:

$S \rightarrow aS$, $S \rightarrow aSbS$, $S \rightarrow c$

Let $w \in L(G)$. Let $n_a(w)$, $n_b(w)$, $n_c(w)$ denote the number of times a, b, c occur in w, respectively. Which of the following determinants is/are true?

(a) $n_c(w) = n_b(w) * 2$
(b) $n_a(w) > n_b(w)$
(c) $n_a(w) > n_c(w) - 2$
(d) $n_c(w) = n_b(w) + 1$

Ans.   **(d)**

$S \rightarrow aS$, $S \rightarrow aSbS$, $S \rightarrow c$

$S \rightarrow aS$

$\quad \rightarrow ac$

$S \rightarrow a\underline{S}bS$

$\quad \rightarrow aa\underline{S}b\underline{S}bS$

$\quad \rightarrow aacbcbc$

By verification process

$$n_c(w) = n_b(w) + 1$$

Answer is option (d).

End of Solution

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Questions & Solutions
Exam held on : **10-02-2024**
Afternoon Session

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Q.22 Let $L_1 = $ b* ab* (ab* ab*)* and $L_2 = \{w \in (a + b)^* \mid |w| \le 4\}$

Then the number of strings in L_2 which are also in L_1 _____.

Ans. **(15)**

All the strings $|w| \le 4$ in L_1 are also in L_2

$$L = \text{b* ab* (ab* ab*)*}$$

L_1 is b* ab* or b* ab* ab* ab*

The strings that can be formed from b* ab* which $|w| \le 4$ are a, ba, b^2 a, b^3 a, ab, ab^2, ab^3, baL bbab, babb i.e. 10 strings.

The strings that can be format from b* ab* ab* ab* with $|w| \le 4$ are aaa, baaa, abaa, aaba, aaab i.e. 5 strings.

So, total strings that are common in L_1 and L_2 are 15.

End of Solution

Computer Networks

Q.23 Which one of the following CIDR prefix exactly represent the range of IP addresses 10.12.2.0 to 10.12.3.255?

(a) 10.12.2.0/24   (b) 10.12.2.0/22

(c) 10.12.0.0/22   (d) 10.12.2.0/23

Ans. **(d)**

End of Solution

Q.24 Which of the following fields of an IP header is/are always modified by any router before it forwards the IP packet?

(a) TTL   (b) Protocol

(c) Source address   (d) Header check sum

Ans. **(a, d)**

End of Solution

Q.25 Consider an ethernet segment with a transmission speed of 10^8 bits/sec and a minimum segment length of 500 mm. If the speed of the propagation of the signal in the medium is 2×10^8 m/s, then the min frame size (in bits) required for collision detection is _____.

Ans. **(500 bits)**

End of Solution

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Q.26 Consider a TCP connection operating at a point of time with congestion window of size 12 MSS, when a timeout occurs due to packet loss. Assuming that all the segments transmitted in the next two RTT's are acknowledged correctly, the congestion window size (in MSS) during 3rd RTT will be _____.

Ans. **(4 MSS)**

End of Solution

Q.27 Which of the following statement about IPv4 fragmentation is/are true?
   (a) Fragmentation of IP datagram is performed only at source of the datagram.
   (b) Fragmentation of IP datagram is performed at only router which finds that size of the datagram to the transmitted exceeds the MTU.
   (c) The reassembly of fragments is performed at all intermediate router along the path from source to destination.
   (d) Ressambly of fragmentation is performed only at destination.

Ans. **(b, d)**

End of Solution

Computer Organization & Architecture

Q.28 Instruction format has the following structure instruction number opcode destination source1, source2
I_1 : DIV R_3 R_1 R_2; $R_3 \in R_1/R_2$
I_2 : SUB R_5 R_3 R_4; $R_5 \in R_3 - R_4$
I_3 : ADD R_3 R_5 R_6; $R_3 \in R_5 + R_6$
I_4 : MUL R_7 R_3 R_8; $R_7 \in R_3 * R_8$
   (a) There is WAW dependency on R_3 between I_3 and I_4
   (b) There is WAR dependency on R_3 between I_1 and I_3
   (c) There is RAW dependency on R_3 between I_1 and I_2
   (d) There is RAW dependency on R_3 between I_2 and I_3

Ans. **(c)**

End of Solution

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Page
10

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Questions & Solutions

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Exam held on : **10-02-2024**

Afternoon Session

Q.29 A processor with 16 GPR's uses 32-bits instruction format. The instruction format consists of an op-code field, an addressing mode field, register operand fields, and a 16-bit scalar operand field. If 8 addressing modes are to be supported, the max. number of unique op-codes possible for every addressing mode is _____.

Ans. **(512)**

Opcode	AM	Reg	Immediate
?	3 bit	4 bit	16 bit

32 bit
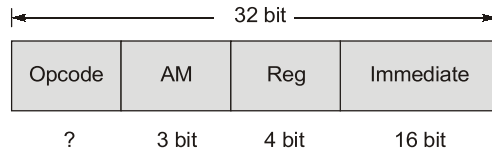
Opcode = 9 bit

Number of operations = 8^9 = 512

Q.30 Consider non-pipeline processor with 2 GHz clock, average CPI of '6'. It is hence with 5-stage pipeline processor with same clock, consider 1 instructions per cycle and if 20% instructions have 2 cycle stalls due to control hazards and 20% of instructions have 3 cycles stalls due to data hazards. Speedup of pipeline over non-pipeline _____.

Ans. **(3)**

$$ET_{non-pipe} = CPI \times Cycle\ time$$
$$\{n = 100\%\} = 6 \times 0.5\ ns = 3\ ns$$
$$ET_{Pipeline} = (1 + Number\ of\ stalls/Instruction)\ cycle\ time$$
$$= (1 + [(0.2 \times 2) + (0.2 \times 3)])\ 0.5\ ns$$
$$= 1\ ns$$

$$S - \frac{ET_{non-pipeline}}{ET_{pipeline}} = \frac{3\ ns}{1\ ns} = 3$$

Q.31 Largest representable data among all the single precision data is

S	Exponent	Mantissa

(a) 0   0 1 1 1   1 1 1 1   23   0's   (b) 0   0 1 1 1   1 1 1 1   23   1's
(c) 0   1 1 1 1 1 1 1 0   23   1's   (d) 0   1 1 1 1 1 1 1 1   23   1's

Ans. **(c)**

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Questions & Solutions

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Exam held on: **10-02-2024**

Afternoon Session

Q.32 Consider a disk with the following specifications: rotation speed of 6000 RPM, average seek time of 5 ms, 500 sectors/track, 512 B sectors. A file has content stored in 3000 sectors located randomly on the disk. Assuming average rotational latency, the total time (in secs, rounded to 2 places) to read the entire file from the disk is?

Ans. **(30.06)**

$$\text{Average seek time} = 5 \text{ ms}$$

6000 revolutions ⟶ 1 min (60 sec)

1 revolution ⟶ ?

$$\Rightarrow \qquad \frac{60}{6000} \text{ sec} = 10 \text{ ms}$$

$$\text{Average rotational latency} = \frac{1}{2} \text{ revolution time} = 5 \text{ ms}$$

1 revolution time ⟶ 1 track (500 sectors)

? time ⟶ 1 sector

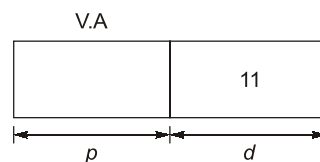$$\Rightarrow \qquad \frac{10 \text{ ms}}{500} = 0.02 \text{ ms}$$

$$T_{avg} = (5 \text{ ms} + 0.02 \text{ ms} + 0) \times 3000$$
$$= 30.06 \text{ ms}$$

End of Solution

Q.33 Consider a memory management system page size is 2 KB. The page numbers 0, 1, 2, 3 are stored in frames 1, 3, 2, 0 respectively. What is the physical address of virtual address 2500 _____?

Ans. **$(6596)_{10}$**

$$\text{Page size} = 2 \text{ KB} = 2^{11} \text{ B}$$

V.A

	11
p	d

$$(2500)_{10} = (\underbrace{100}_{p}\ \underbrace{111000\ 100}_{d})_2$$

$$\text{Offset} = 11 \text{ bits}$$

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Questions & Solutions

Exam held on: **10-02-2024**

Afternoon Session

Page number '1'.
Page number '1' in frame number '3'.

0	1
1	3
2	2
3	0

$$\text{Frame number (3)} = (11)_2$$

$$(\underset{f}{\underline{11}} \underset{d}{\underline{00111\ 000\ 100}})_2 = (6596)_{10}$$

<div align="right">*End of Solution*</div>

Digital Logic

Q.34 Consider f_1, f_2, f_3, f_4 expressed in sum of minterms

$f_1 = \Sigma(0, 2, 3, 5, 7, 8, 11, 13)$, $f_2 = \Sigma(1, 3, 5, 7, 11, 13, 15)$

$f_3 = \Sigma(0, 1, 4, 11)$, $f_4 = \Sigma(0, 2, 6, 13)$

The output y of the circuit is
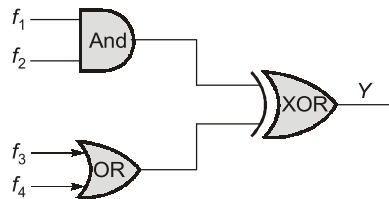
(a) $Y = \pi(8, 9, 10, 11, 12, 13, 14, 15)$

(b) $Y = \pi(3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 15)$

(c) $Y = \Sigma(0, 1, 2, 3, 4, 5, 6, 7)$

(d) $Y = \Sigma(0, 1, 2, 11, 13)$

Ans. **(a, c)**

Output and AND gate $x = f_1 \cdot f_2$

$= \Sigma m(3, 5, 7, 11, 13)$

Output and OR gate $z = f_3 + f_4$

$= \Sigma m(0, 1, 2, 4, 6, 11, 13)$

Output of EX-OR gate $y = x \oplus z$

$= \Sigma m(0, 1, 2, 3, 4, 5, 6, 7)$

$= \pi M(8, 9, 10, 11, 12, 13, 14, 15)$

<div align="right">*End of Solution*</div>

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- ✔ Helps to improve answer writing and presentation skills.

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- ✔ Updated Mains workbook with wide range of practice questions.

- ✔ ESE Mains test series will be conducted on every Sunday in synchronization with the subjects.

  Note : Offline classes will be conducted at Delhi Centre.

GATE 2024
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Memory based
Questions & Solutions

Exam held on: **10-02-2024**
Afternoon Session

Q.35 Which of the following is/are equivalent to $(224)_5$

(a) $(121)_7$ (b) $(50)_{16}$

(c) $(100)_8$ (d) $(64)_{10}$

Ans. **(a, c, d)**

$$(224)_5 = 2 \times 5^2 + 2 \times 5^1 + 4 \times 5^0$$
$$= 50 + 10 + 4 = (64)_{10}$$

(a) $(121)_7 = 1 \times 7^2 + 2 \times 7^1 + 1 \times 7^0$
$$= 49 + 14 + 1 = (64)_{10}$$

(b) $(50)_{16} = 5 \times 16^2 + 0 \times 16^0$
$$= (80)_{10}$$

(c) $(100)_8 = 1 \times 8^2 + 0 \times 8^1 + 0 \times 8^0$
$$= (64)_{10}$$

Answer is (a), (c) and (d).

End of Solution

Q.36 Which of the following is incorrect relation?

(a) $x \cdot 1 = x$ (b) $x + \bar{x} = 1$

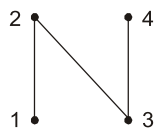(c) $1 + x = 1$ (d) $x \cdot x = 0$

Ans. **(d)**

(a) $x \cdot 1 = x$ True

(b) $x + \bar{x} = 1$ True

(c) $1 + x = 1$ True

(d) $x \cdot x = 0$ False

End of Solution

Discrete Mathematics

Q.37 $A = \{1, 2, 3, 4\}$ and 'P' is a partial order set on $P = \{(x, x) \mid x \in A\} \cup \{(1, 2) (3, 2) (3, 4)\}$ then total number of orders on 'A' that contains 'P'.

Ans. **(4)**

Topological order:

1   3   2   4

1   3   4   2

3   1   2   4

3   1   4   2

End of Solution

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Page
14

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Questions & Solutions

Exam held on: **10-02-2024**

Afternoon Session

Q.38 p : Fail grade can be given.

q : Students scores more than 50% marks.

Which of the following is logical expression for the statement.

"Fail grade can't be given when student score more than 50% of marks".

(a) $\neg p \rightarrow q$ (b) $\neg q \rightarrow p$
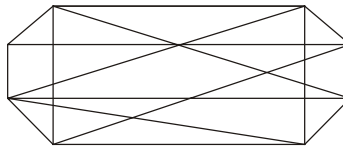
(c) $q \rightarrow p$ (d) $q \rightarrow \neg p$

Ans. **(d)**

A when B

If B then A

$B \rightarrow A$

$$\neg p$$
$$|$$
$$\neg p \text{ when } q$$

$\Rightarrow q \rightarrow \neg p$

Q.39 The chromatic number of the following graph is _____.

Ans. **(2)**

$$x(G) = 2$$

Engineering Mathematics

Q.40 Given $f(x) = 1 - f(2 - x)$, then $\int_{0}^{2} f(x)dx = ?$

(a) 1 (b) −1

(c) 0 (d) 2

Ans. **(a)**

$$f(x) = 1 - f(2 - x)$$

or $f(2 - x) = 1 - f(x)$

Now, $I = \int_{0}^{2} f(x)dx = \int_{0}^{2} f(2-x)dx$

$$= \int_{0}^{2} (1 - f(x))dx$$

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Exam held on: **10-02-2024**

Afternoon Session

$$\int_0^2 f(x)\,dx = \int_0^2 (1)\,dx - \int_0^2 f(x)\,dx$$

$$2I = (x)_0^2 = 2 - 0$$

or $\qquad I = 1$

Q.41 $\displaystyle\int_{x=0}^{a}\int_{y=\sqrt{\frac{x}{a}}}^{y=1} e^{y^3}\,dy\,dx = (e-1)$, then the value of a is

Ans. **(3)**

Region of integration is

$$x = 0,\ x = a,\ y = \sqrt{\frac{x}{a}},\ y = 1$$

or $\qquad x = 0,\ x = a,\ y^2 = \dfrac{x}{a},\ y = 1$
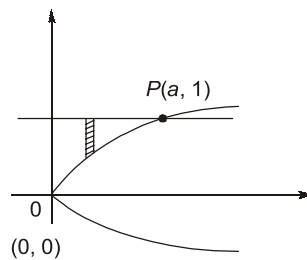
By changing the order of integration
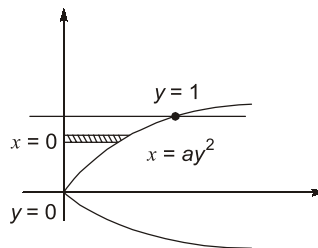
So, $\qquad \displaystyle I = \int_0^a \int_{y=\sqrt{\frac{x}{a}}}^{y=1} e^{y^3} \cdot dy\,dx$

$$= \int_{y=0}^{1}\int_{x=0}^{ay^2} e^{y^3}\cdot(dx\,dy)$$

$$= \int_{y=0}^{1} (x)_{x=0}^{ay^2}\cdot\left(e^{y^3}\,dy\right)$$

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Questions & Solutions

Exam held on: **10-02-2024**

Afternoon Session

$$= \int\limits_{y=0}^{1} ay^2 \cdot e^{y^3} dy$$

Put, $\qquad\qquad y^3 = t$

$\Rightarrow \qquad\qquad y^2 \ dy = \dfrac{dt}{3}$

$$= a \int\limits_{y=0}^{1} e^t \dfrac{dt}{3} - \dfrac{a}{3}(e-1)$$

$$\approx (e-1)$$

$\Rightarrow \qquad\qquad a = 3$

<div align="right">*End of Solution*</div>

Q.42 The probability of getting distinct number while throwing dice six times?

(a) $\dfrac{5}{324}$ (b)

(c) (d)

Ans. **(a)**

$$\text{Total outcomes} = 6 \times 6 \times 6 \times 6 \times 6 \times 6 = 6^6$$

$$\text{Favourable outcomes (R.N.A.)} = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 6!$$

So, $\qquad$ Required probability $= \dfrac{\text{Favourable}}{\text{Total}}$

$$= \dfrac{6!}{6^6} = \dfrac{5}{324}$$

<div align="right">*End of Solution*</div>

Q.43 If $A_{n \times n}$ such that A is real matrix and B is any matrix which is obtained from A by interchanging any two rows then pick the true statements?
(a) if A is invertible so B will be also.
(b) $|B| = -|A|$
(c) if Trace $(A) = 0$ then Trace $(B) = 0$
(d) if A in symmetric then B is also symmetric.

Ans. **(a, b)**

Let us take $\qquad\qquad A = \begin{bmatrix} 1 & 2 \\ 2 & -3 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -3 \\ 1 & 2 \end{bmatrix}$

By $R_1 \leftrightarrow R_2$

$\because \qquad\qquad |A| = -7, \quad |B| = 7$ so (b) is true

$\because \qquad\qquad |B| = -|A|$ so (a) is true

$\qquad$ Trace $(A) = -2$ and Trace $(B) = 4$ so (c) is not true

A is symmetric but B is not symmetric so (d) is not true.

<div align="right">*End of Solution*</div>

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Page
17

Memory based
Questions & Solutions
Exam held on : **10-02-2024**

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Afternoon Session

Operating System

Q.44 2×10^8 m/s signal speed, _____ bites to be transferred length of wire 500 m. Frame size to detect collision.

Ans. (500)

Q.45 Consider a process 'P' running on a CPU. Which one or more of the following elements will always trigger a CS by the OS. Than results in process P moving to a non-running state (e.g. ready, blacked)?
(a) An interrupt raised by disk driver data required by some other process
(b) An trimmer interrupt is raised by the H/W
(c) P makes a blocking system call so read a block of data from the disk
(d) P tries to access a page that is in the swap space, triggering a page faults.

Ans. (b, c, d)

Q.46 Which of the following statements is true about the 2PL protocol?
(a) 2PL permits only serializable schedules.
(b) With 2PL, once a lock is released an any data item inside a transaction, no more locks an any data item can be obtained inside that transaction.
(c) A deadlock is possible with 2PL.
(d) With 2PL, a transaction always locks the data item being read or written just before away operation and always releases the lock just after the operation.

Ans. (a, b, c)

Q.47 A deadlock is passible with 2PL. with 2PL, a transaction always locks the data item being read or written just before energy operation and always release the lock just after that operation.

Ans. (False)

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Questions & Solutions

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Afternoon Session

Programming & Data Structures

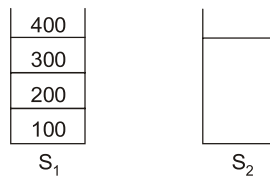**Q.48** What is the output of following programme

```
# include <stdio.n>
int main( ) {
double a[2] = {20.0, 25.0}, *p, *q;
    p = a;
    q = p + 1;
printf("%d, %d", int (q – p), int (*q – *p));
return 0; }
```

(a) 8, 5   (b) 1, 8

(c) 1, 5   (d) 4, 8

Ans. **(c)**

End of Solution

Q.49 S_1 : Capacity : 4
S_2 : Capacity : 2

400
300
200
100

S_1 S_2

1. Push to S_2 : Pop from S_1 and push to S_2
2. Push to S_1 : Pop from S_2 and push to S_1
3. Generate o/p : Pop top elements from S_1 and print.

Which of the following sequence of output can be generated ?

(a) 200, 300, 400, 100   (b) 100, 200, 400, 300

(c) 400, 200, 100, 300   (d) 300, 200, 400, 100

Ans. **(a)**

End of Solution

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Questions & Solutions
Exam held on: 10-02-2024
Afternoon Session

Q.50   int g(int p)
{
        printf("%d", p);
        return p;
}
int h(int q)
{
        printf("%d", q);
        return q;
}
void f(int x, int y)
{
        $g(x)$;
        $h(y)$;
}
int main( )
{
        $f(g(10), h(20))$;
}
What is o/p printed? (parameters all evaluated from left to right).

Ans.   **(10201020)**

End of Solution

■■■■

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Page
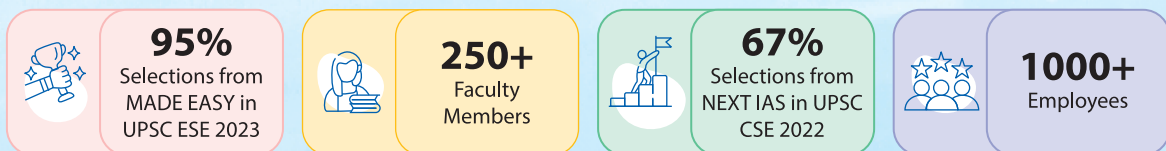**20**

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