GATE 2024 Question Paper Feb 10
(CSE - Slot 2)

Ques 1. Which of the following fields of IP header is/ are always modified by any router before it forwards to IP Packet?

- **A. Time to live**
- **B. Source IP address**
- **C. Header checksum**
- **D. Protocol**

Ans. A and C are correct.

Ques 2. Which one of the following CIDR profix 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 / 23**
- **C. 10.12.2.0 /22**
- **D. 10.12.0.0 / 22**

Ans. B

Ques 3. Consider an ethernet segment whose transmission is 10^8 bits per second. Maximum segment length 500 m, speed of the provocation media velocity is 2×10^8 meter per second. What is the minimum frame size in bits?

Ans. 500 Bits

Ques 4. Instruction format has the following structure. Instruction number OPCODE destination Source 1 and Source 2.

I_1: Div R_3 R_1 R_2;
I_2: Sub R_5 R_3 R_4;
I_3: Add R_3 R_5 R_6;
I_4: Mul R_7 R_3 R_8;

A. There is a RAW dependency on R_3 between I_1 and I_2
B. There is a RAW dependency on R_3 between I_2 and I_3
C. There is a WAW dependency on R_3 between I_3 and I_4
D. There is a WAR dependency on R_3 between I_1 and I_3

Ans. A and B are correct.

Ques 5. Largest among all in a single precision

	Sign	Exponent	Mantissa
A.	**0**	**01111111**	**23 0'8**
B.	**0**	**01111111**	**23 1'8**
C.	**0**	**11111110**	**23 1'8**
D.	**0**	**11111111**	**23 1'8**

Ans. C

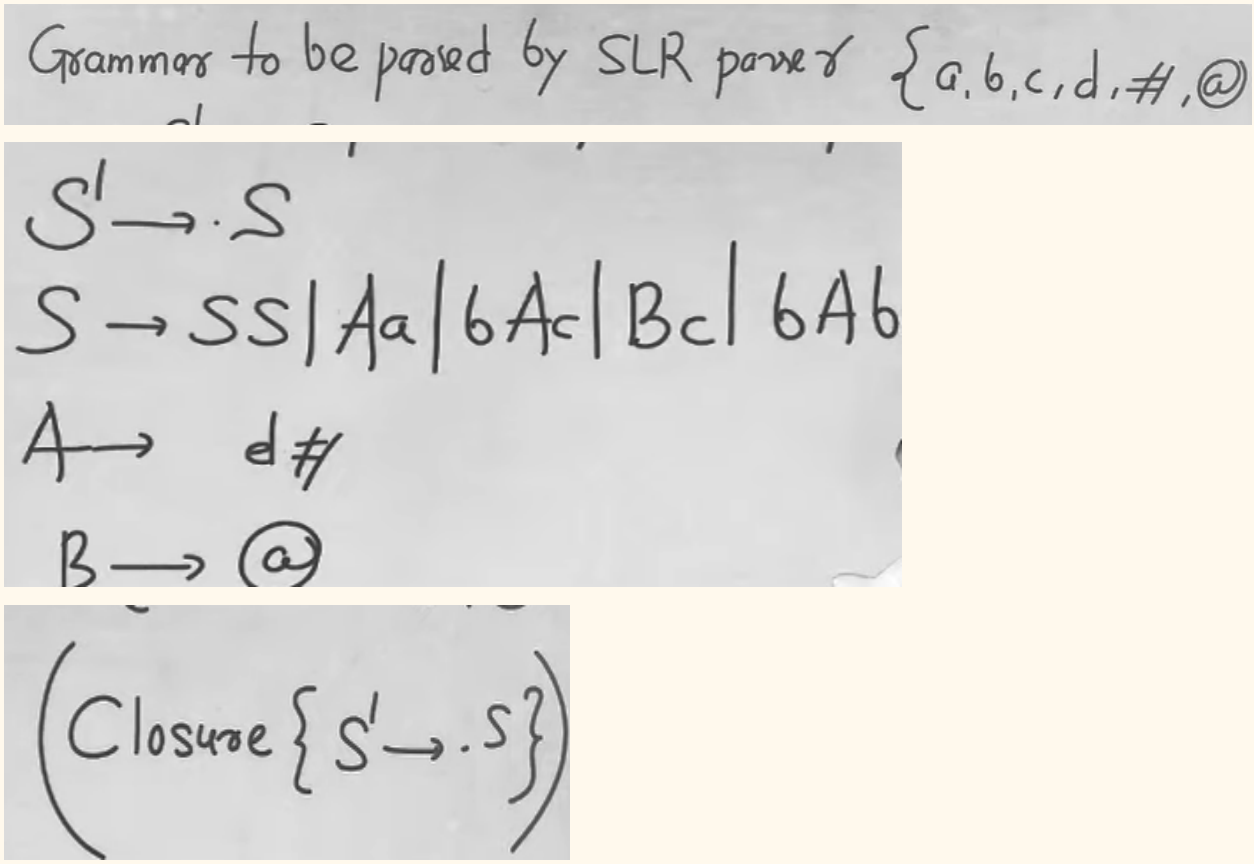
Ques6.

```
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);
```

A. 4,8
B. 8,5
C. 1,5
D. 1.8

Ans. C

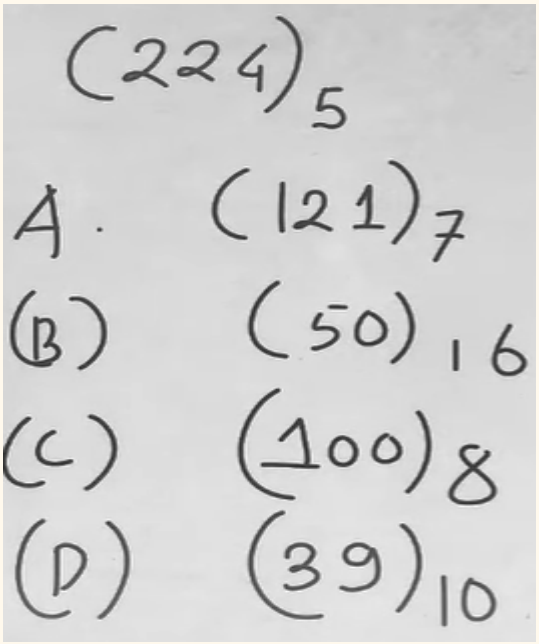
Ques 7.



The number of items in goto Io on input S.

Ans. 9

Ques 8.



Ans. A & C are correct

Ques 9. Which one is false:-

A. X.1 = X

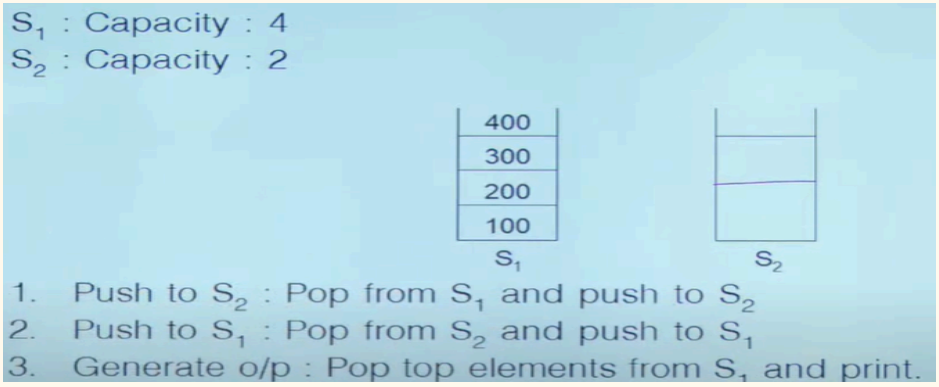
B. $X + \bar{X} = 1$

C. 1 + X = x

D. X.X = 0

Ans. C & D are false

Ques 10.

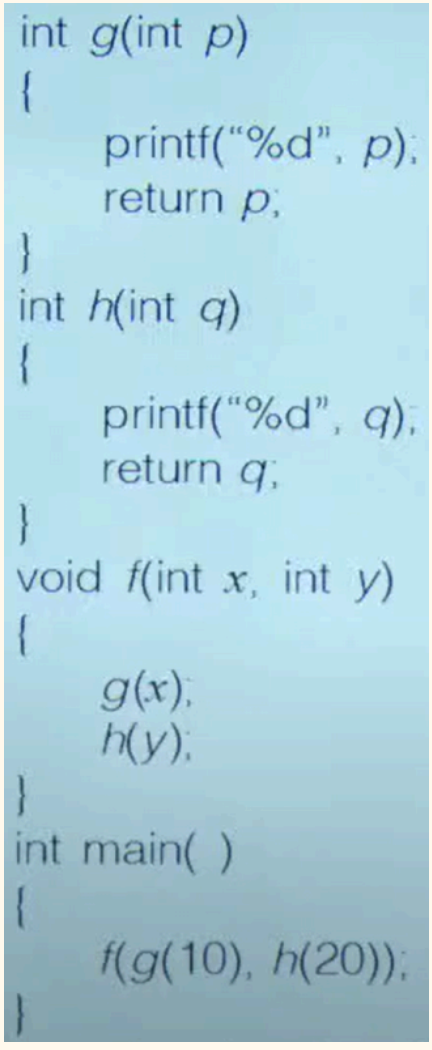


Which of the following sequences of output can be generated?

A. 200,300,400,100
B. 100,200,400,300
C. 400,200,100,300
D. 300,200,400,100

Ans. A, C & D are correct

Ques 11.



```
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 the o/p printed?(parameters all evaluated from left to right)

Ans. 10,20,10,20

Ques 12. 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

Ques 13. The value of x in given series is:-
6, 9, 14, x, 30, 41

Ans. 21

Ques 14. $\log\left[\frac{x+y}{2}\right]=\frac{1}{2}(\log x+\log y)$ The value of $\frac{x}{y}+\frac{y}{x}$ is

Ans. 2

Ques 15. 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. 6

Ques 16. Increasing order of the intensity
Walk → Jog → Sprint
Bothered →? Daunted

- **A. Fazed**
- **B. Phrased**
- **C. Phased**
- **D. Fused**

Ans. A

Ques 17. A processor with 16 GPR's uses a 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

Ques 18. Consider a non-pipeline processor with 2 GHz clock, average CPI of '6'. It is hence with a 5-stage pipeline processor with the 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 times

Ques 19. 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 ms

Ques 20.

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

A. 1

B. -1
C. 0
D. 2

Ans. A

Ques 21. $\int_{x=0}^{a} \int_{y=\sqrt{\frac{x}{a}}}^{y=1} e^{y^3}\, dy\, dx = (e-1)$ **, then the value of *a* is**

Ans. 3

Ques 22. The probability of getting a distinct number while throwing dice six times?

Ans. 5/324

Ques 23. 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 is symmetric then B is also symmetric.

Ans. A & B are correct