MID SEM REGULAR

Q1.

SET A

Correct order should be:--

3log(log(n)), 5log(n^2) + 3, (4n)^0.5, 2^log(8n), 13n(log(n))^3, 4n(log(n))^4, 2n^3 + 9n + 7, 5n^11 + 2 , 33^(n+3) n^3, 1001n^(n/2)log(n)

SET B

Correct order should be:--

7log(log(n)), 6log(n^3) + 2, (3n)^0.25, 17n(log(n))^2, 5n(log(n))^3, 4^log(4n), 3n^5 + 7n + 4, 8n^13 + 3 , 22^(n-2) n^2, 909n^(n/3)log(n)

SET C:

correct ans should be:--

5log(logn), 7log(n^5) + 9, (2n)^.75, 19n(log(n))^4 , 3n(log(n))^5 , 8^(log(2n)) , 9n^7 + 5n + 3, 4n^17 + 6 , 66^(n-6) n^6 , 404 n^(n/4) log(n).

Example solution for SET C – Q1.. Similar for other sets as well.

First of all follow this order :

Constant<Logarithmic<Poly Logarithmic<Polynomial<Exponential<n! or n^n.

There are several methods to solve this. One such simple method is by looking at the terms and trying to identify the order according to the rule specified above

5log(logn), 7log(n^5) + 9 purely logarithmic so should be placed at the beginning.

Then comes (2n)^.75< 19n(log(n))^4 because the term 19n(log(n))^4 contains n^1 which is definite.y greater than n^0.75 in (2n)^.75 . After that 19n(log(n))^4 < 3n(log(n))^5 as both are same type of terms just the difference in power.

8^(log(2n)) =(2n)^(log 8 with base 2)=(2n)^3 which is greater than the previous term.similarly , 9n^7 + 5n + 3 then 4n^17 + 6 comes in order. 66^(n-6) n^6 is the exponential term just like we use to have 2^n that's why it is at 2nd highest place. Last one is 404 n^(n/4) log(n) ~~O(n^n) which is of highest order.

And hence the ordering comes out to be:

5log(logn), 7log(n^5) + 9, (2n)^.75, 19n(log(n))^4 , 3n(log(n))^5 , 8^(log(2n)) , 9n^7 + 5n + 3, 4n^17 + 6 , 66^(n-6) n^6 , 404 n^(n/4) log(n).

MID SEM MAKE UP

Q1.

SET A

Correct order:
2n^log(3)/log(n),4log(logn),71log(n^2)+9, 5n(logn)^5, 3n^3+8n+6, (πn)^4.5,
(512)^log(8n), 6n^13 +5 , 44^(n+4) n^3, 1729n^(n/2)log(n).

SET B

correct order:
3πn^log(4)/log(n), 9log(logn), 8log(n^3)+55, 6n(logn)^4, 3n^5 +7n +4, 64^(log4n),
(3n)^6.25, 8n^11 +3, 33^(n-3) n^2, 202n^(n/3) log(n).

SET C

Correct order:
4n^log(5)/log(n), πlog(logn),7log(n^5)+91, 3n(logn)^5, (128)^log(2n), 9n^7+5n+1, (2n)^7.75,
6n^17 +4 , 77^(n-7) n^6, 505n^(n/4)log(n).

Solution for SET C Q1.. Similar for other sets as well.

First of all follow this order :

Constant<Logarithmic<Poly Logarithmic<Polynomial<Exponential<n! or n^n.

4n^log(5)/log(n)=20(constant) should be placed at the beginning.among logarithmic functions the order suffice πlog(logn),7log(n^5)+9.

Among 3n(logn)^5, (128)^log(2n)=(2n)^7 which is greater than 3n(logn)^5. Similarly u can have 9n^7+5n+1, (2n)^7.75, 6n^17 +4 as the order of terms. 77^(n-7) n^6= exponential term which has higher time complexity in comparison to polynomial.Lastly ,505n^(n/4)log(n). Cuz it has the term n^n which is again more than exponential so the given order follows as :

4n^log(5)/log(n), πlog(logn),7log(n^5)+91, 3n(logn)^5, (128)^log(2n), 9n^7+5n+1, (2n)^7.75, 6n^17 +4 , 77^(n-7) n^6, 505n^(n/4)log(n).