PART-A

Que.1(a)Find tenth term of the A.P. whose first term is 5 and common difference is 2.

(b)Is 90 a term of the series $4 + 7 + 10 + 13 + \ldots\ldots$?

(c)Explain bounded sequence with examples.

(d)Define independent events. Also give two examples.

(e)If the fifth term of a G.P. is 162 and the first term is 2, then find the common ratio.

(f)A bag contains 6 white balls, 9 black balls. What is the probability of drawing a black ball?

(g)What is the probability of getting a total of more than 10 in a single throw with two dice?

(h)What is positive term series? Explain.

(i)Examine the nature of the series $1 + 2 + 3 + 4 + \ldots\ldots + n + \ldots\ldots\infty$.

(j)Test the nature of the series $1 + (3/4) + (9/16) + (27/64) + \ldots\ldots\infty$.   (1.5*10 =15)

PART-B

Q.2(a)Calculate the arithmetic mean of the number of florets on sunflower as given below:

Class interval	Frequency	Class Interval	Frequency
10-20	2	50-60	29
20-30	7	60-70	10
30-40	17	70-80	3
40-50	29	80-90	2
		90-100	1 (7)

(b)In a study on patients, the following data was obtained .Find the standard deviation of the data.

Age(in years):	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
Number of Cases:	1	0	1	10	17	38	9	3

(8)

Q.3(a)The sum of 'p' terms of a series is $2p^2+p$.Prove that the series is in A.P. (7)

(b)The sum of the digits of a three digited number is 12.The digits are in A.P. If the digits are reversed, then the number is diminished by 396.Find the number. (8)

Q.4(a)If $3x+1,7x$ and $10x+8$ be in G.P., then find the value of x. (7)

(b)Find the sum of the given series:

(i)2+6+18+54+……to 10 terms.

(ii)$1 - \frac{1}{2} + \frac{1}{4} - \frac{1}{8}$ … … … … to 12 terms. (8)

Q.5(a)The probability that a student passes a physics test is(2/3) and the probability that he passes both physics and English test is (14/45).The probability that he passes at least one test is (4/5).What is the probability that the student passes the English test. (7)

(b)The probability that a boy will get a scholarship is 0.9 and that a girl will get is 0.8.What is the probability that at least one of them will get the scholarship? (8)

Q.6(a)Prove that the given series $\frac{2}{3!} + \frac{3}{4!} + \frac{4}{5!} + \cdots$ … … … .. is convergent and find its sum. (7)

(b)Examine the convergence of the series: $\frac{\sqrt{2}-1}{3^3-1} + \frac{\sqrt{3}-1}{4^3-1} + \frac{\sqrt{4}-1}{5^3-1} + \cdots$ … … …. (8)

Q.7(a)If a,b,c , are in A.P., then prove that $a^2(b+c),b^2(c+a),c^2(a+b)$ are in A.P. (7)

(b)There are 4 boys and 2 girls in room A and 5 boys and 3 girls in room B . A girl from one of the two rooms laughed loudly. What is the probability that the girl who laughed was from room B. (8)