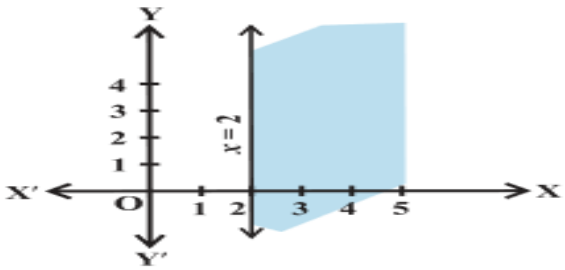
INDIAN SCHOOL MUSCAT – SENIOR SECTION – DEPARTMENT OF MATHEMATICS

QUESTION BANK – MATHEMATICS – CLASS 11 – HALF YEARLY – (2019 – 20)

S.NO	MCQ(1 Mark Each)
1	In a class of 60 students, 25 students play cricket and 20 students play tennis and 10 students play both the games. Then, the number of students who play neither is (A) 5 (B) 25 (C) 15 (D) 35
2	Which of the following relations is a function? (A) $\{(1,2),(-1,3),(-1,8)\}$ (B) $\{(0,4),(5,6),(5,8)\}$ (C) $\{(1,2),(2,2),(3,4)\}$ (D) $\{(3,7),(3,6),(5,3)\}$
3	Domain of sec(x) is (A) [-1 1] (B) R (C) R-{x|x = (2n+1)π/2,nεZ} (D) R-{x|x = nπ,nεZ}
4	What is the solution set for $0 < \frac{-x}{2} < 3$? (A) (5, 6) (B) (-6, 0) (C) (-6, 6) (D) (0, 6)
5	If A and B are two sets, then A∩(A∪ B) equals (A) ∅ (B) A ∩ B (C) A (D) B
6	Find x and y if (4x + 3, y) = (3x + 5, -2) (A) x = -2 , y = -2 (B) x = 2 , y = -3 (C) x = 2, y = 2 (D) x = 2, y = -2
7	If cos x = 0.8, then cos (2x) =? (A) 0.28 (B) 0.4 (C) 1.0 (D) 1.6
8	Given item A, which of the following would be the value of item B? Item A : $\sum_{n=1}^{5} a_n$ = 30 Item B : $\sum_{n=1}^{5}(3a_n - 2)$ (A) 28 (B) 78 (C) 80 (D) 88
9	The coefficient of variation of a distribution is 70 and its standard deviation is 28. What is the corresponding arithmetic mean? (A) 42 (B) 40 (C) 25 (D) 50
10	A.M between 1- x + x² and 1+ x + x² is (A) 2 – x² (B) 2 + x² (C) 1 – x² (D) 1 + x²
	VSA –I VERY SHORT ANSWER TYPE QUESTIONS(1 Mark Each)
11	If A = [–3, 5), B = (0, 6] then find A – B.
12	Are sets A = {1, 2, 3, 4}, B = {x: x ∈ N and $5 \leq x \leq 7$} disjoint? Justify.
13	Write the following interval in set-builder form : [–23, 5)
14	The relation g is defined by g(x) = $\begin{cases} x^2, & 0 \leq x \leq 2 \\ 3x, & 2 \leq x \leq 10 \end{cases}$

	Check whether this relation is a function.
15	**Convert into radian measures. – 47^0 30´**
16	**The standard deviation of 25 observations is 4 and their mean is 25. If each observation is increased by 10, what is the new standard deviation?**
17	**Give an appropriate inequality that represents the shaded region.(fig. 1)** 
18	**Find the general solution of sin x = $\frac{-\sqrt{3}}{2}$**
19	**Solve – 12x > 30, when x is an integer.**
20	**If the product of 3 consecutive terms of G.P. is 27, find the middle term**
	SA- SHORT ANSWER TYPE QUESTIONS (2 Marks Each)
21	**(a) Find the domain of the function, f(x) = $\frac{x^2+2x+3}{x^2-5x+6}$** **OR** **(b) Find the domain and the range of the real function f defined by f (x) = |x – 1|.**
22	**Let A = {1, 2, 3}, B = {3, 4} and C = {4, 5, 6}. Verify that A × (B ∩ C) = (A X B) ∩ (A X C).**
23	**Let A = {1, 2, 3 }, B= {1,2,3,4 } and R = { (x, y) : (x, y) ∈ A x B ,y = × + 1 }.** **(i) Write R in roster form (ii) Represent R by an arrow diagram**
24	**(a) Find the mean deviation about the median for the following data:** **3, 9, 5, 3, 12, 10, 18, 4, 7, 19, 21.** **OR** **(b) Find the mean deviation about the mean for the following data:** **6,7,10,12,13,4,8,20.**
25	**If tan A = a/(a + 1) and tan B = 1/ (2a + 1), then find the value of A + B.**
26	**The mean of 100 observations is 50 and their standard deviation is 5. Find the sum of squares of all the observations.**
	LA-I LONG ANSWER TYPE QUESTIONS(4 Marks Each)
27	**If U = {1,2,3,4,5,6,7,8,9}, A = {2,3,5,7,9}, B = { 1,2,4,7}, C = { 1,2, 3, 5 ,6} .** **(i) Verify (A U B)' = A' ∩ B'** **(ii) Draw a Venn diagram to represent the given sets with elements and shade (A – B – C) in it.**
28	**Find the general solution of the equation sin 2x – sin4 x + sin 6x = 0.**
29	(a) Prove that $\tan 4x = \frac{4\tan x(1-\tan^2 x)}{1-6\tan^2 x+\tan^4 x}$

	OR **(b) If tan x =$\frac{-4}{3}$, where x is in Quadrant II, find the values of sin $\frac{x}{2}$, cos$\frac{x}{2}$ and tan $\frac{x}{2}$.**
30	**By using the principle of mathematical induction prove that for all n ∈ N:** **$1+3+3^2+\ldots+3^{n-1}=\frac{3^n-1}{2}$**
31	**The sum of n terms of two A. P are in the ratio (3n+8) : (7n+15). Find the ratio of their 12th terms.**
32	**Find the sum to n terms of the series $1^2+(1^2+2^2)+(1^2+2^2+3^2)+\ldots$** **OR** **Find the sum to n terms of the sequence 8, 88, 888, 8888, … .**
33	**By using the principle of mathematical induction prove that for all n ∈ N:** $1+\frac{1}{(1+2)}+\frac{1}{(1+2+3)}+\ldots+\frac{1}{(1+2+3+\ldots n)}=\frac{2n}{(n+1)}$
34	**Find the general solution of the equation sin x +sin 3x +sin 5x = 0**
35	**The sums of n terms of two A. P are in the ratio (5n+4): (9n+6). Find the ratioof their 18th terms.**
	LA-II LONG ANSWER TYPE QUESTIONS(6 Marks Each)
36	**In a survey it is found that 21 people like product A, 26 people like product B and 29 like product C. If 14 people like product A and B, 15 people like product B and C, 12 people like product C and A, and 8 people like all the three products. Find** **(i) How many people are surveyed in all?** **(ii) How many like product C only?** **(iii) How many like exactly two products?**
37	**Prove that$\cos^2 x+\cos^2\left(x+\frac{\pi}{3}\right)+\cos^2\left(x-\frac{\pi}{3}\right)=\frac{3}{2}$.**
38	**(a) For 200 candidates the mean and standard deviation was found to be 10 and 15 respectively. After that if was found that the scale 34 was incorrect. Find the correct mean and correct standard deviation if the wrong scale was replaced by 43.** **OR** **(b) Calculate the mean, variance and standard deviation of the following data:**

Classes	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90	90 - 100
Frequency	3	7	12	15	8	3	2

39	**(a) How many litres of water will have to be added to 1125 litres of the 45% sol.of acid so that the resulting mixture will contain more than 25%but less than 30% acid content.** **OR** **(b) Solve graphically : $x+2y\le 10$, $x+y\ge 1$, $x-y\le 0$, $x\ge 0$, $y\ge 0$.**
40	**In a town of 10,000 families, it was found that 4000 families buy newspaper A,2000 families buy newspaper B and 1000 families buy newspaper C. 500 families buy A and B, 300 buy B and C and 400 buy A and C. If 200 families buy all the three**

	papers. Find the no. of families which buy **(i) newspaper A only** **(ii) newspaper B only** **(iii) none of the newspapers A, B, and C.**