PUNJAB BOARD OF TECHNICAL EDUCATION

21-A, Kashmir Block Allama Iqbal Town, Lahore
www.pbte.edu.pk- R&D Section Tel # 042-99260273

SAY NO TO CORRUPTION

No: PBTE/R&D/2023/02 Dated: 04-01-23

NOTIFICATION

It is for the information of all concerned that the academic wing of TEVTA has rationalized the problems for the subjects of Math-113, Math-123, Math-212 and Math-233. It is clarified that problem mentioned in the communiqué of Academics Wing TEVTA will only be considered by the paper setters for setting of question papers of the different variants of Mathematics offered in DAE stream.

In addition, the other contents within the detailed chapters of said books i.e. examples, numerical as well as theory, definitions, theorems and derivations etc. will be considered intact and included for paper setting w.e.f. current session i.e. 2022-23 and onward. The paper setters are advised that, while setting the question papers, only approved textbooks for these variants of Mathematics as already notified by the PBTE, must be used to avoid any ambiguity, in future.

The detail of rationalized problems is available on Board's website and may be downloaded from the link i.e. https://www.pbte.edu.pk/Ptextbooks.aspx

All concerned are requested to note, please.

SECRETARY
02/01/23

Copy for information to:

1- The DG Academics, TEVTA, Lahore.
2- The DG Operations-I, TEVTA, Lahore.
3- PS to Chairman, PBTE, Lahore.
4- PA to Secretary, PBTE, Lahore.
5- PA to Controller of Examinations, PBTE, Lahore.
6- The principals concerned.
7- Deputy Controller of Examinations (Conduct), PBTE, Lahore.
8- Deputy Controller of Examinations (Secrecy), PBTE, Lahore.
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12- Assistant Controller of Examinations (P&P-I), PBTE, Lahore.
13- Assistant Controller of Examinations (P&P- II), PBTE, Lahore.
14- Web Administrator, PBTE Lahore to upload on Board Website.

Rationalized exercises and related problems to be included during paper setting by PBTE

MATH-113 PAPER(A)		
Chapter no.	**Exercise**	**Rationalized Exercise problems**
1	**Quadratic Equation**	
	Ex#1.1	Q#1(i to vi),2 (I to vi),3 (I to iv)
	Ex #1.2	Q# 1,2,3,4,5(ii),6(i,ii)
	Ex#1.3	Q#1,2,3
	Ex#1.4	Q#1,2,3,4
	Short Question	1 to 4 , 7 to 14 , 16 to 18, 21 to 23 ,28,29
	MCQ.s	1,5,6,9,10,11,12,13,19,20
2	**Sequences & Series**	
	Ex#2.1	Q# 1 to 5
	Ex #2.2	Q#1,2,3,4,8
	Ex#2.3	Q#1(I,iii),2,4,5(ii),10
	Ex#2.4	Q#1,2,3,4
	Ex #2.5	Q# 1 to 4
	Ex#2.6	Q# 1,2,4
	Ex#2.7	Q# 1,2,3,4(i)
	Short Question	Q#1,5,6,7,8,10,11,12,13,14,15,16,19,20, 22,23,24,25
	MCQ.s	1,2,3,5,6,10,13,15,19,20
3	**Binomial theorem**	
	Ex # 3.1	Q#1 (I to vi),2(i,ii) ,3(i),5,6(I,ii),7(i,ii), 9,10
	Ex#3.2	Q#1(i to iv),2(ii,v,vi) ,3(i)
	Short Question	ALL
	MCQ.s	1,2,3,4,5,6,7,13,16
4	**Partial Fractions**	
	Ex#4.1	Q#1,2,3,4,9
	Ex #4.2	Q#1,2,3,4,5,8
	Ex#4.3	Q# 1 to 8
	Ex#4.4	Q#1
	Short Question	ALL
	MCQ.s	ALL
5	**Fundamental of Trigonometry**	
	Ex#5.1	Q#1,2,3,4,5,6,7
	Ex#5.2	Q#1,2,3,49,10,11,12
	Ex#5.3	Q# 1 to 10
	Short Question	1 To15 , 19 to 24
	MCQ.s	1,2,3,4,6,7,10,11,12,18
6	**General Identities**	
	Ex#6.1	Q# 1,2,5,(I to iv)
	Ex#6.2	Q #1,2,3,4
	Ex#6.3	Q# 1 to 5, 14 to 16
	Short Question	Q# 1 to 12 , 20 to 24
	MCQ.s	1 to 10

Signature of Committee Members: 1-

2- KHALID SULTAN (A/P)

3- M. MOHSIN NIAZ

4- M. IRFAN ASLAM

Rationalized exercises and related problems to be included during paper setting by PBTE

7	**Solution of triangles**	
	Ex#7.1	ALL
	Ex#7.2	Q# 1 to 4
	Ex#7.3	Q# 1 to 5
	Ex#7.4	Q# 1 to 5
	Ex#7.5	Q# 1,2,3,6,7
	Short Question	Q# 1 to 15
	MCQ.s	1 to 10

	MATH-113 PAPER(B)	
8	**Vector and Scalar**	
	Ex#8.1	ALL
	Ex#8.2	Q#1,2,3,4,7,9,13,14,16,18,19
	Short Question	1 to 6,9 to 18, 20,23
	MCQ.s	1,2,3,5,7,8,9,10,13,14
9	**Matrices & Determinant**	Q # 2,4,5,6,8,9
	Ex#9.1	
	Ex #9.2	Q#1,2(I,iii,v),5,8
	Ex#9.3	Q# 1,2,3,4
	Short Question	7 to 15 , 22 to 29
	MCQ.s	1,2,3,4,6,7,8,10,11,17
10	**Area of Triangle**	
	EX# 10	Q# 1 to 5
	Short Question	ALL
	MCQ.s	ALL
11	**Area of Quadrilateral**	
	Ex#11	Q# 3,4,5,8,9
	Short Question	1,2,3,4,5,8,9,12
	MCQ.s	1 to 5, 7 to 11
12	**Area of Polygon**	
	EX#12	Q#1 to 5
	Short Question	ALL
	MCQ.s	ALL
13	**Area of Circle**	
	Ex#13	Q# 1 to 5
	Short Question	Q# 1 to 10
	MCQ.s	1 to 10
14	**Area of Irregular plane Figures**	
	Ex#14	Q# 1 to7
	Short Question	ALL
	MCQ.s	ALL
15	**Mensuration of Solid**	
	Ex#15	Q # 1 to 5
	Short Question	Q # 1 to 5
	MCQ.s	Q # 1 to 5

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Rationalized exercises and related problems to be included during paper setting by PBTE

16	**Mensuration of Cylinder** Ex#16	Q# 1 to 5
	Short Question	1 to 5
	MCQ.s	1 to 5
17	**Mensuration of Pyramid** Ex # 17(A)	Q # 1 to 8
	Short Question	Q # 1 to 5
	MCQ's	Q # 1 to 5
18	**Mensuration of Cone** Ex # 18(A)	Q # 1 to 7
	Short Question	Q # 2,3,6,7,8
	MCQ's	Q # 1 to 5
19	**Mensuration of Sphere** Ex # 19(A)	Q # 1,2,4,6,7
	Short Question	Q # 3,5,6,9,11,15
	MCQ's	Q # 1,2,36,8

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Rationalized exercises and related problems to be included during paper setting by PBTE

MATH-123 PAPER(A)		
Chapter no.	**Exercise**	**Rationalized Exercise problems**
1	**Quadratic Equation**	
	Ex#1.1	Q#1(i to vi),2 (I to vi),3 (I to iv)
	Ex #1.2	Q# 1,2,3,4,5(ii),6(i,ii)
	Ex#1.3	Q#1,2,3
	Ex#1.4	Q#1,2,3,4
	Short Question	1 to 4 , 7 to 14 , 16 to 18, 21 to 23 ,28,29
	MCQ.s	1,5,6,9,10,11,12,13,19,20
2	**Binomial theorem**	
	Ex # 2.1	Q#1 (I to vi),2(i,ii) ,3(i),5, 6(I,ii),7(i,ii), 9,10
	Ex#2.2	Q#1(i to iv),2(ii,v,vi) ,3(i)
	Short Question	ALL
	MCQ.s	1,2,3,4,5,6,7,13,16
3	**Fundamental Trigonometry**	
	Ex#3.1	Q#1,2,3,4,5,6,7
	Ex#3.2	Q#1,2,3,49,10,11,12
	Ex#3.3	Q# 1 to 10
	Short Question	1 To15 , 19 to 24
	MCQ.s	1,2,3,4,6,7,10,11,12,18
4	**General Identities**	
	Ex#4.1	Q# 1,2,5,(I to iv)
	Ex#4.2	Q #1,2,3,4
	Ex#4.3	Q# 1 to 5, 14 to 16
	Short Question	Q# 1 to 12 , 20 to 24
	MCQ.s	1 to 10
5	**Solution of triangles**	
	Ex#5.1	ALL
	Ex#5.2	Q# 1 to 4
	Ex#5.3	Q# 1 to 5
	Ex#5.4	Q# 1 to 5
	Short Question	Q# 1 to 15
	MCQ.s	1 to 10
6	**Vector and Scalars**	
	Ex#6.1	ALL
	Ex#6.2	Q#1,2,3,4,7,9,14,16,19
	Short Question	1 to 20
	MCQ.s	1 to 10
7	**Phasors Algebra**	
	Ex#7	Q#1,2,3,10,12
	Short Question	Q#1,2,3,4,5,11,12,13,15,16
	MCQ.s	ALL

Signature of Committee Members:

1-
2- KHALID SULTAN
3- M. MOHSIN NIAZ
4- M. IRFAN ASLAM

Rationalized exercises and related problems to be included during paper setting by PBTE

MATH-123 PAPER(B)		
8	**Complex Numbers**	
	Ex#8.1	Q#1,2,3(I to iii),4(I to v),5,7,8,9,10,11
	Ex#8.2	Q#1(I to v), 2(I to v),3
	Ex#8.3	Q#1(I to iv),2(i,ii),3
	Short Question	1 to 14 , 20
	MCQ.s	1 to 10
9	**Partial Fractions**	
	Ex#9.1	Q#1,2,3,4,9
	Ex #9.2	Q#1,2,3,4,5,8
	Ex#9.3	Q# 1 to 8
	Ex#9.4	Q#1
	Short Question	ALL
	MCQ.s	ALL
10	**Number systems & Arithmetic Operations**	
	EX# 10	Q# 1 to 7
	Short Question	1 to 15
	MCQ.s	ALL
11	**Boolean Algebra**	
	Ex#11	Q#1(I,ii), 2(I,ii), 3,4(i),5(i),6, 9
	Short Question	1 to 9, 14 to 17
	MCQ.s	ALL
12	**The Straight Line**	
	EX#12.1	Q#1 to 5
	Ex#12.2	Q#1 to 5
	Ex#12.3	Q#1 to 5
	Ex #12.4	Q#1 to 10
	Ex#12.5	Q#1,3,4,7,8
	Ex#12.6	Q# 1 to 4
	Short Question	1 to 4,7, 9 to 20
	MCQ.s	1 to 10
13	**The Circle**	
	Ex#13	Q#1,2,3(i,ii,iii),4,6(i),7(i,ii),8,9,10
	Short Question	1 to 8,12 to 14,16
	MCQ.s	1 to 10

Signature of Committee Members:

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Rationalized exercises and related problems to be included during paper setting by PBTE

MATH-212		
Chapter no.	**Exercise**	**Rationalized Exercise problems**
1	**Function & Limit**	
	Ex#1.1	Q# 1, 2, 3, 6, 7, 8, 10, 11, 12
	Ex #1.2	Q# 1(i-iv), 2(i-v), 3 (i,ii), 4(I-iv), 5(I-iv)
	Ex#1.3	Q# 1(i-viii), 2, 3(i,iii)
	Short Question	1-5, 8-10, 12, 14, 15
	MCQ.s	ALL
2	**Derivative**	
	Ex#2.1	Q# 1(i-v), 2(i),
	Ex #2.2	Q# 1(i-ix), 2(i-iv,vii,viii), 3(i-iv,vii,viii,ix), 4(i-v,viii,ix), 5(i-iv)
	Ex#2.3	Q#1(I-iii,v-viii), 2(i,ii),3(i-iii,vi,vii),4(i-iii)
	Ex#2.4	Q#1(i-v)
	Short Question	Q# 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 19, 20
	MCQ.s	ALL
3	**Derivative of trigonometry & Invers function**	
	Ex # 3.1	Q# 2(i,vi,viii) , 3(I,vi,viii,ix), 5(i,ii), 6, 7(ii), 8(i), 9(i-iv)
	Ex#3.2	Q# 1(i-iii), 2(i,iii,v) , 3, 4(I), 5
	Ex#3.3	Q#1(i-vi,viii,x,xii) , 2(I-v,x) ,3(I,iii)
	Short Question	3, 5, 6-10, 14, 15, 17
	MCQ.s	1-10
4	**Rate of change of variable**	
	Ex#4.1	Q#1-5
	Ex #4.2	Q# 1(i-iiii) , 2(I-vi), 3(I,ii), 4, 8
	Short Question	1, 2, 6, 7, 10, 14, 15, 16, 17, 19
	MCQ.s	ALL
5	**Integration**	
	Ex#5.1	Q# 1-11, 14-17
	Ex#5.2	Q# 1-2, 4-6, 8, 9, 11
	Ex#5.3	Q# 1(I-vi,ix-xi,xiii), 2(i-iii,v)
	Short Question	1-5, 7, 8, 10, 11, 12, 15
	MCQ.s	ALL
6	**Method of Integration**	
	EX#6.1	Q# 1(i-iv), 2(i-iii), 3, 4(i-iv)
	Ex#6.2	Q# 1(i-ii, iv, viii)
	Ex#6.3	Q# 1(i-iv), 2(ii,iv), 3(i-iii,vi), 4(i-ii)
	Short Question	1-10,13,14,15
	MCQ.s	ALL

Signature of Committee Members: 1-

2- KHALID SULTAN (Ay/p)

3- MOHSIN NIAZ (Lecturer)

4- M. IRFAN ASLAM (Lecturer)

Rationalized exercises and related problems to be included during paper setting by PBTE

MATH-212		
7	**Definite Integral and Applications**	
	Ex#7.1	Q# 1(i-viii),2(i-iii,vii)
	Ex #7.2	Q# 2,3, 5-10
	Short Question	2-5, 7-12, 14, 17
	MCQ.s	ALL
8	**The Straight Line**	
	EX#8.1	Q# 1 to 5
	Ex#8.2	Q# 1 to 5
	Ex#8.3	Q# 1 to 5
	Ex #8.4	Q# 1 to 10
	Ex#8.5	Q# 1,3,4,7,8
	Ex#8.6	Q# 1 to 4
	Short Question	1 to 4, 9 to 20
	MCQ.s	1 to 10
9	**The Circle**	
	Ex#9	Q#1, 2, 3(I,ii,iii), 4, 6(i), 7(I,ii), 8, 9
	Short Question	1 to 10, 12 to 14, 16, 17
	MCQ.s	1 to 10

Signature of Committee Members:

Rationalized exercises and related problems to be included during paper setting by PBTE

MATH-233 PAPER(A)		
Chapter no.	**Exercise**	**Rationalized Exercise problems**
1	**Function & Limit**	
	Ex#1.1	Q#1,2,3,6,7,8,10,11,12
	Ex #1.2	Q# 1(i-iv), 2(i-v), 3(i,ii), 4(i-iv), 5(i-iv)
	Ex#1.3	Q# 1(i-viii), 2, 3(i,iii)
	Short Question	1-5,8-10,12,14,15
	MCQ.s	ALL
2	**Derivative**	
	Ex#2.1	Q# 1(i-v), 2(i),
	Ex #2.2	Q# 1(i-ix), 2(i-iv,vii,viii), 3(i-iv,vii,viii,ix), 4(i-v,viii,ix), 5(i-iv)
	Ex#2.3	Q#1(I-iii,v-viii), 2(i,ii), 3(i-iii,vi,vii), 4(i-iii)
	Ex#2.4	Q#1(i-v)
	Short Question	Q# 2,,4,5,6,7,8,9,10,11,12,13,14,17,18
	MCQ.s	ALL
3	**Derivative of trigonometry & Invers Trigonometric function**	
	Ex # 3.1	Q#2(i-vi,viii) , 3(I-iv,viii,ix), 5(i,ii), 6, 7(ii), 8(i), 9(i-iv)
	Ex#3.2	Q#1(i-iii), 2(i,iii,v) , 3, 4(i), 5
	Ex#3.3	Q#1(i-vi,viii,x,xii) , 2(I-v,x), 3(I,iii)
	Short Question	3,5,6-10,14,15,17
	MCQ.s	1-10
4	**Rate of change of variable**	
	Ex#4.1	Q#1-3
	Ex #4.2	Q#1(i-iiii) , 2(I-vi), 3(I,ii), 4, 8
	Short Question	1,2,6,7,10,14,15,16,17,19
	MCQ.s	ALL
5	**Statistics**	
	Ex#5.1	Q# 1, 2, 3, 5, 6, 9
	Ex#5.2	Q# 1-6
	Short Question	7-21
	MCQ.s	10-20
6	**Probabilities**	
	Ex#6.1	Q# 1-5
	Ex#6.2	Q # 1, 2, 3, 5, 6
	Short Question	1-9
	MCQ.s	1-5,11-15

Signature of Committee Members:

1-
2- KHALID SULTAN
3- M. MOHSIN NIAZ
4- M. IRFAN ASLAM

Rationalized exercises and related problems to be included during paper setting by PBTE

MATH-233 PAPER(B)		
7	**Integration**	
	Ex#7.1	Q# 1-11, 14-17
	Ex#7.2	Q# 1-2 , 4-6, 8, 9, 11
	Ex#7.3	Q#1(I-vi,ix-xi,xiii), 2(i-iii,v)
	Short Question	1-5, 7, 8, 10, 11, 12, 15
	MCQ.s	ALL
8	**Method of Integration**	
	EX#8.1	Q# 1(i-iv), 2(i-iii), 3, 4(i-iv)
	Ex#8.2	Q# 1(i-ii, iv, viii)
	Ex#8.3	Q# 1(I-iv,), 2(ii,iv), 3(i-iii,vi), 4(i-ii)
	Short Question	1-10,13-15
	MCQ.s	ALL
9	**Definite Integral**	
	Ex#9.1	Q# 1(i-viii), 2(i-iii,vii)
	Ex #9.2	Q# 2,3, 5-10
	Short Question	2-5, 7-12, 14, 17
	MCQ.s	ALL
10	**Differential Equation**	
	EX# 10	Q# 1-10, 16, 17
	Short Question	1-3, 5, 10-14
	MCQ.s	ALL
11	**Fourier Series**	
	Ex#11	NILL
	Short Question	ALL
	MCQ.s	ALL
12	**Laplace Transformation**	
	EX#12	Q# 1, 2(i-iv), 5, 6(I,ii,iv,v)
	Short Question	1-4,6,7,8,10,11,12,13,17,18,19
	MCQ.s	ALL

Signature of Committee Members:

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