PREFACE

This book contains the Daily Practice Problems (DPPs) designed for the aspirants JEE(Main+Advanced). It is a collection of problems (Physics, Chemistry & Mathematics in separate booklets) from multiple topics to understand the application of concepts learned in theory. Each DPP is kind of a timed test with marking scheme and prescribed time to be spent on each problem. It is according to the latest pattern of JEE(Advanced) and serves as a great tool for the students to simulate examination conditions at home. It enables a student to practice time management while solving a problem which helps him/her to better prepare for the target exam.

Every effort has been taken to keep this book error free, however any suggestions to improve are welcome at <u>smdd@resonance.ac.in</u>.





DAILY PRACTICE PROBLEMS

MATHEMATICS

TARGET: JEE (Main + Advanced) 2022

COURSE : VIKAAS (JA)

DPPs - B1 to B27

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NOTE :

• 🔈 "Marked questions are recommended for Revision"

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DPP No. # B1(JEE-MAIN)

Total M Single Multip Subjec	larks : 46 choice O le choice tive Que	bjec obje stion	tive (' ctive s ('-1'	'-1' ne ('-2' r ' nega	egativ negat ative	ve ma ive & mark	rking Part ing) (g) Q.1 ial ma Q.9 to	ot G arkin o 15).7 g) Q.8			(3 (4 (3	۸ marks marks marks	lax. Ti 3 min 3 min 3 min 3 min	me:4 .) [21, .) [04, .) [21	5 min. 21] 03] , 21]
Ques	stion No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Mark Obtai	s ined																
1.	lf produc (1) not p	t of tl ossib	he roo le	ots of	the e (2) –	quatio 1	on 3x²	² – 4x	+ (lo (3	g a² – I) 1	og (– :	a) + 3)	= 0 is (4)	1, the None	n 'a' is of thes	equal se	to
2.	The proc (1) – 1	duct c	ot 12	3º.co	ot 133 (2) ta	^{9⁰} . co n 37º	t 137	^o . CO	t 147 ^g (3	² , whe) cot 3	n simp 3º	olified is	s equa (4)	l to : 1			
3.	cos (200	1)π-	+ cot	(2001	$)\frac{\pi}{2}+$	⊦ sec	(2001	$1) \frac{\pi}{3}$	+ tan	(2001)	$\frac{\pi}{4}$ +	cosec	(2001)	$\frac{\pi}{6}$ eq	uals to)	
	(1) 0 (2) 1 (3) -2 (4) Not defined																
4.	Let cos(α + β)	$) = \frac{4}{5}$	and	et sin	ı(α –	B) = -	<u>5</u> , w	here	0 ≤ α,	$\beta \leq \frac{\pi}{4}$. Then	tan 2o	x =			
	(1) $\frac{56}{33}$				(2) $\frac{19}{12}$	9 2			(3) $\frac{20}{7}$			(4)	25 16			
5.	If the exp $\cos\left(x - \frac{1}{2}\right)$	$\left(\frac{3\pi}{2}\right)$	ion + sin	$\left(\frac{3\pi}{2}\right)^+$	• x)+	sin(3	2π + 2	x) — 1	8 cos	(19π –	x) + c	os(567	τ + x) -	- 9 sin	(x + 17	π)	
	is expres (1) 17	ssed i	in the	form	of a s (2) 27	sinx + 7	b cos	sx, the	en (a (3	+ b) is) 13	equal	to	(4)	23			
6.	The sma	llest	value	of x ²	– 3x	+ 3 in	the i	nterva	al [-:	$3, \frac{3}{2}$	is						
	(1) – 20				(2) –	15			(3) 5			(4)	3/4			
7.	If cos 2x (1) 1	+ 2 c	cos x	= 1, tł	nen si (2) 2	n² x (2 – co	OS² X)	is eq (3	ual to) 3			(4)	4			
8.	If sec A =	= 17 8	and o	cosec	B = -	$\frac{5}{4}$, the	en se	c(A +	B) ca	an have	e the v	alue e	qual to)			
	(1) $\frac{85}{36}$				(2) –	85 36			(3	$)-\frac{85}{84}$			(4)	$\frac{85}{84}$			
9.	Prove th	at <u>s</u>	sinA+ sA+	- sin3. cos3.	A + si A + co	n5A - os5A	⊦sin7 +cos	<u>'A</u> 7A =	tan 4	A							
10.	Prove th	at 2 c	$\cos \frac{\pi}{13}$	$-\cos\frac{9}{2}$	$\frac{9\pi}{13} + 0$	$\cos\frac{3\pi}{10}$	$\frac{\pi}{3} + cc$	$\cos \frac{5\pi}{13}$	= 0								
11.	If θ lies i	n III q	luadra	ant an	d sin	θ = -	12 13	find c	cos θ	, tan θ	, cot θ)					
12.	Prove th	at : 1 1	– sin + sin	$\frac{\theta}{\theta} = (s$	ecθ –	- tanθ)²										

- **13.** If $\sin\theta + \sin^2\theta = 1$, then prove that $\cos^2\theta + \cos^4\theta = 1$
- **14.** The diameter of a bicycle wheel is 28 inches ; through what distance does its centre move during one revolution of the wheel ?
- **15.** Find θ lying in the interval [0, 2π] satisfying the following equations :

(i)	$\sin \theta = \frac{1}{2}$	(ii)	$\cos \theta = \frac{\sqrt{3}}{2}$	(iii)	$\tan \theta = \sqrt{3}$
(iv)	$\sin \theta = -\frac{1}{\sqrt{2}}$	(v)	$\cos \theta = -\frac{1}{2}$	(vi)	$\tan \theta = -\frac{1}{\sqrt{3}}$

DPP No. # B2 (JEE-ADVANCED)

Total Marks: 28 Single choice Objective ('–1' negative marking) 1 to Q.2 Multiple choice objective ('–1' negative marking) Q.3,4,5,6 Subjective Questions ('–1' negative marking) Q.7,8

(3 marks, 3 min.) (4 marks, 3 min.) (3 marks, 3 min.) Max. Time : 24 min. [06, 06] [16, 12] [06, 06]

Question No.	1	2	3	4	5	6	7	8	Total
Marks Obtained									

1. If $\sin \theta = 5 \sin (\theta + \phi)$, then $\tan (\theta + \phi) =$

(A) sin ϕ	_(B) sin∮	(C) sin ϕ	cos ¢ (_{ط)}
$(\pi) \frac{1}{\cos \phi - 3}$	(D) $\frac{1}{\cos\phi+3}$	$(0) \frac{1}{\cos \phi - 5}$	$(D) \frac{1}{\sin \phi + 5}$

2. If $P = \frac{\sin 300^\circ \cdot \tan 330^\circ \cdot \sec 420^\circ}{\tan 135^\circ \cdot \sin 210^\circ \cdot \sec 315^\circ} \& Q = \frac{\sec 480^\circ \cdot \csc \sec 570^\circ \cdot \tan 330^\circ}{\sin 600^\circ \cdot \cos 660^\circ \cdot \cot 405^\circ}$, then P & Q are respectively

(A) 2, 16 (B) $\sqrt{2}$, $\frac{10}{3}$ (C) - 2, $\frac{3}{16}$ (D) none of the	(A) 2 , 16	(D) none of	(C) $-2, \frac{3}{16}$	(D) none of these
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- **3.** For $m \in R$, let $f(x) = x^3 + 3mx^2 3x 3m + 2$ has 3 real roots x_1, x_2 and x_3 . Also k denotes the value of m for which $(x_1^2 + x_2^2 + x_3^2)$ is minimum. Which of the following statement(s) is/are correct ?
 - (A) f(x) has all 3 roots real and distinct corresponding to m for which is $(x_1^2 + x_2^2 + x_3^2)$ minimum
 - (B) The value of k lies in [-1, 1]
 - (C) The minimum value of $\sum_{i=1}^{3} x_i^2$ equals 6.
 - (D) Number of roots of sinx = k in $[0, 2\pi]$ equals 3.
- 4. The integral values of x for which $x^2 + 7x + 13$ is perfect square are α and β then (A) α and β are -ve integer (C) atleast one of the value α or β is negative (D) atleast one of the value α or β is prime
- 5. ➤ If quadratic equation (x + a)(x + 1991) + 1 = 0 has integral roots then
 (A) Number of Integral values of a are 2
 (B) Both the Integral values of a is divisible by 2
 - (C) one of the Integral value of a is divisible by 2
 - (D) If the Integral values of a are $\alpha \& \beta$ such that $\alpha > \beta$ then $\alpha \beta = 4$



- 7.2 Find the number of integral values of 'a' for which $ax^2 - (3a + 2)x + 2(a + 1) < 0$, $a \neq 0$ holds exactly four integral value of x.
- Let x_1 , x_2 , x_3 be 3 roots of the cubic $x^3 x 1 = 0$. 8. Then the expression $x_1(x_2 - x_3)^2 + x_2(x_3 - x_1)^2 + x_3(x_1 - x_2)^2$ equals a rational number. Find the absolute value of the number.

DPP No. # B3 (JEE-ADVANCED) Special DPP on "Trigonometry and Sequence Series"

Question No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Total Marks Obtained 1	Total M Single Multip	/larks : 56 choice C le choice))bjec obje	tive (' ctive	'-1' ne ('-2' r	egativ negat	ve ma ive &	rking Parti) Q.1 al ma	ot Q. Irking	4 j) Q.5 t	o Q.15	5	(3 m (4 m	Ma arks 3 arks 3	x. Tim min.) min.)	e:45 [12, 12 [44, 33	min. 2] 3]
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Quest	ion No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1. Let $f(\theta) = \frac{1}{2} + \frac{2}{3}\csc^2\theta + \frac{3}{8}\sec^2\theta$. The least value of $f(\theta)$ for all permissible values of θ , is (A) $\frac{31}{12}$ (B) $\frac{61}{48}$ (C) $\frac{61}{25}$ (D) $\frac{61}{24}$ 2.3. If $f(x) = \frac{1-\sin 2x + \cos 2x}{2\cos 2x}$, then the value of $f(16^{\circ})$. $f(29^{\circ})$ is (A) $\frac{1}{2}$ (B) $\frac{1}{4}$ (C) 1 (D) $\frac{3}{4}$ 3.3. If $P = (\tan (3^{n+1}\theta) - \tan \theta)$ and $Q = \sum_{r=0}^{n} \frac{\sin(3^r\theta)}{\cos(3^{r+1}\theta)}$, then (A) $P = 2Q$ (B) $P = 3Q$ (C) $2P = Q$ (D) $3P = Q$ 4. Let a sequence whose n^{n} term is $\{a_n\}$ be defined as $a_1 = \frac{1}{2}$ and $(n-1)a_{n-1} = (n+1)a_n$ for $n \ge 2$ then $\lim_{n \to \infty} S_n$ equals (A) $\frac{3}{4}$ (B) $\frac{5}{4}$ (C) $\frac{3}{2}$ (D) 1 5. Which of the following are the solutions of equation $2\sin 11x + \cos 3x + \sqrt{3} \sin 3x = 0$? (A) $x = \frac{n\pi}{7} - \frac{\pi}{84}$, $n \in Z$ (B) $x = \frac{n\pi}{4} + \frac{7\pi}{48}$, $n \in Z$ (C) $x = \frac{n\pi}{7} - \frac{\pi}{63}$, $n \in Z$ (D) $x = \frac{n\pi}{4} + \frac{\pi}{24}$, $n \in Z$ (C) $x = \frac{n\pi}{4} - \frac{\pi}{3}$, $2n\pi + \frac{\pi}{4}$, $n \in Z$ (B) $(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$	Marks C	Obtained																
2.3 If $f(x) = \frac{1-\sin 2x + \cos 2x}{2\cos 2x}$, then the value of $f(16^{\circ})$. $f(29^{\circ})$ is (A) $\frac{1}{2}$ (B) $\frac{1}{4}$ (C) 1 (D) $\frac{3}{4}$ 3.3 If P = $(\tan (3^{n+1}\theta) - \tan \theta)$ and Q = $\sum_{r=0}^{n} \frac{\sin(3^{r} \theta)}{\cos(3^{r+1} \theta)}$, then (A) P = 2Q (B) P = 3Q (C) 2P = Q (D) 3P = Q 4. Let a sequence whose n th term is $\{a_n\}$ be defined as $a_1 = \frac{1}{2}$ and $(n-1)a_{n-1} = (n+1)a_n$ for $n \ge 2$ then $\lim_{n \to \infty} n$ equals (A) $\frac{3}{4}$ (B) $\frac{5}{4}$ (C) $\frac{3}{2}$ (D) 1 5. Which of the following are the solutions of equation $2\sin 11x + \cos 3x + \sqrt{3} \sin 3x = 0$? (A) $x = \frac{n\pi}{7} - \frac{\pi}{84}$, $n \in Z$ (B) $x = \frac{n\pi}{4} + \frac{7\pi}{48}$, $n \in Z$ (C) $x = \frac{n\pi}{7} - \frac{\pi}{63}$, $n \in Z$ (D) $x = \frac{n\pi}{4} + \frac{\pi}{24}$, $n \in Z$ (C) $x = \frac{n\pi}{7} - \frac{\pi}{63}$, $n \in Z$ (B) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4})$, $n \in Z$	1.	Let f (θ) (A) $\frac{31}{12}$	$) = \frac{1}{2}$	$+\frac{2}{3}c$	osec	$e^{2}\theta + \frac{3}{8}$ (B) $\frac{6}{4}$	-sec ² 1 8	θ.Τ	he lea	ast va (C)	lue of 61 25	f (θ) fo	or all pe	ermissi (D)	ble val 61 24	ues of	θ, is	
3. If $P = (\tan (3^{n} + 10) - \tan 0)$ and $Q = \sum_{r=0}^{n} \frac{\sin(3^r \theta)}{\cos(3^{r+1}\theta)}$, then (A) $P = 2Q$ (B) $P = 3Q$ (C) $2P = Q$ (D) $3P = Q$ 4. Let a sequence whose n th term is {a _n } be defined as $a_1 = \frac{1}{2}$ and $(n-1)a_{n-1} = (n+1)a_n$ for $n \ge 2$ then $\lim_{n \to \infty} S_n$ equals (A) $\frac{3}{4}$ (B) $\frac{5}{4}$ (C) $\frac{3}{2}$ (D) 1 5. Which of the following are the solutions of equation $2\sin 11x + \cos 3x + \sqrt{3} \sin 3x = 0$? (A) $x = \frac{n\pi}{7} - \frac{\pi}{84}$, $n \in Z$ (B) $x = \frac{n\pi}{4} + \frac{7\pi}{48}$, $n \in Z$ (C) $x = \frac{n\pi}{7} - \frac{\pi}{63}$, $n \in Z$ (D) $x = \frac{n\pi}{4} + \frac{\pi}{24}$, $n \in Z$ 6. If $\cos 3\theta + \sin 3\theta + (2\sin 2\theta - 3)(\sin \theta - \cos \theta) > 0$, then subset of values of θ is (A) $\left(2n\pi - \frac{3\pi}{4}, 2n\pi + \frac{\pi}{4}\right)$, $n \in Z$ (B) $\left(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{6}\right)$, $n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right)$, $n \in Z$	2.54	If $f(x) =$ (A) $\frac{1}{2}$	<u>1-sir</u> 2	12x + 2cos2	cos2> 2x	$\frac{4}{3}$, the (B) $\frac{1}{2}$	n the	value	e of f(*	16º) . (C)	f(29º) i) 1	S		(D)	<u>3</u> 4			
4. Let a sequence whose n th term is {a _n } be defined as $a_{1} = \frac{1}{2} \text{ and } (n-1)a_{n-1} = (n+1)a_{n} \text{ for } n \ge 2 \text{ then } \lim_{n \to \infty} S_{n} \text{ equals}$ (A) $\frac{3}{4}$ (B) $\frac{5}{4}$ (C) $\frac{3}{2}$ (D) 1 5. Which of the following are the solutions of equation $2\sin 11x + \cos 3x + \sqrt{3} \sin 3x = 0$? (A) $x = \frac{n\pi}{7} - \frac{\pi}{84}, n \in Z$ (B) $x = \frac{n\pi}{4} + \frac{7\pi}{48}, n \in Z$ (C) $x = \frac{n\pi}{7} - \frac{\pi}{63}, n \in Z$ (D) $x = \frac{n\pi}{4} + \frac{\pi}{24}, n \in Z$ 6. If $\cos 3\theta + \sin 3\theta + (2\sin 2\theta - 3)(\sin \theta - \cos \theta) > 0$, then subset of values of θ is (A) $\left(2n\pi - \frac{3\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z$ (B) $\left(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{6}\right), n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (E) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (E) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (E) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$	3.2	If $P = (ta)$ (A) $P = $	an (3 2Q	^{n +1} 0)	– tan	θ) an (B) P	d Q = = 3Q	$\sum_{r=0}^{n} -c$	sin(3' os(3'	$\left(\frac{T}{\theta}\right)^{+1}\theta$, (C)	then) 2P = (Q		(D) 3	3P = Q			
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$a_{1} = \frac{1}{2} \text{ and } (n-1)a_{n-1} = (n+1)a_{n} \text{ for } n \ge 2 \text{ then } \lim_{n \to \infty} S_{n} \text{ equals}$ (A) $\frac{3}{4}$ (B) $\frac{5}{4}$ (C) $\frac{3}{2}$ (D) 1 5. Which of the following are the solutions of equation $2\sin 11x + \cos 3x + \sqrt{3} \sin 3x = 0$? (A) $x = \frac{n\pi}{7} - \frac{\pi}{84}, n \in Z$ (B) $x = \frac{n\pi}{4} + \frac{7\pi}{48}, n \in Z$ (C) $x = \frac{n\pi}{7} - \frac{\pi}{63}, n \in Z$ (D) $x = \frac{n\pi}{4} + \frac{\pi}{24}, n \in Z$ 6. If $\cos 3\theta + \sin 3\theta + (2\sin 2\theta - 3)(\sin \theta - \cos \theta) > 0$, then subset of values of θ is (A) $\left(2n\pi - \frac{3\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z$ (B) $\left(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{6}\right), n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$	4.	Let a sequence whose n th					n is {a	a _n } be	aetin	ed as								
(A) $\frac{3}{4}$ (B) $\frac{5}{4}$ (C) $\frac{3}{2}$ (D) 1 5. Which of the following are the solutions of equation $2\sin 11x + \cos 3x + \sqrt{3} \sin 3x = 0$? (A) $x = \frac{n\pi}{7} - \frac{\pi}{84}, n \in \mathbb{Z}$ (B) $x = \frac{n\pi}{4} + \frac{7\pi}{48}, n \in \mathbb{Z}$ (C) $x = \frac{n\pi}{7} - \frac{\pi}{63}, n \in \mathbb{Z}$ (D) $x = \frac{n\pi}{4} + \frac{\pi}{24}, n \in \mathbb{Z}$ 6. If $\cos 3\theta + \sin 3\theta + (2\sin 2\theta - 3)(\sin \theta - \cos \theta) > 0$, then subset of values of θ is (A) $\left(2n\pi - \frac{3\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in \mathbb{Z}$ (B) $\left(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{6}\right), n \in \mathbb{Z}$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}$		$a_1 = \frac{1}{2}$	and (n – 1))a _{n-1}	= (n +	- 1)a _n	for n	≥ 2 th	en Lii n⇒	mS _n ec	quals						
5. Which of the following are the solutions of equation $2\sin 11x + \cos 3x + \sqrt{3} \sin 3x = 0$? (A) $x = \frac{n\pi}{7} - \frac{\pi}{84}, n \in Z$ (B) $x = \frac{n\pi}{4} + \frac{7\pi}{48}, n \in Z$ (C) $x = \frac{n\pi}{7} - \frac{\pi}{63}, n \in Z$ (D) $x = \frac{n\pi}{4} + \frac{\pi}{24}, n \in Z$ 6.24 If $\cos 3\theta + \sin 3\theta + (2\sin 2\theta - 3)(\sin \theta - \cos \theta) > 0$, then subset of values of θ is (A) $\left(2n\pi - \frac{3\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z$ (B) $\left(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{6}\right), n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (E) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$		(A) $\frac{3}{4}$				(B) $\frac{5}{2}$	5			(C)	$\frac{3}{2}$			(D) 1	l			
(A) $x = \frac{n\pi}{7} - \frac{\pi}{84}, n \in Z$ (B) $x = \frac{n\pi}{4} + \frac{7\pi}{48}, n \in Z$ (C) $x = \frac{n\pi}{7} - \frac{\pi}{63}, n \in Z$ (D) $x = \frac{n\pi}{4} + \frac{\pi}{24}, n \in Z$ 6. (D) $x = \frac{n\pi}{4} + \frac{\pi}{24}, n \in Z$ (E) $x = \frac{n\pi}{4} - \frac{\pi}{24}, n \in Z$ (E) $(2n\pi - \frac{3\pi}{4}, 2n\pi + \frac{\pi}{4}), n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}), n \in Z$ (B) $(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{6}), n \in Z$ (C) $(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}), n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}), n \in Z$ (D) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}), n \in Z$ (E) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}), n \in Z$ (E) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}), n \in Z$ (E) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}), n \in Z$ (E) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}), n \in Z$ (E) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}), n \in Z$ (E) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}), n \in Z$ (E) $(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}), n \in Z$ (E) $(2n\pi - \frac{\pi}{4}, 2n\pi + $	5.	Which o	f the f	follow	ing ar	e the	solut	ions c	of equ	ation	2sin11	x + cos	s3x + ,	√3 sin3	x = 0 ?			
(C) $x = \frac{n\pi}{7} - \frac{\pi}{63}, n \in Z$ (D) $x = \frac{n\pi}{4} + \frac{\pi}{24}, n \in Z$ 6.2 If $\cos 3\theta + \sin 3\theta + (2\sin 2\theta - 3)(\sin \theta - \cos \theta) > 0$, then subset of values of θ is (A) $\left(2n\pi - \frac{3\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z$ (B) $\left(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{6}\right), n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (E) Resconce Rescale R		(A) x =	$\frac{n\pi}{7}$	<u>π</u> , n 84	∈Z					(B)	$x = \frac{n}{2}$	$\frac{\pi}{4} + \frac{7\pi}{48}$, n ∈ Z	2				
6. If $\cos 3\theta + \sin 3\theta + (2\sin 2\theta - 3)(\sin \theta - \cos \theta) > 0$, then subset of values of θ is (A) $\left(2n\pi - \frac{3\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z$ (B) $\left(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{6}\right), n \in Z$ (C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z$ (Equating for better tomorrow) Reg. & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.)-324005 Website: www.resonance.ac.in E-mail : contact@resonance.ac.in PAGE NO3		(C) x =	<u>nπ</u> 7	<u>π</u> , n 63	∈Z					(D)	$x = \frac{n}{2}$	$\frac{\pi}{4} + \frac{\pi}{24}$	-, n ∈ Z	2				
$(A) \left(2n\pi - \frac{3\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \qquad (B) \left(2n\pi - \frac{\pi}{2}, 2n\pi + \frac{\pi}{6}\right), n \in Z \\ (C) \left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in Z \qquad (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right), n \in Z \\ (D) \left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}\right$	6.2	lf cos3θ	+ sin:	3 0 + (2sin2	θ – 3))(sinθ	– cos	iθ) > (), thei	n subse	et of va	alues o	ofθis				
(C) $\left(2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{3}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ (D) $\left(2n\pi - \frac{\pi}{4}, 2n\pi + \frac{3\pi}{4}\right), n \in \mathbb{Z}$ Reg. & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.)-324005 Website: www.resonance.ac.in E-mail : contact@resonance.ac.in E-mail : con		(A) (2n7	$\tau - \frac{3\pi}{4}$	[⊑] , 2n7	$\left(\tau + \frac{\pi}{4}\right)$, n ∈ 2	<u>Z</u>			(B) (2nπ	$-\frac{\pi}{2}, 2$	$2n\pi + \frac{\pi}{6}$	$\left(\frac{1}{3}\right), n \in \mathbb{Z}$	Z			
Reg. & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.)-324005 Website: www.resonance.ac.in E-mail : contact@resonance.ac.in Tell Free : 1900 APR F5FF CM: UpgenD U		(C) (2n;	$\pi-\frac{\pi}{3}$,	2nπ	$+\frac{\pi}{3}$,	n∈Z				(D)) (2nπ	$-\frac{\pi}{4}$, 2	$n\pi + \frac{3}{2}$	<u>π</u>), n ∈	Z			
Reg. & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.)-324005 Website: www.resonance.ac.in E-mail : contact@resonance.ac.in Tell Free : 1900 050 555 : CHV: Usersonance.ac.in																		
Key Scheme Website: www.resonance.ac.in E-mail : contact@resonance.ac.in Tell Free + 1900 959 5555 FEE + CNF Upgroup 1907751 000 1000 PAGE NO3						® ₿	eg. & C	orp. Of	ice : CO	G Tower	, A-46 & t	52, IPIA, I	Vear City	Mall, Jha	lawar Roa	ad, Kota (Raj.)-324(005
		Educating	for bet	dn ter ton	Le	W	ebsite:	www.re	sonance	e.ac.in	E-mail :	contact@	resonanc	e.ac.in		PAGE	NO3	

7.	In a $\triangle ABC$, if tan $\frac{A}{2}$ =	$=\frac{5}{6}$, tan $\frac{B}{2}=\frac{20}{37}$, the	en which of the following	g is/are correct ?
	(A) B > C	(B) B < C	(C) a > b > c	(D) a < b < c
8.	For all permissible val	ues of x, if $y = \frac{\sin 3x}{2}$	$\frac{(\cos 6x + \cos 4x)}{2}$, then	range of y is (– ∞ , a) \cup (b, ∞). If
	'2b' is the first term of	sin x(G.P. and 'a' is its co	cos8x + cos2x) mmon ratio, then	
	(A) $b - a = \frac{10}{10}$	(B) 3a + b = 4	(C) $S_{10} = 9$	(D) $S_{re} = \frac{27}{(a+b)}$
•	3 Khuana an ba			(′ ∞ 10 ′ ′
9.	b+c, c+a, a+ba		, b+c c+a a	+b
	(A) <u>a</u> , <u>b</u> , <u>c</u>	are in A.P.	(B) <u>a</u> , <u>b</u> ,—	c are in H.P.
	(C) a^2 , b^2 , c^2 are in A.I	.	(D) a ² , b ² , c ² are in	H.P.
10.	I hree friends whose a do that three years lat rupees more that he g ages of the friends are	ages form a G.P. divide er, when the youngest jets now and the middle e	a certain sum of mone is half the age of the o e friend will get 15 rupe	ey in proportion to their ages. If they Idest, then he will receive 105 ees more that he gets now, then
	(A) 12, 18, 27	(B) 6, 12, 24	(C) 8, 18, 36	(D) divisible by 3
11.24	I he roots of the equation is 10, then	$100 x^{3} - 40x^{4} + ax^{3} + b^{2}$	$x^{2} + cx + d = 0$ are in C	aP. If sum of reciprocals of the roots
	(A) c = 40	(B) d = 4	(C) d = 32	(D) c = 320
12.	The number of terms	of an A.P. is even; the s	sum of the odd terms is	s 310; the sum of the even terms is
	340; the last term exc	eeds the first by 57. Th of the series – 20	en (B) Number of terr	ns of the series -10
	(C) The first term of se	eries = 4	(D) The first term of	of series = 5
13.	 a, b, c are the first through then which of the follow (A) Sum of the first tere (B) Sum of the first five (C) If the value of the common difference of (D) The number 648 is 	ee terms of geometric s wing hold(s) good? rm and common ratio o e terms of the G.P. is 9 the first term and comm an A.P. then its 8 th term s one of the term of the	series. If the H.M. of <i>a</i> a f the G.P. is 11. 48. non ratio of the given G n is 29. g.G.P.	and <i>b</i> is 12 and that of b and c is 36 A.P. is taken as the first term and
14.2	Consider a decreasing	g G.P. : g ₁ , g ₂ , g ₃ , ç	$g_n \dots such that g_1 + g_1$	$g_2 + g_3 = 13$ and $g_1^2 + g_2^2 + g_3^2 = 91$
	(A) The greatest term	of the G.P. is 9.	(B) $3g_4 = g_3$	
	(C) $g_1 = 1$		(D) $g_2 = 3$	
15.	If a,b,c are positive (A) $b^2c^2 + c^2a^2 + c^2a^2$	e then which of the f $a^{2}b^{2} > abc (a + b + c)$	ollowing holds good	5 ?
	(R) $\frac{bc}{bc} + \frac{ca}{ca} + \frac{ab}{ab} > a$	$\pm b \ge abc (a \pm b \pm c)$	1	
	(C) $\frac{bc}{a^3} + \frac{ca}{b^3} + \frac{ab}{c^3} \ge \frac{1}{a^3}$	$\frac{1}{1} + \frac{1}{1} + \frac{1}{1}$		
		, 1 , 1		
	(D) $\frac{a}{a} + \frac{b}{b} + \frac{c}{c} \ge \frac{1}{\sqrt{b}}$	\overline{c} $\frac{1}{\sqrt{ca}}$ $\frac{1}{\sqrt{ab}}$		
	, ,	DPP No. # B4	(JEE-ADVANCED	
Total N	Marks : 26	negative marking)	1 to 0.6	Max. Time : 24 min.
Multip	le choice objective (-1	2' negative & Partial n	narking) Q.7 to Q.8	(4 marks 3 min.) [10, 16]
	Question No.	1 2 3	4 5 6	7 8 Total

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Marks Obtained

7.

1.	If $\frac{\cos x - \cos \alpha}{\cos x - \cos \beta} = \frac{\sin^2 \alpha \cos \beta}{\sin^2 \beta \cos \alpha}$, then	
	(A) $\cos x = \frac{\cos \alpha + \cos \beta}{1 + \cos \alpha \cos \beta}$	(B) $\cos x = \frac{\cos \alpha + \cos \beta}{1 - \cos \alpha \cos \beta}$
	(C) $\tan \frac{x}{2} = \tan \frac{\alpha}{2} \tan \frac{\beta}{2}$	(D) $\tan \frac{x}{2} = 3 \tan \frac{\alpha}{2} \tan \frac{\beta}{2}$

. 2

2. For all pairs of angles (A, B), measured in degrees such that $\sin A + \sin B = \sqrt{2}$ and $\cos A + \cos B = \sqrt{\sqrt{2}}$, both hold simultaneously. The smallest possible value of |A - B| in degrees is (A) 15 (B) 30 (C) 45 (D) 60

3. If $\cos(\theta + \phi) = m\cos(\theta - \phi)$, then $\tan \theta$ is equal to : (A) $\left(\frac{1+m}{1-m}\right) \tan \phi$ (B) $\left(\frac{1-m}{1+m}\right) \tan \phi$ (C) $\left(\frac{1-m}{1+m}\right) \cot \phi$ (D) $\left(\frac{1+m}{1-m}\right) \cot \phi$

4. Let α be a real number such that $0 \le \alpha \le \pi$. If $f(x) = \cos x + \cos(x + \alpha) + \cos(x + 2\alpha)$ takes some constant number c for any $x \in R$, then the value of $[c + \alpha]$ is equal to (Note : [y] denotes greatest integer less than or equal to y.) (A) 0 (B) 1 (C) - 1 (D) 2

5. If
$$a_1, a_2, a_3, \dots$$
 are in A.P. and $a_1 > 0$ for each i, then
$$\sum_{i=1}^{n} \frac{n}{a_{i+1}^{2/3} + a_i^{1/3} + a_i^{1/3} + a_i^{1/3}}$$
 is equal to (A) $\frac{n}{a_{n+1}^{2/3} + a_{n+1}^{1/3} + a_1^{1/3}}$ (B) $\frac{n+1}{a_n^{2/3} + a_n^{1/3} + a_1^{2/3}}$ (C) $\frac{n^2}{a_{n+1}^{2/3} + a_{n+1}^{1/3} + a_{n+1}^{1/3}}$ (D) none of these

6. Let n quantities be in A.P., d being the common difference. Let the arithmetic mean of the squares of these quantities exceed the square of the arithmetic mean of these quantities by a quantity p. Then p

(A) is always neg	ative (B) equals $\frac{n^2}{12}$	$\frac{-1}{2}d^2$ (C) equals $\frac{d^2}{12}$	$\frac{n^2}{2}$ (D) equals $\frac{n^2 - 1}{12}$
For a sequence {	a_n , $a_1 = 2$ and $\frac{a_{n+1}}{a_n}$	$= \frac{1}{3}$. Then $\sum_{r=1}^{\infty} a_r$ is	
(A) 2/3	(B) 3	(C) 3/2	(D) prime number

8. The sum of the first three terms of the G.P. in which the difference between the second and the first term is 6 and the difference between the fourth and the third term is 54, is (A) 39 (B) -10.5 (C) 27 (D) -27

DPP No. # B5 (JEE–MAIN)

Total Marks : 48 Single choice O Multiple choice Single Integer Q	Notal Marks : 48Max. Time : 45 min.Single choice Objective ('-1' negative marking) Q.1 to Q.9(3 marks 3 min.) [27, 27]Multiple choice objective ('-2' negative & Partial marking) Q.10 to Q.12(4 marks 3 min.) [12, 09]Single Integer Questions ('-1' negative marking)Q. 13 to Q.15(3 marks 3 min.) [09, 09]													5 min. , 27] , 09]), 09]		
Question No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Marks Obtained																
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DPPs	BOOKLET-2			VIKAAS (JA MATHEMATICS
1.24	Let S = $\sin\sqrt{2}$ - $\sin\sqrt{2}$	$\overline{3}$ and C = cos $\sqrt{2}$ -co	$\sqrt{3}$ then which	one of the following is correct?
	(A) S > 0 and C > 0 (C) S < 0 and C > 0		(B) S > 0 and C (D) S < 0 and C	S < 0 S < 0
2.	If $2\tan\frac{\alpha}{2} = \tan\frac{\beta}{2}$,	then $\frac{3+5\cos\beta}{5+3\cos\beta}$ is equ	al to :	
	(A) $\cos \alpha$	(B) $\cos\beta$	(C) sin α	(D) sin β
3.	If $2^x = \cos\left(\frac{y}{2}\right)$ and a^x	$= \sin y$, then $\sin\left(\frac{y}{2}\right)$ is e	qual to	
	(A) $\frac{1}{2}\left(\frac{a}{2}\right)^{x}$	(B) $\left(\frac{a}{2}\right)^{x}$	(C) $\frac{a^{x}}{2}$	(D) 2 ^{π/2}
4.2	The number of integral a solution is	value(s) of 'p' for which	the equation 99 c	$\cos 2\theta - 20 \sin 2\theta = 20p + 35$, will have
	(A) 8	(B) 9	(C) 10	(D) 11
5.	The number of integral (A) 2	value(s) of x satisfying th (B) 3	he equation x ⁴ .3 (C) 1	$3^{ x-2 }.5^{x-1} = -x^4.3^{ x-2 }.5^{x-1}$ is (D) infinite
6.	For $x > 0$ the sum of the	the series $\frac{1}{1+x} - \frac{(1-x)}{(1+x)^2} - \frac{1}{(1+x)^2}$	$+\frac{(1-x)^2}{(1+x)^3}$	∞ is equal to
	(A) $\frac{1}{4}$	(B) $\frac{1}{2}$	(C) $\frac{3}{4}$	(D) 1
7.	The equation $x - \frac{8}{1 + x}$	$\frac{1}{2} = 3 - \frac{8}{1 \times 2}$ has	6	
	(A) only one solution (C) no solution	· 5 X - 5	(B) infinite soluti (D) two solution	ions Is
8.	The solution set of the (A) $x \in (-10, 2)$	equation $ 2x + 3 - x - 1 $ (B) $x \in [-10, 2)$	= 6, is (C) x $\in [-10, 2]$	(D) $x \in \{-10, 2\}$
9.	The minimum value of (A) $4x - 3$	the function y = 2x + 1 - (B) 3x - 1	+ 2 x – 2 , is (C) 5	(D) 1
10.	Let a_1 , a_2 , a_3 be three p $a_3 > a_2 + 2a_1$ do not hole	ositive numbers which a ds if r is equal to	re in G.P. with con	mmon ratio r. The inequality
	(A) 2	(B) 1.5	(C) 0.5	(D) 2.5
11.	If a, b, c are first three t c is 5, then	terms of a G.P. if the harr	nonic mean of a a	and b is 20 and arithmetic mean of b &
	(A) no term of this G.P. (C) $b = \pm 6$	is square of an integer	(B) arithmetic m (D) common rat	tio of this G.P. is 2
12.	The first term of an infir positive integers. The p (A) 14	nite geometric series is 2 possible value(s) of the second (B) 20	1. The second ter econd term can b (C) 12	rm and the sum of the series are both be (D) 18
13.	Make the following exp (i) $ x + 2 + x - 2 $	ressions free from modulated 2 if $x^2 \le 2$ (ii)	ulus sign : (x ∈ R) x ³ + 8) (iii) x + 3 + x + x – 1



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14. Evaluate / simpilfy the folowing :

(i)
$$\left| \sqrt{7 - 4\sqrt{3}} \right|$$
 (ii) $\left| \pi - 3 - \sqrt{8 - 2\sqrt{15}} \right|$ (iii) $\left| \sqrt[3]{2} - \sqrt[4]{3} \right|$

In the given figure (circle), PT = 5, PD = 7 and PA = 2, then the value of PB - PC = ?15.



	DPP No. # B6 (JEE–ADVANCED)											
Total M Compr Single Multipl Single	Total Marks : 27Max. Time : 24 min.Comprehension ('-1' negative marking) Q.1 to Q.2(3 marks 3 min.) [06, 06]Single choice Objective ('-1' negative marking) Q.3(3 marks 3 min.) [03, 03]Multiple choice objective ('-2' negative & Partial marking) Q.4 to Q.6(4 marks 3 min.) [12, 09]Single Integer Questions ('-1' negative marking)Q. 7 to Q.8(3 marks 3 min.) [06, 06]											
	Question No.	1	2	3	4	5	6	7	8	Tota	I	
	Marks Obtained											
Compre	ehension # 1 (Q. No. 1 to 2	2).										
	Let a_1 , a_2 , a_3 be an arithmetic progression and b_1 , b_2 , b_3 , be a geometric progression. The sequence c_1 , c_2 , c_3 , is such that $c_n = a_n + b_n \forall n \in N$. Suppose $c_1 = 1$, $c_2 = 4$, $c_3 = 15$ and $c_4 = 2$.											
1.	The common ratio of geor $(A) - 2$	netric pro (B) – 3	ogressior	n is equa	l to (C) 2			(D)	3			
2.	The value of the sum $\sum_{i=1}^{20} a_i$	a _i is equ	al to									
	(A) 480	(B) 770			(C) 96	60		(D)	1040			
3.2	If x = $\tan \frac{\pi}{18}$ then $3x^6 -$	27x ⁴ + 3	33x ² is e	equal to	-							
	(A) 1	(B) 2			(C) 3	3√3		(D)	1/3			
4.১	The sequence form by (A) common difference (C) sum of first 100 terr	commor 20 ns is 10	n terms (1100	of 17, 2	1, 25, (B) si (D) te	& 16, a um of fir enth terr	21, 26, st 100 t n is 201	has erms is	100100)		
5.	If S_n denotes the sum of same A.P. given $S_n = n^2$ (A) $a_1 = p$ (C) $S_p = p^3$	of first n f 2 p ; whe	terms of ere p, n	f an aritl ∈ N, the (B) co (D) a _r	nmetic p en ommon $c_{0} = 2p^{2} -$	orogress differend - p	sion and ce = 2p	an den	otes the	n th term	n of tl	he
6.	If $\log_x a$, $a^{x/2}$, $\log_b x$ are	in GP. t	hen x is	equal	to							
	(A) $\log_a (\log_b a)$	(B) <u>loç</u>	g(loga) - log	-log(log ga	<u>b)</u> (C) I	og _b (log _a	b)	(D)	None o	f these		
7.	Solve: $\left \begin{array}{c} \frac{x^2 - 5x + 4}{x^2 - 4} \right \leq 1$											
8.	Solve the following equations : (i) $ x^2-2 = 2 x-3 $ (ii) $ x^2-4 + x^2-9 = 0$ (iii) $ x-1 + x+5 = 6$											
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\land		We W Tol	bsite: <u>www</u> I Free : 180	<u>resonance</u> 00 258 555	e.ac.in E-r 5 CIN: U8	<u>mail</u> : <u>conta</u> 30302RJ20	act@resona 07PLC0240	ance.ac.in)29		PAGE	NO7	

DPPs	BOOKLET-2						VIK	AAS (JA	MATHE	MATICS	5	
		DF	P No.	# B7 (JEE-A	DVANC	CED)					
Total M Single Multipl Single	larks : 28 choice Objective ('-1' r e choice objective ('-2' Integer Questions ('-1'	negativo negati negati	e marki ve & Pa ve mark	ng) Q.1 rtial ma ting) Q.1	to Q.3 urking) (B	Q.4 to Q.	.7	(3 m (4 m (3 m	Max. narks 3 narks 3 narks 3 narks 3	Time : min.) min.) min.)	: 24 m [09, [16, [03,	nin. 09] 12] 03]
	Question No.	1	2	3	4	5	6	7	8	Tot	tal	
	Marks Obtained											
1.	The variable 'x' satisfy interval (A) $\begin{bmatrix} 0, \frac{\pi}{2} \end{bmatrix}$	ying the (B) (<u>1</u>	e equation	on sin	x cos > (C)	$\langle + \sqrt{2} \\ \frac{3\pi}{2}, \pi \rangle$	+tan ²	x + cot ²	$\overline{x} = \sqrt{2}$	3, bel	ongs	to the
	() [3]	`'(3	3'2)			4 ' ")		()				
2.24	Let $A_0 A_1 A_2 A_3 A_4 A_5 k$ lengths of the line segn	be a reg nents A	ular hex	agon ir A2 and <i>ا</i>	scribed A ₀ A ₄ is	in a circ	le of ur	nit radiu	s. Then	the pr	oduct	of the
	(A) 3/4	(B) 3 v	/3		(C) 3			(D) :	3√3/2			
3.24	Let the n th term of a set	ries be ç	given by	$t_n = \frac{n^2}{n^2}$	$\frac{-n-2}{2+3n}$,	n ≥ 3. Th	nen pro	duct t₃ t₄	1t ₅₀	is equa	al to	
	(A) $\frac{1}{5^2.7.13.53}$	(B)5.	1 7 ² .12.5	53	(C) _ 5	1 5 ² .7.12.	51	(D)	1 5.7 ² .13	3.53		
4.	The sum of the first thre terms of the series can	ee term: be	s of an A	A.P. is 9	and the	sum of t	heir sqı	uares is	35. The	e sum t	o first	t n
	(A) n(n + 1)	(B) n²			(C) n	(4 – n)		(D) I	n(6 – n)			
5.	Consider an A.P. a_1 , a_2 ,	a	, a	nd the C	G.P. b ₁ , b	₂ ,,	b _n ,	such the	at a, = b	$b_{1} = 1$,		
	$a_{9} = b_{9}$ and $\sum_{r=1}^{9} a_{r} = 36$	9, then										
	(A) $b_{6} = 27$	(B) b ₇	= 27		(C) b	₃ = 81		(D) I	o ₉ = 81			
6.	If $\sum_{r=1}^{n} r(r+1) = \frac{(n+a)(n+a)}{n}$	+b)(n+ 3	<u>c)</u> , whe	ere a > I	⊃ > c, th	en						
	(A) $2b = c$	(B) a ³	– 8b³ + 0	C³ = 8ab	c (C) a	is prime	numbe	er (D) ((a – 2b) [;]	² = 0		
7.2a	If 5sinx cosy = 1 and 4 (A) x = (m + 2n) $\frac{\pi}{2} + \frac{\pi}{4}$	$\tan x = t$ + $(-1)^m \frac{1}{2}$	any, the $\frac{1}{2}$ sin ⁻¹ (-	n - <mark>3</mark>); m, 3)	n ∈ Z							
	(B) $y = (2n - m)\frac{\pi}{2} + \frac{\pi}{4} + \frac{\pi}{4}$	(-1) ⁺¹	_sin [_] (- <u>-</u> ; m 3)	, n ∈ Z							
	(U) $x = (m + n) \frac{\pi}{2} + \frac{\pi}{4} + \frac{\pi}{4}$	- (-1) ^m - 2	sin ⁻ (–	; m, ı ; 3.)	ו∈Z							
	(D) $y = (n - m) \frac{\pi}{2} + \frac{\pi}{4} + \frac{\pi}{4}$	· (- 1) ^{m+1}	<u>-</u> sin ⁻¹ 2	- 5]; m	, n ∈ Z							
8.	Solve :											
	$(i)-2 \le \left \left x^2 + 1 \right - 3 \right \le$	7										

(ii) $|x^2 - 4x| \leq 5$



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8. Solve : (i) $|x^2 - 2x| \le x$

(ii) $(x^2 - 9) (|x| - 2) \le 0$

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DPP No. # B9 (JEE- MAIN)

Tota Sing Muli Sing	Iotal Marks : 49Max. Time : 45 min.Single choice Objective ('-1' negative marking) Q.1(3 marks 3 min.) [03, 03]Multiple choice objective ('-2' negative & Partial marking) Q.2 to Q.5(4 marks 3 min.) [16, 12]Single Integer Questions ('-1' negative marking) Q.6 to Q.15(3 marks 3 min.) [30, 30]																
Qı	uestion No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Ma Ot	arks otained																
1.	α, β, γ ε	and δ	are t	he sr	nalles	st pos	itive	angle	in as	scendii α	ng ord ß	er of r	nagniti v	ude wl δ	hich ha	ave the	eir sines
	equal to the positive quantity k. The value of 4 sin $\frac{\alpha}{2}$ + 3 sin $\frac{\beta}{2}$ + 2 sin $\frac{\gamma}{2}$ + sin $\frac{\sigma}{2}$ is equal to																
	(A) 2√1	<u>-k</u>			(B) 2	$\sqrt{1+1}$	ĸ		(C	;) 2√k			(D)	2 k			
2.	If the firs (n + 1) th	st & th terms	ie (2n s are a	+ 1) ^t a, b &	^h term	is of a specti	an A.F vely, †	P., a C then :	à.P. &	a H.P.	of pos	sitive te	erms a	re san	ne and	their	
	(A) a = b) = C			(B) a	≥ b ≥	С		(C	;) a + c	c = 2b		(D)	ac = t	0^{2} .		
3.	p, q, r ar px² + qx	e thre + r =	e pos 0 are	sitive real	real n for	umbe	ers in	A.P.,	then	the roo	ots of tl	he qua	dratic	equati	on		
	(A) $\left \frac{r}{p} \right $	-7 ≥	4√3		(B)	$\frac{p}{r} - 7$	7 ≥ 4	4√3	(C	;) all p	and r		(D)	no p a	and r		
4.	In the gir (A) A.P.	ven fi	gure /	AB, B	C, BE (B) G) cani .P.	not be	ə in	(C	;) H.P.			(D)	None	of the	se	
		90	•	>		90°											
		B					} C										
5.১	If x ∈ R, (A) [12, ⊲	the n ∞)	umbe	ers 21	^{+ x} + 2 (B) [6	$\frac{2^{1}-x}{2}$	0/2, 3	6× + 3	86-× fo (C	orm an ;) (–∞,	A.P., t 6]	hen b	may lie (D)	e in the [6, 12	e interv]	al	
6.	ls 184 a	term	of the	e sequ	uence	3, 7,	11, .	?									
7.	Suba Ra In what y	ao sta year c	rted v did his	vork i s anni	n 199 Jal sa	5 at a lary v	an anı vill rea	nual s ach R	alary Is 700	of Rs)0 ?	5000 a	and rec	ceived	a Rs 2	200 rais	se eac	h year.
8.	Solve:	$\frac{ \mathbf{x} }{ \mathbf{x} ^2- \mathbf{x} ^2}$	-3 5x+6	- ≥2													

- 9. Solve: $|x| |x 2| \ge 1$
- **10.** Draw graph of the following expressions. Also find extremum value if it exists.

(i) y = |x - 2| + |x - 1| + |x + 1| + |x + 2|(ii) y = |2x - 5| - 2|2x + 5|(iii) y = |2x - 1| + |x - 1|(iv) y = |x - 1| - |x - 6|

- **11.** Solve the following equations :
 - (i) |x-3| = x-1
 - (ii) $|x^2 3x| = 2x 6$
 - (iii) |x-4| + |x-7| = 11

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If $\frac{1}{|a|} > \frac{1}{b}$, then |a| < b, where a & b are non-zero real numbers. 12.

Solve the following equations (Q. No.13 to 15)

- 13. |x| + 2 |x - 6| = 12
- 14. ||x + 3| - 5| = 2

|||x-2|-2|-2| = 215.

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DPP No. # B10 (JEE-ADVANCED)

Total M Single Multipl Single	Total Marks : 25Single choice Objective ('-1' negative marking) Q.1 to Q.4(3 maMultiple choice objective ('-2' negative & Partial marking) Q.5(4 maSingle Integer Questions ('-1' negative marking) Q.6 to Q.8(3 ma									Max. Time : 24 min. narks 3 min.) [12, 12] narks 3 min.) [04, 03] narks 3 min.) [09, 09]		
	Question No.	1	2	3	4	5	6	7	8	Total		
	Marks Obtained											
1.24	$If \sum_{n=1}^{2013} \tan\left(\frac{\theta}{2^n}\right) \sec\left(\frac{\theta}{2^{n-1}}\right) = \tan\left(\frac{\theta}{2^a}\right) - \tan\left(\frac{\theta}{2^b}\right) then (b + a) equals$											
	(A) 2014	(B) 201	2		(C) 2	013		(D)	2014			
2.	2. The minimum value of the expression $ x - p + x - 15 + x - p - 15 $ for 'x' in the range $p \le x \le 15$, where $0 is$											

- (A) 10 (B) 15 (C) 30 (D) 0
- If the graph of the function y = f(x) is as shown : 3.



then the graph of y = 1/2(|f(x)| - f(x)) is









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4.	If A, B, C, D are the angles of a quadrilateral, the	n <u>tar</u> cot	n A + tan E t A + cot E	$\frac{D}{B+\tan C+\tan D}$ is equal to $\frac{D}{B+\cot C+\cot D}$
	(A) tan A tan B tan C tan D	(B) co	ot A cot E	cot C cot D
	(C) $\tan^2 A + \tan^2 B + \tan^2 C + \tan^2 D$	(D)	\sum tan A	tanBtanC

5. If the sum of n terms of the series $\frac{5}{1.2.3} + \frac{6}{2.3.4} + \frac{7}{3.4.5} + \dots$ is $\frac{a}{2} - \frac{n+b}{(n+1)(n+2)}$, then (A) a = 3 (B) b = 2 (C) b = 3 (D) a = 2

- 6. If the 8th term of an A.P. is 31 and the 15th term is 16 more than the 11th term. Find the A.P.
- 7. The coefficient of the quadratic equation $ax^2 + (a + d)x + (a + 2d) = 0$ are consecutive terms of a positively valued, increasing arithmetic sequence. Determine the least integral value of $\frac{d}{a}$ such that the equation has real solutions.

8.2 Let
$$f(r) = \sum_{j=2}^{2008} \frac{1}{j^r} = \frac{1}{2^r} + \frac{1}{3^r} + \dots + \frac{1}{2008^r}$$
. Find $\sum_{k=2}^{\infty} f(k)$

DPP No. # B11 (JEE–ADVANCED) Special DPP on "Formulae Based Questions "

Total M Single Multip Single	Total Marks : 94Max. Time : 90 min.Single choice Objective ('-1' negative marking) Q.1 to Q.20(3 marks 3 min.) [60, 60]Multiple choice objective ('-2' negative & Partial marking) Q.21 to 24(4 marks 3 min.) [16, 12]Single Integer Questions ('-1' negative marking) Q.25 to Q.30(3 marks 3 min.) [18, 18]																
Question	n No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Marks C	Obtained																
Question	n No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
Marks C	Obtained																
1.	1. If $\sin\alpha \cos\beta = \frac{-1}{2}$ then find the range of value of $\cos\alpha \sin\beta$ (A) $\left[-\frac{1}{2}, 1\right]$ (B) $\left[-\frac{1}{2}, 0\right]$ (C) $\left[-\frac{1}{2}, \frac{3}{2}\right]$ (D) $[-1, 1]$																
2.	2. $-\cos(A + B)\cos(B - A) =$ (A) $\cos^2 A - \sin^2 B$ (B) $\cos^2 B - \sin^2 A$ (C) $\sin^2 B - \cos^2 A$ (D) None of these																
3.24	Find the value of $x\sqrt{6x^4 + 4x^2 + 2} > -2x^2 + 5x - 4$																

(A) $x \in (-\infty, -1)$ (B) [-1, 1] (C) $(1, \infty)$ (D) R



DPPs BOOKLET-2

DPP	s BOOKLET-2		VIKAAS (JA MATHEMATICS
4.	$S = n \times 10^{6m} + n \times 10^{6m-1} + n \times 10^{6m-2} + \dots +$ then the remainder if	n × 10 + n – 10 m ∈	I , n = single digit +ve integer.
	(1) S is divided by 13 is a (2) it S is divid	ded by 11 is b (3	B) it S is divided by 7 is c
	a + b + c = (A) 5 (B) 6	(C) 7	(D) 8
5.	Number of roots of $(x^2 + 5x + 7)(-x^2 + 3x - 4)$ (A) 0 (B) 2	= 0 (C) 4	(D) can't determine
6.	If the roots of Quadratic $i^2 x^2 + 5ix - 6$ are $a + i$ (ac - bd) + (ad + bc) i = ?	b and c + id (a, b, c,	$d \in R$ and $i = \sqrt{-1}$) then,
	(A) 6 (B) -6	(C) 6i	(D) None of these
7.	$S_{10} = \cos \frac{\pi}{180} + \cos \frac{3\pi}{180} + \dots \cos \frac{19\pi}{180}$		
	(A) $\frac{\sin \frac{\pi}{9} \cos \frac{\pi}{18}}{\sin \frac{\pi}{90}}$ (B) $\frac{\sin \frac{\pi}{18} \cos \frac{\pi}{18}}{\sin \left(\frac{\pi}{180}\right)}$	(C) $\frac{\sin\frac{\pi}{18}\cos\frac{\pi}{9}}{\sin\left(\frac{\pi}{180}\right)}$	(D) $\frac{\frac{\cos\frac{\pi}{18}\cos\frac{\pi}{9}}{\sin\left(\frac{\pi}{180}\right)}}{\sin\left(\frac{\pi}{180}\right)}$
8.24	Find the sum of the series 31 ³ + 32 ³ +50 ³ (A) 1509400 (B) 1509600	(C) 1409400	(D) 1409600
9.	Find maximum value of a^2b^3 if $a + b = 2$. When	n a & b are positive n	umbers
	(A) $\frac{2^5 3^5}{2^5}$ (B) $\frac{2^7 3^3}{5^5}$	(C) $\frac{2^8 3^2}{5^5}$	(D) $\frac{2^6 3^4}{5^5}$
10.	Find the roots of the equation $x^2 + ix - 1 - i = 0$ (A) 1 & i (B) i & -i) (C) 1 – i & 1	(D) 1 & – i – 1
11.	solve x - 2 - 1 < 2 (A) (-2, 5) (B) (-1, 5)	(C) (-2, -1)	(D) (0, 5)
12.	If $x^3 + 2x - 3 = 0$ then then number of real valu (A) 0 (B) 1	ues of 'x' satisfying th (C) 2	e equation is : (D) 3
13.	solve for x x + 1 + x - 2 + x - 5 = 4 (A) -3, 1 (B) 2	(C) –1, 1	(D) no solution
14.	If $ a - b > a - b $ then (A) $a.b > 0$ (B) $a.b \ge 0$	(C) a.b < 0	(D) $a.b \leq 0$
15.	The inequation $\sqrt{f(x)} > g(x)$, is equivalent to t (A) $g(x) \le 0$ & $f(x) \ge 0$ or $g(x) \ge 0$ & (B) $g(x) \le 0$ & $f(x) \ge 0$ or $g(x) \ge 0$ & (C) $g(x) \le 0$ & $f(x) \ge 0$ or $g(x) \ge 0$ & (D) $g(x) \le 0$ & $f(x) \ge 0$ or $g(x) \ge 0$ &	he f(x) > g(x) $f(x) > g^{2}(x)$ $f^{2}(x) > g^{2}(x)$ $f^{2}(x) > g^{2}(x)$ $f(x) < g^{2}(x)$	
16.	The value of $\sin\theta + \sin3\theta + \sin5\theta + \dots + \sin(2\pi)$ (A) $\frac{\cos^2 n\theta}{\sin\theta}$ (B) $\frac{\sin^2 n\theta}{\cos\theta}$	$(C) \frac{\sin^2 n\theta}{\sin \theta}$	(D) $\frac{\cos^2 n\theta}{\cos\theta}$

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- 17.If a, b, $c \in R$ and equations $ax^2 + bx + c = 0$ and $x^2 + 2x + 9 = 0$ have a common root then
(A) a : b : c = 1 : 2 : 9
(C) a : b : c = 9 : 2 : 1(B) a : b : c = 9 : 2 : 4
(D) a : b : c = 2 : 1 : 9
- **18.** Find the value of $\cos \theta \cdot \cos 2\theta \cdot \cos 2^2\theta \cdot \cos 2^3\theta \dots \cos 2^{n-1}\theta$ is

(A) $\frac{\cos 2^n \theta}{2}$	(B) $\frac{\sin 2^{n} \theta}{2}$	(C) $\frac{\cos 2^n \theta}{\cos 2^n \theta}$	(D) $\frac{\sin 2^n \theta}{\sin 2^n \theta}$
$2^n \sin \theta$	$(2^{n}\cos\theta)$	$2^n \cos \theta$	$(2^n \sin \theta)$

19. The graph of y = f(|x|) is given below



then the graph y = |f(x)|





- (D) None of these
- 20. $\left(\frac{\cos 15^\circ \sin 15^\circ + 1}{\cos 15^\circ + \sin 15^\circ + 1}\right)\left(\frac{1 + \sin 15^\circ}{\cos 15^\circ}\right) =$ (A) $2 - \sqrt{3}$ (B) 1



21. Which of the following is true : $\pi = \sqrt{3} - 1$

(A)
$$\sin \frac{\pi}{12} = \frac{\sqrt{3-1}}{2\sqrt{2}}$$

- (C) $\tan 15^\circ = 2 \sqrt{3}$
- 22. $\tan A + \tan B + \tan C = \tan A \tan B \tan C$ if (A) $A + B + C = \pi$ (B) $A + B + C = 2\pi$

23. Which of the following is true If $A + B + C = \pi$ (A) sin2A + sin2B + sin2C = 4 sinA sinB sinC

- (B) $\sin A + \sin B + \sin C = 4 \cos \frac{A}{2} \cos \frac{B}{2} \cos \frac{C}{2}$
- (C) $\cos 2A + \cos 2B + \cos 2C = -1 4 \cos A \cos B \cos C$

(D)
$$\cos A + \cos B + \cos C = 1 + 4 \sin \frac{A}{2} \sin \frac{B}{2} \sin \frac{C}{2}$$



(B)
$$\cos \frac{\pi}{12} = \frac{\sqrt{3} + 1}{2\sqrt{2}}$$

(D) $\sin \frac{\pi}{10} = \frac{\sqrt{5} - 1}{4}$

(C) A + B + C =
$$n\pi$$
 (D) A + B + C = $\pi/2$

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24. If $a_1 x^2 + b_1 x + c_1 = 0$ and $a_2 x^2 + b_2 x + c_2 = 0$ has only one root is common, and α is the common root then

(A)
$$\alpha = \frac{c_1 a_2 - c_2 a_1}{a_1 b_2 - a_2 b_1} = \frac{b_1 c_2 - b_2 c_1}{c_1 a_2 - c_2 a_1}$$

(B)
$$\alpha = \frac{c_1 a_2 - c_2 a_1}{a_1 b_2 - a_2 b_1} = \frac{b_1 c_2 - b_2 c_1}{c_1 a_2 - c_2 a_1}$$

(C) the condition for one common root is $(c_1a_2 - c_2a_1)^2 = (a_1b_2 - a_2b_1)(b_1c_2 - b_2c_1)$

- (D) The condition for one common root is $(a_1b_2 b_1a_2)^2 = (c_1a_2 a_1c_2)(b_1c_2 b_2c_1)$
- **25.** Find the average of $\sin 2^{\circ}$, $\sin 4^{\circ}$, $\sin 6^{\circ}$,, $\sin 180^{\circ}$
- **26.** Find maximum and minimum values of $9\cos^2 x + 48\sin x \cos x 5\sin^2 x 2$
- **27.** Find maximum and minimum values of 2 sin $\left(\theta + \frac{\pi}{6}\right) + \sqrt{3} \cos\left(\theta \frac{\pi}{6}\right)$
- $28. \qquad \text{Solve} \quad \frac{\tan 3x \tan 2x}{1 + \tan 3x \quad \tan 2x} = 1$
- **29.** Solve $\cos x + \cos 3x 2\cos 2x = 0$
- **30.** Find the solution of the equation $[x] + \{-x\} = 2x$, (where [.] and $\{..\}$ represents greatest integer function and fractional part function respectively).

DPP No. # B12 (JEE–ADVANCED)

Total Marks : 27	Max. Time : 24 min.
Single choice Objective ('-1' negative marking) Q.1 to Q.3	(3 marks 3 min.) [09, 09]
Multiple choice objective ('-2' negative & Partial marking) Q.4 to Q.6	(4 marks 3 min.) [12, 09]
Single Integer Questions ('-1' negative marking) Q.7 to Q.8	(3 marks 3 min.) [06, 06]

Question No.	1	2	3	4	5	6	7	8	Total
Marks Obtained									

1. If $\tan \alpha$, $\tan \beta$, $\tan \gamma$ are the roots of the equation, $x^3 - (a + 1)x^2 + (b - a)x - b = 0$, $(b - a \neq 1)$

Where $\alpha + \beta + \gamma$ lies between 0 & π then $\alpha + \beta + \gamma$ is equal to

(A) π/4 (B) π/2	(C) 3π/4	(D) None of these
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2.2	Value of	$\frac{4 \text{sin}9^\circ \text{sin}21^\circ \text{sin}39^\circ \text{sin}51^\circ \text{sin}69^\circ \text{sin}89^\circ \text{sin}89^\circ \text{sin}89^\circ \text{sin}54^\circ \text{sin}54^\circ \text{sin}54^\circ \text{sin}54^\circ \text{sin}89^\circ \text{sin}$	$\stackrel{1^{\circ}}{-}$ is equal to	
	$\frac{1}{16}$	(B) $\frac{1}{32}$ (0	C) $\frac{1}{8}$	(D) 1/4



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(B) First term of the arithmetic progression is $\frac{149}{50}$ (C) 100th term of the arithmetic progression is $\frac{74}{25}$

(D) Sum of the an infinite geometric progression whose first term is $\frac{47}{25}$ and common ratio is common

difference of arithmetic sequence, equals 2.

- **6.** If the solution of the equation $|(x^4-9) (x^2+3)| = |x^4-9| |x^2+3|$ is $(-\infty, p] \cup [q, \infty)$ then (A) p + q = 0 (B) |p| + |q| = 4 (C) |q - p| = 4 (D) |pq| = 4
- **7.** Let T_n denotes the nth term of a G.P. with common ratio 2 and $(\log_2(\log_{3(100,127_{100}))) = 1)$. If three sides of a triangle ABC are the values of $(T_1 + T_2)$, T_2 and T_3 then area of the triangle is $\frac{\sqrt{2160}}{N}$, where N is a positive integer. Find the remainder when N is divided by 2¹⁰.
- 8. Draw the labled graph of following (i) y = |7 - 2x| (ii) y = |x - 1| - |3x - 2| (iii) y = |x - 1| + |x - 4| + |x - 7|

DPP No. # B13 (JEE-ADVANCED)

Total Ma	arks : 29							Max. Time : 24 min.						
Single c	hoice Objective ('-1' n	egative	markir	1g) Q.1	to Q.2			(3 marks 3 min.) [06, 06]						
Multiple	choice objective ('-2'	2.7	(4 marks 3 min.) [20, 15]											
Single I	nteger Questions ('-1'	negativ	e mark	ing) Q.	B			(3 r	narks 3	3 min.) [03, 03]			
											_			
	Question No	1	2	3	4	5	6	7	8	Total				

Question No.	1	2	3	4	5	6	7	8	Total
Marks Obtained									

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VIKAAS (JA | MATHEMATICS **DPPs BOOKLET-2** 1. Which one of the following inequality holds good. (A) $\cos 12^{\circ} < \tan 12^{\circ} < \csc 12^{\circ} < \cot 12^{\circ}$ (B) $\cos 12^{\circ} < \tan 12^{\circ} < \cot 12^{\circ} < \csc 12^{\circ}$ (C) $\tan 12^{\circ} < \cos 12^{\circ} < \csc 12^{\circ} < \cot 12^{\circ}$ (D) $\tan 12^{\circ} < \cos 12^{\circ} < \cot 12^{\circ} < \csc 12^{\circ}$ If $x = \cos \alpha + \cos \beta - \cos(\alpha + \beta)$ and $y = 4 \sin \frac{\alpha}{2} \sin \frac{\beta}{2} \cos \left(\frac{\alpha + \beta}{2}\right)$, then (x - y) equals 2.2 (A) 0 (B) 1 (C) - 1(D) - 23. Consider the series $1 + 2(1 - x) + 3(1 - x) (1 - 2x) + \dots + n (1 - x) (1 - 2x) \dots (1 - (n - 1)x)$ (A) $S_n = -\frac{1}{x} [(1-x)(1-2x)....(1-nx) - 1]$ (B) $S_n = -\frac{1}{x} [(1-x)(1-2x)...(1-6x) - 1]$ (C) $S_n = \frac{1}{x} [(1-x)(1-2x)....(1-nx) - 1]$ (D) $T_s = 5(1-x)(1-2x)...(1-4x)$ If a, b respectively be the numbers of solutions and sum of solutions of $\left|\frac{2x}{x-1}\right| - |x| = \frac{x^2}{|x-1|}$, then 4.2 (A) a = 3(B) b = 1(C) b = 2(D) a = 2The equation |x + 2| - |x + 1| + |x - 1| = K, $x \in R$ has two solutions if K is equal to (A) 4 (B) 3/2 (C) 5/2 (D) 3 5. If $|\sin^2 x + 17 - x^2| = |16 - x^2| + 2\sin^2 x + \cos^2 x$ then subsets of solution are 6. (B) [-4, 4] (D) $\left[-\sqrt{17},\sqrt{17}\right]$ (A) {0} (C) [-8,8] Solution set of the inequality $\sqrt{7-x} > 2x-3$, is contained by the set 7. (A) $\left(\frac{11+\sqrt{89}}{8},\infty\right)$ (B) $(-\infty,7)$ (C) $\left(-\infty, \frac{11+\sqrt{89}}{8}\right)$ (D) $(-\infty, 3)$ a, b, c are positive real numbers forming a. G.P. If $ax^2 + 2bx + c = 0$ and $dx^2 + 2ex + f = 0$ have a 8.2 common root, then prove that d/a, e/b, f/c are in A.P. DPP No. # B14 (JEE– MAIN) Total Marks: 45 Max. Time : 45 min.

e choice Ob e Integer Qu	jectiv Jestio	/e ('-1 ons ('-	' nega 1' neg	ative i gative	marki mark	ng) Q (ing)	.1 to Q.6 to	Q.5 Q.15	5			(3 m (3 m	(3 marks 3 min.) [15, 15] (3 marks 3 min.) [30, 30]				
stion No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total	
s Obtained																	
Let $y = \cos x$ (cos $x - \cos 3 x$). Then y is (A) ≥ 0 only when $x \ge 0$ (B) ≤ 0 for all real x (C) ≥ 0 for all real x (D) ≤ 0 only when $x \le 0$ The (m + 1) th term of $\left(\frac{x}{y} + \frac{y}{x}\right)^{2m+1}$ is:																	
(C) depen	ds on	the ra	atio x/	y and	m		(D) no	ne of	these							
The remain (A) 1	inder	when	2 ²⁰⁰³ i (B	s divid) 2	ded by	y 17 is	s : (C) 8				(D) I	None	of the	se		
The soluti	on se	t of th	e equ	ation 4	4sinθ.	cosθ -	- 2cos	s 0 – 2	√3 sir	ıθ + √.	3 = 0 i	n the	interv	al (0, 1	2π) is		
(A) $\left\{\frac{3\pi}{4},\right.$	$\left.\frac{7\pi}{4}\right\}$		(B)	$\left\{ \frac{\pi}{3},\right.$	$\left.\frac{5\pi}{3}\right\}$		(C) $\left\{\frac{3}{2}\right\}$	$\frac{3\pi}{4}, \pi,$	$\frac{\pi}{3}, \frac{5\pi}{3}$	$\left\{\frac{\pi}{2}\right\}$	(D)	$\left\{\frac{\pi}{6}, \frac{5}{6}\right\}$	$\frac{\pi}{6}, \frac{11}{6}$	$\left\{\frac{\pi}{2}\right\}$		
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	e choice Ob e Integer Qu stion No. (s Obtained Let $y = cc$ (A) ≥ 0 (c) (C) ≥ 0 f The (m + (A) independ (C) depend The remation (A) 1 The soluti (A) $\left\{\frac{3\pi}{4}, \frac{3\pi}{4}, \frac{3\pi}{4}, \frac{3\pi}{4}, \frac{3\pi}{4}\right\}$	e choice Objective e Integer Questionstand stion No. 1 (s Obtained) Let $y = \cos x$ (c) (A) ≥ 0 only w (C) ≥ 0 for all The $(m + 1)^{th}$ te (A) independen (C) depends on The remainder (A) 1 The solution set (A) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$	e choice Objective ('-1 e Integer Questions ('- stion No. 1 2 (s Obtained Let $y = \cos x (\cos x - (A) \ge 0 \text{ only when } x - (C) \ge 0 \text{ for all real } x - (C) \ge 0 \text{ for all real } x - (C) \ge 0 \text{ for all real } x - (C) = 0 \text{ for all real } x - $	e choice Objective ('-1' nega e Integer Questions ('-1' nega stion No. 1 2 3 (s Obtained Let $y = \cos x (\cos x - \cos x)$ (A) ≥ 0 only when $x \ge 0$ (C) ≥ 0 for all real x The $(m + 1)^{th}$ term of $\left(\frac{x}{y} + A\right)$ (A) independent of x (C) depends on the ratio $x/2$ The remainder when 2^{2003} is (A) 1 (B) The solution set of the equations (A) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$ (B) Educating for better tomorrow	e choice Objective ('-1' negative e Integer Questions ('-1' negative stion No.1234stion No.1234ks Obtainedks ObtainedksksLet $y = \cos x (\cos x - \cos 3 x)$.ks(A) ≥ 0 only when $x \geq 0$ (C) ≥ 0 for all real x The $(m + 1)^{th}$ term of $\left(\frac{x}{y} + \frac{y}{x}\right)^{2m}$ (A) independent of x (C) depends on the ratio x/y andThe remainder when 2^{2003} is divide (A) 1(A) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$ (B) $\left\{\frac{\pi}{3}, \frac{7\pi}{3}\right\}$ Resonance (B) $\left\{\frac{\pi}{3}, \frac{7\pi}{101}\right\}$	e choice Objective ('-1' negative marking e Integer Questions ('-1' negative marking (A) ≥ 0 only when $x \ge 0$ (C) ≥ 0 for all real x Let $y = \cos x$ (cos $x - \cos 3 x$). Then (A) ≥ 0 only when $x \ge 0$ (C) ≥ 0 for all real x Then (A) $\begin{pmatrix} x + y \\ y + x \end{pmatrix}^{2m+1}$ is: (A) independent of x (C) depends on the ratio x/y and m The remainder when 2^{2003} is divided by (A) 1 (B) 2 The solution set of the equation 4sin0. (A) $\left\{ \frac{3\pi}{4}, \frac{7\pi}{4} \right\}$ (B) $\left\{ \frac{\pi}{3}, \frac{5\pi}{3} \right\}$ Rescence (B Website: www Toll Free : 18	e choice Objective ('-1' negative marking) Q e Integer Questions ('-1' negative marking) Q stion No. 1 2 3 4 5 6 (s Obtained 1 2 4 5 6 (s Obtained 1 2 4 5 6 (s Obtained 1 2 5 6 (s Obtaine	e choice Objective ('-1' negative marking) Q.1 to e Integer Questions ('-1' negative marking) Q.6 to stion No.stion No.1234567(s Obtained1234567(s Obtained1234567(s Obtained1234567(s Obtained1234567(s Obtained1234567(k) A) ≥ 0 only when $x \geq 0$ (()()()()()(C) ≥ 0 for all real x ()()()()()(C) ≥ 0 for all real x ()()()()()(h) independent of x ()()()()()(h) independent of x ()()()()()(h) 1(B) 2()()()()()The remainder when 2^{2003} is divided by 17 is :()()()(A) 1(B) 2()()()()()(A) $\left\{ \frac{3\pi}{4}, \frac{7\pi}{4} \right\}$ (B) $\left\{ \frac{\pi}{3}, \frac{5\pi}{3} \right\}$ ()()Educating for better tomorrow(B) $\left\{ \frac{\pi}{3}, \frac{5\pi}{3} \right\}$ ()	e choice Objective ('-1' negative marking) Q.1 to Q.5 e Integer Questions ('-1' negative marking) Q.6 to Q.15stion No.12345678stion No.12345678(a) Sobained1111111Let $y = \cos x$ ($\cos x - \cos 3 x$). Then y is(A) ≥ 0 only when $x \geq 0$ (B) \leq (C) ≥ 0 for all real x (D) \leq (C) ≥ 0 for all real x (D) \leq (D) for all real x (D) \leq (D) noThe (m + 1) th term of $\left(\frac{x}{y} + \frac{y}{x}\right)^{2m+1}$ is:(A) independent of x (B) $a c$ (C) depends on the ratio x/y and m (D) noThe remainder when 2^{2003} is divided by 17 is :(A) 1(B) 2 (A) 1 (B) 2 (C) 8 The solution set of the equation $4\sin\theta.\cos\theta - 2\cos\theta - 2$ (A) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$ (B) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$ (C) $\left\{\frac{3\pi}{4}, \frac{5\pi}{4}\right\}$ Reg. & Corp. Office : CG Tower, A-4Website: www.resonance.ac.in I.E-mToll Free : $1800 258 5555 CIN: U80$	e choice Objective ('-1' negative marking) Q.1 to Q.5 e Integer Questions ('-1' negative marking) Q.6 to Q.15stion No.123456789 <s obtained<="" td="">IIIIIIILet $y = \cos x$ ($\cos x - \cos 3 x$). Then y is (A) ≥ 0 only when $x \geq 0$(B) ≤ 0 for (C) ≥ 0 for all real x(D) ≤ 0 on (D) ≤ 0 on (D) ≤ 0 on The (m + 1)th term of $\left(\frac{x}{y} + \frac{y}{x}\right)^{2m+1}$ is: (A) independent of x(B) a consta (D) none of The remainder when 2^{2003} is divided by 17 is : (A) 1(B) 2(C) 8The solution set of the equation $4\sin\theta.\cos\theta - 2\cos\theta - 2\sqrt{3}\sin\theta$ (A) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$(B) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$(C) $\left\{\frac{3\pi}{4}, \pi, \pi\right\}$Resconce (B)Register Corp. Office : CG Tower, A-46 & 52, 1 Website: www.resonance.ac.in E-mail : con Toll Free : $1800 \ 258 \ 5555 \ CIN: U80302RJ2$</s>	e choice Objective ('-1' negative marking) Q.1 to Q.5 e Integer Questions ('-1' negative marking) Q.6 to Q.15stion No.12345678910(s ObtainedIIIIIIII(s ObtainedIIIIIII(A) ≥ 0 only when $x \geq 0$ (B) ≤ 0 for all re(C) ≥ 0 for all real x(D) ≤ 0 only when(C) ≥ 0 for all real x(D) ≤ 0 only whenThe $(m + 1)^{th}$ term of $\left(\frac{X}{Y} + \frac{Y}{X}\right)^{2m+1}$ is:(B) a constant(A) independent of x(B) 2^{2m+1} is:(B) a constant(D) none of these(A) independent of x(B) 2(C) 8The remainder when 2^{2003} is divided by 17 is :(A) 1(B) 2(A) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$ (B) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$ (C) $\left\{\frac{3\pi}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ Resent (C) $\left\{\frac{3\pi}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ Resent (C) $\left\{\frac{8m}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ Resent (C) $\left\{\frac{8m}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ Resent (C) $\left\{\frac{8m}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ (C) $\left\{\frac{8m}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ (C) $\left\{\frac{3\pi}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ (C) $\left\{\frac{8m}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ (C) $\left\{\frac{3\pi}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ (C) $\left\{\frac{8m}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}$	The constant (C) dependent of x (B) a constant (C) dependent of x (C) dependent of x (C) dependent of x (C) dependent of x (C) dependent of the equation 4 sin0.cos0 - 2cos0 - 2 $\sqrt{3}$ sin0 + $\sqrt{3}$ = 0 if (A) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$ (B) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$ (C) $\left\{\frac{3\pi}{4}, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ Recence of the equation for the equation 	e choice Objective ('-1' negative marking) Q.1 to Q.5(3 me Integer Questions ('-1' negative marking) Q.6 to Q.15(3 mstion No.123456789101112stion No.123456789101112stion No.123456789101112stion No.123456789101112Stion No.123456789101112Let $y = \cos x$ ($\cos x - \cos 3 x$). 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Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar R Website: www.resonance.ac.in I.E-mail : contact@resonance.ac.in Toll Free : 1800 258 5555 CIN: U80302RJ2007PLC024029 <th>e choice Objective ('-1' negative marking) Q.1 to Q.5(3 marks 3 min (3 marks 3 min (4 marks 4 marks 4</th> <th>(a hoice Objective ('-1' negative marking) Q.1 to Q.5(3 marks 3 min.) [19](3 marks 3 min.) [19](a marks 3 min.) [19](B) (a marks 3 min.) [19](B) (a marks 3 min.) [19](B) (a marks 3 min.) [19](a mark 3 min.) [19]<th colspa<="" th=""></th></th>	e choice Objective ('-1' negative marking) Q.1 to Q.5(3 marks 3 min (3 marks 3 min (4 marks 4	(a hoice Objective ('-1' negative marking) Q.1 to Q.5(3 marks 3 min.) [19](3 marks 3 min.) [19](a marks 3 min.) [19](B) (a marks 3 min.) [19](B) (a marks 3 min.) [19](B) (a marks 3 min.) [19](a mark 3 min.) [19] <th colspa<="" th=""></th>	

DPP	s BOOKLET-2			VIKAAS (JA MATHEMATICS
5.১	sin 36º sin 72	º sin 108º sin 144º =		
	(A) $\frac{1}{4}$	(B) <u>1</u>	(C) $\frac{3}{4}$	(D) <u>5</u> 16

- 6. In an A.P. the third term is four times the first term, and the sixth term is 17; find the series.
- 7. The sum of three numbers in A.P. is 27, and their product is 504, find them.
- 8. Determine all pairs (a, b) of real numbers such that 10, a, b, ab are in arithmetic progression.
- 9. Draw the graphs of

(i) y = |x + 2| + |x - 3| (ii) $y = x + \frac{x}{|x|}$

Solve the following inequalities (10 and 13) :

 $10. \qquad \left| \begin{array}{c} \frac{2x-1}{x-1} \\ \end{array} \right| > 2$

- **11.** $|x-1| + |x-2| + |x-3| \ge 6$
- **12.** $\log_2 |x| < 3$
- **13.** $|\log_3 x| < 2$
- 14. Draw the graph of the function y = |2 |x 2||.

DPP No. # B15 (JEE-ADVANCED)

Total M Compr Single Multipl Single	larks : 25 ehension ('–1' negative choice Objective ('-1' r e choice objective ('-2' Integer Questions ('-1'	e marki negativo negati negati	ng) Q.1 e marki ve & Pa ve mark	to Q.3 ng) Q.4 rtial ma ting) Q.8	to Q.6 urking) (8	Q.7		(3 m (3 m (4 m (3 m	Max. narks 3 narks 3 narks 3 narks 3	Time : 24 min. min.) [09, 09] min.) [09, 09] min.) [04, 03] min.) [03, 03]
[Question No.	1	2	3	4	5	6	7	8	Total
	Marks Obtained									
Compr	ehension # 1 (Q.No. 1 Consider the equation	t o 3) o = 5 –	2q – 3							
1.	Greatest set of all poss (A) $(-\infty, 5]$	ible valı (B) (–	ues of p ∞, 5)	for q ∈	R is (C) (-	-5, 5)		(D)	None of	these
2.	If $p = 4$ then possible va (A) 2, 1, -1	alues of (B) –1	q are , 1 only		(C) 1	only		(D) 2	2, 1 onl <u>y</u>	ý
3.	If $p = r + 5$, then numb (A) 1	er of po (B) 2	ossible c	rdered	pair (r, c (C) 4) is/are		(D)	Infinite	
4.	Total number of values $x^2 \le 30$ is : (A) 1	of'x's (B) 2	atisfying	g the eq	uation, (C) 3	2 ^{cos 2x} =	3.2 ^{cos²}	² × – 4 a (D)	and the i 4	inequality
	0	_ _(R) Re	g. & Corp.	Office : CO	G Tower, A-	46 & 52, IP	PIA, Near Ci	ty Mall, Jha	alawar Roa	d, Kota (Raj.)-324005



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DPPs	BOOKLET-2						AAS (JA	MATHE	MATICS	
5.	If $P = \cos \frac{\pi}{20}$. co	$\cos \frac{3\pi}{20} \cdot \cos \frac{7}{2}$	$\frac{\pi}{0}$. cos -	9π 20	&					
	\circ	2π 4	ιπ	8π	16π	thon F				
	$Q = \cos \frac{1}{11}$	$\frac{11}{11}$	11	11 . 0	0 <u>s</u> ,	then -	בו ה ג			
	(A) not defined	(B) 1		(C)	2		(D)	None of	f these	
_	.π. 2π	_ 3π _ 5π		6π	, 7π.					
6.2	$\tan^2 \frac{\pi}{16} + \tan^2 \frac{\pi}{16} + \tan^2 \frac{\pi}{16}$	$1^2 \frac{3\pi}{16} + \tan^2 \frac{3\pi}{16}$	$+ \tan^2$	<u></u> + tar 16	n² <u>16</u> is e	equal to)			
	(A) 24	(B) 34		(C) 4	4		(D)	None of	these	
	1	1 1	4							
7.	Consider $S_n = \frac{1}{3^2 + 1} + \frac{1}{3^2 + 1}$	$-\frac{1}{4^2+2} + \frac{1}{5^2+3}$	$\frac{1}{6^2 + 4}$	upto	o n terms	s then				
	0 11	1 12 0 10								
	(A) general term of the	series is t _n = -	1	_						
		r	$1^2 + 5n + 4$	4						
	(B) general term of the	e series is t _n =	$\frac{1}{n^2}$ 5n	4						
	13		II - 5II+	4						
	$(C) S_{\infty} = \frac{10}{36}$									
	(D) $S_{m} = \frac{15}{10}$									
	36									
8.2	If $y = x^3 - 3x + 2$, then	draw the graph	of the fo	llowings	;					
	(i) $y = x^3 - 3x + 2$	2	(ii)	y = x	³ – 3 x	+ 2				
			/- \		2 0	~				
	(iii) $y = - x ^{\circ} + 3 x $	+2	(iv)	$ \mathbf{y} = 2$	x ³ – 3x +	2				
	(iii) $y = - x ^2 + 3 x $	DPP No.	(iv) . # B16	y = : (JEE-/	x ³ – 3x + ADVAN	CED)				
Total N	(iii) $y = - x ^2 + 3 x ^2$	DPP No	(iv) . # B16	y = : (JEE-/	x ³ – 3x + ADVAN	2 CED)		Max.	Time : 24 r	nin.
Total M Single Multin	(iii) $y = - x ^{\circ} + 3 x $ Marks : 26 choice Objective ('-1' i le choice objective ('-2)	DPP No.	(i∨) . # B16 ing) Q.1	y = : (JEE-/ to Q.5 arking) (x ³ – 3x + ADVAN	2 CED)	(3 m (4 m	Max. narks 3 narks 3	Time : 24 r min.) [15, min) [08	nin. 15] 061
Total M Single Multip Single	Arks : 26 choice Objective ('-1' le choice objective ('-2 Integer Questions ('-1'	DPP No. negative mark ' negative & P ' negative mar	(Ⅳ) . <mark># B16</mark> ing) Q.1 artial ma king) Q.	y = : (JEE–/ to Q.5 arking) (8	x ³ – 3x + \DVAN Q.6 to Q	2 CED) .7	(3 n (4 n (3 n	Max. narks 3 narks 3 narks 3	Time : 24 r min.) [15, min.) [08, min.) [03,	nin. 15] 06] 03]
Total M Single Multip Single	(iii) $y = - x ^{\circ} + 3 x ^{\circ}$ Marks : 26 choice Objective ('-1' i le choice objective ('-2 Integer Questions ('-1' Question No.	DPP No negative mark ' negative & P ' negative mar 1 2	(Ⅳ) . # B16 . ing) Q.1 artial ma king) Q. 3	y = 2 (JEE-4 to Q.5 arking) (8 4	x ³ – 3x + ADVAN Q.6 to Q 5	2 CED) .7 6	(3 m (4 m (3 m	Max. narks 3 narks 3 narks 3 8	Time : 24 r min.) [15, min.) [08, min.) [03, Total	nin. 15] 06] 03]
Total M Single Multip Single	(iii) $y = - x ^{\circ} + 3 x ^{\circ}$ Marks : 26 choice Objective ('-1' i le choice objective ('-2 Integer Questions ('-1' Question No. Marks Obtained	DPP No.	(Ⅳ) . # B16 . ing) Q.1 artial ma . king) Q. 3	y = 2 (JEE-4 to Q.5 arking) (8 4	x ³ – 3x + ADVAN Q.6 to Q. 5	2 CED) .7 6	(3 m (4 m (3 m	Max. narks 3 narks 3 narks 3 8	Time : 24 r min.) [15, min.) [08, min.) [03, Total	nin. 15] 06] 03]
Total M Single Multip Single	(iii) $y = - x ^{\circ} + 3 x ^{\circ}$ Marks : 26 choice Objective ('-1' i le choice objective ('-2 Integer Questions ('-1' Question No. Marks Obtained	DPP No.	(Ⅳ) . # B16 artial ma king) Q.1 3	y = 2 (JEE-/ to Q.5 arking) (8 4	x ³ – 3x + ADVAN Q.6 to Q. 5	2 CED) .7 6	(3 m (4 m (3 m	Max. narks 3 narks 3 narks 3 8	Time : 24 r min.) [15, min.) [08, min.) [03, Total	nin. 15] 06] 03]
Total M Single Multip Single	(iii) $y = - x ^{\circ} + 3 x ^{\circ}$ Marks : 26 choice Objective ('-1' i le choice objective ('-2 Integer Questions ('-1' Question No. Marks Obtained The sum $\sum_{i=1}^{m} (10)$	DPP No. negative mark ' negative & P ' negative mar 1 2 (20) (who	(Ⅳ) . # B16 . ing) Q.1 artial ma . king) Q. 3 3	y = 2 (JEE-4 to Q.5 arking) (8 4	x ³ – 3x + ADVAN Q.6 to Q 5	2 CED) .7 6	(3 m (4 m (3 m 7	Max. harks 3 harks 3 harks 3 8	Time : 24 r min.) [15, min.) [08, min.) [03, Total	nin. 15] 06] 03]
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Total M Single Multip Single	(iii) $y = - x ^{\circ} + 3 x ^{\circ}$ Marks : 26 choice Objective ('-1' i le choice objective ('-2 Integer Questions ('-1' Question No. Marks Obtained The sum $\sum_{i=0}^{m} {10 \choose i}$ (A) 5	$\begin{array}{c c} \mathbf{DPP} & \mathbf{No} \\ \mathbf{DPP} & \mathbf{No} \\ \mathbf{negative mark} \\ \mathbf{negative mar} \\ \mathbf{negative mar} \\ 1 & 2 \\ \hline 1 & 2 \\ $	(iv) . # B16 ing) Q.1 artial matrial matrix king) Q. 3 ere $\begin{pmatrix} p \\ q \end{pmatrix}$	y = 2 (JEE-/ to Q.5 arking) (8 4 = 0, if p (C) 1	x ³ – 3x + ADVAN Q.6 to Q 5 < q) is m 5	2 CED) .7 6	(3 m (4 m (3 m 7 m when (D) 1	Max. harks 3 harks 3 arks 3 8 ' m ' is	Time : 24 r min.) [15, min.) [08, min.) [03,	nin. 15] 06] 03]
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Total M Single Multip Single 1.	(iii) $y = - x ^{\circ} + 3 x ^{\circ}$ Marks : 26 choice Objective ('-1' i le choice objective ('-2 Integer Questions ('-1' Question No. Marks Obtained The sum $\sum_{i=0}^{m} {10 \choose i}$ (A) 5 Co-efficient of α^{t} in the $(\alpha + p)^{m-1} + (\alpha + p)^{m-1}$ $mC_{t} (p^{t} - q^{t})$	DPP No. megative mark ' negative & P ' negative mar 1 2 $\begin{pmatrix} 20 \\ m - i \end{pmatrix}$, (whe (B) 10 e expansion of $f^{2}(\alpha + q) + (\alpha - q)$	(iv) . # B16 ing) Q.1 artial matrix ing) Q. 3 ere $\begin{pmatrix} p \\ q \end{pmatrix}$, + p) ^{m-3} (m ^{-t} - q ^{m-1}	$ \mathbf{y} = \frac{ \mathbf{y} }{ \mathbf{q} ^2}$ to Q.5 arking) (2 8 4 4 = 0, if p (C) 1 $\alpha + q)^2$	x ³ – 3x + ADVAN Q.6 to Q 5 < q) is m 5 + (α ^m C, (p ^t)	2 CED) .7 6 haximur + q) ^{m -} + q ^t)	(3 n (4 n (3 n 7 7 m when (D) 1	Max. marks 3 marks 3 marks 3 8 'm'is 20 $e \alpha \neq - 1$ $m C_{+} (r)$	Time : 24 r min.) [15, min.) [08, min.) [03, Total Total	nin. 15] 06] 03]
Total M Single Multip Single	(iii) $y = - x ^{\circ} + 3 x ^{\circ}$ Marks : 26 choice Objective ('-1' i le choice objective ('-2 Integer Questions ('-1' Question No. Marks Obtained The sum $\sum_{i=0}^{m} {10 \choose i}$ (A) 5 Co-efficient of α^{t} in the $(\alpha + p)^{m-1} + (\alpha + p)^{m-1}$ (A) $\frac{{}^{m}C_{t}(p^{t}-q^{t})}{p-q}$	$\begin{array}{c c} \mathbf{PP} & \mathbf{No} \\ \hline \mathbf{PP} & \mathbf{No} \\ \hline \mathbf{negative mark} \\ \mathbf{P} \\ \mathbf{regative mar} \\ \hline 1 & 2 \\ \hline 1 & 1 \\ \hline 1 & 2 \\ \hline 1 & 1 \\ \hline 1$	(iv) . # B16 . ing) Q.1 artial matrix artial matrix artial ma	$ \mathbf{y} = \frac{\mathbf{y}}{\mathbf{y}}$ to Q.5 arking) (3 8 4 = 0, if p (C) 1 $\alpha + q)^2$.	$x^{3} - 3x +$ ADVAN Q.6 to Q 5 () ($\frac{2}{CED}$ $\frac{7}{6}$ $\frac{7}{6}$ $\frac{7}{1}$	(3 m (4 m (3 m 7 m when (D) 1 1 , wher (D)	Max. marks 3 marks 3 marks 3 8 'm'is 20 $e \alpha \neq -e$ $\frac{mC_t (p)}{p}$	Time : 24 r min.) [15, min.) [08, min.) [03, Total q and p ≠ q $q^{m-t} + q^{m-t}$ p-q	nin. 15] 06] 03]
Total M Single Multip Single	(iii) $y = - x ^{2} + 3 x ^{2}$ Marks : 26 choice Objective ('-1' i le choice objective ('-2 Integer Questions ('-1' Question No. Marks Obtained The sum $\sum_{i=0}^{m} {10 \choose i}$ (A) 5 Co-efficient of α^{t} in the $(\alpha + p)^{m-1} + (\alpha + p)^{m-1}$ (A) $\frac{{}^{m}C_{t} (p^{t} - q^{t})}{p-q}$	$\frac{ +2}{ } \frac{ +2 }{ } \frac{ +2 }{ $	(iv) . # B16 . ing) Q.1 artial matrix artial matrix . artial matrix . art	$ \mathbf{y} = \frac{1}{2}$ to Q.5 arking) (3 arking) (4 = 0, if p (C) 1 $\alpha + q)^2$.	$x^{3} - 3x +$ ADVAN Q.6 to Q 5 $< q) \text{ is m}$ 5 $+ \dots (\alpha)$ $\frac{{}^{m}C_{t} (p^{t})}{p-c}$	$\frac{2}{CED}$	(3 m (4 m (3 n 7 m when (D) 1 1 , when (D)	Max. marks 3 marks 3 marks 3 8 ' m ' is 20 e $\alpha \neq - \frac{1}{2}$ m C _t (p	Time : 24 r min.) [15, min.) [08, min.) [03, Total q and p ≠ q $p^{m-t} + q^{m-t}$ p-q	nin. 15] 06] 03]
Total M Single Multip Single 1. 2.	(iii) $y = - x ^{2} + 3 x ^{2}$ Marks : 26 choice Objective ('-1' i le choice objective ('-2 Integer Questions ('-1' Question No. Marks Obtained The sum $\sum_{i=0}^{m} {10 \choose i}$ (A) 5 Co-efficient of α^{t} in the $(\alpha + p)^{m-1} + (\alpha + p)^{m-2}$ (A) $\frac{{}^{m}C_{t}(p^{t}-q^{t})}{p-q}$ The sum of the series 2	$\frac{ +2}{DPP No}$ negative mark ' negative mark ' negative & P ' negative mar 1 2 (a) 10 (b) 10 e expansion of $\frac{(20)}{(m - i)}$, (when (b) 10 e expansion of $\frac{(20)}{(m - i)}$, (when (b) 10 (c) $\frac{mC_{t}(p)}{p}$	(iv) . # B16 . ing) Q.1 artial matrix artial matrix . artial matrix . art	$ \mathbf{y} = \frac{1}{2}$ to Q.5 arking) (arking) (8 4 = 0, if p (C) 1 $\alpha + q)^2$ $\frac{1}{2}$ (C) $3 + \dots + q^2$	$x^{3} - 3x +$ ADVAN Q.6 to Q. 5 c (q) is m 5 c (q) is m c (q) is m (q) (q) (q) (q) (q) (q) (q) ($\frac{2}{CED}$	(3 m (4 m (3 m 7 m when (D) 1 1 , when (D)	Max. marks 3 marks 3 marks 3 8 'm'is 20 $e \alpha \neq - \frac{1}{2}$ $mC_t (p)$	Time : 24 r min.) [15, min.) [03, Total q and $p \neq q$ $p^{m-t} + q^{m-t}$ p-q	nin. 15] 06] 03]
Total M Single Multip Single 1. 2. 3.	(iii) $y = - x ^{2} + 3 x ^{2}$ Marks : 26 choice Objective ('-1' n le choice objective ('-2 Integer Questions ('-1') Question No. Marks Obtained The sum $\sum_{i=0}^{m} {10 \choose i}$ (A) 5 Co-efficient of α^{t} in the $(\alpha + p)^{m-1} + (\alpha + p)^{m-2}$ (A) $\frac{{}^{m}C_{t}(p^{t}-q^{t})}{p-q}$ The sum of the series 2 (A) $-{}^{20}C_{10}$	$\begin{array}{c c} \mathbf{DPP} & \mathbf{No} \\ \mathbf{DPP} & \mathbf{No} \\ \mathbf{P} \\ \mathbf$	(iv) . # B16 . ing) Q.1 artial matrix artial matrix . artial matrix . art	y = 3 to Q.5 arking) (8 4 = 0, if p (C) 1 $\alpha + q)^2 - \frac{1}{2}$ $3 + \dots + \frac{1}{2}$ (C) 0	$x^{3} - 3x +$ ADVAN Q.6 to Q. 5 $< q) \text{ is m}$ 5 $+ \dots (\alpha)$ $\frac{{}^{m}C_{t} (p^{t})}{p-c}$ $\cdot {}^{20}C_{10} \text{ is }$	$\frac{2}{CED}$	(3 m (4 m (3 m 7 m when (D) 1 1 , when (D)	Max. marks 3 marks 3 marks 3 8 'm'is 20 $e \alpha \neq -e^{\frac{m}{2}} C_{t} (p)$	Time : 24 r min.) [15, min.) [08, min.) [03, Total q and p ≠ q $p^{m-t} + q^{m-t}$ p-q	nin. 15] 06] 03]

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(D) 3

4. The term independent of x in the expansion of $\left(x - \frac{1}{x} \right)^4 \left(x + \frac{1}{x} \right)^3$ is:

5. The co-efficient of x^{n-2} in the polynomial $(x - 1) (x - 2) (x - 3) \dots (x - n)$ is : (A) $\frac{n (n^2 + 2) (3n + 1)}{24}$ (B) $\frac{n (n^2 - 1) (3n + 2)}{24}$

(C)
$$\frac{n(n^2 + 1)(3n + 4)}{24}$$
 (D) none of these

6. If α , β are the roots of the equation $x^2 + \alpha x + \beta = 0$ such that $\alpha \neq \beta$ and $||x - \beta| - \alpha| < \alpha$, then (A) inequality is satisfied by exactly two integral values of x

(C) 1

- (B) inequality is satisfied by all values of $x \in (-4, -2)$
- (C) Roots of the equation are opposite in sign
- (D) $x^2 + \alpha x + \beta < 0 \forall x \in [-1, 0]$
- 7. Consider the equation : $x^2 + 18x + 30 = 2\sqrt{x^2 + 18x + 45}$.
 - (A) Product of real root of the equation is 10
 - (B) Product of real root of the equation is 20
 - (C) Sum of real roots of the equation is -18
 - (D) Sum of real roots of the equation is 18
- 8.2. If $x^2 + x = 1 y^2$, where x > 0, y > 0, then find the maximum value of $x \sqrt{y}$.

Total M Compr Single Single	Fotal Marks : 24 Comprehension ('–1' negative marking) Q.1 to Q.3 Single choice Objective ('-1' negative marking) Q.4 to Q.6 Single Integer Questions ('-1' negative marking) Q.7 to Q.8									Max. Time : 24 min. (3 marks 3 min.) [09, 09] (3 marks 3 min.) [09, 09] (3 marks 3 min.) [06, 06]				
	Question No.	1	2	3	4	5	6	7	8	Total]			
	Marks Obtained													
Compr	Consider the equation $2^{ x+1 } - 2^x = 2^x - 1 + 1$													
1.১	The least value of x satisfying the equation is (A) 0 (B) 2 (C) 4 (D) -2													
2.	Number of integers less than 15 satisfying the equation are(A) 14(B) 15(C) 16(D) 17													
3.	Number of composite n is/ are	umbers	less th	nan 20	which	are cop	orime w	vith 4 s	atisfyin	g the give	n equation			
	(A) 2	(B) 3			(C) 4			([D) 5					
4.	The remainder obtained	when [1 + 2	+ 3	+ + [<u>200</u> is	s divide	d by 14	l is					
	(A) 3	(B) 4			(C) 5			(D) None	e of these				
5.১	s If $\sum_{r=1}^{N}$ (r ² + 2r + 1). r! = (2014)! -2, then N can be													
	(A) 2012	(B) 201	3		(C) 2	011		([0) 2014					
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\mathbb{Z}	Result of the second control of the second									O20				

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DPPs	BOOKLET-2					VIKAAS (JA MATHEMATICS						
6.	The number of non-zer (A) 9	o terms ir (B) 0	n the ex	cpansio	n of (1 (C)5	+ 3 √2 x) ^s	 ⁹ + (1 –	3√2 x) ⁹ (D) 1	is 10			
7.	If n th term of the series	3 <mark>1</mark> , 2,	$1 \frac{3}{7}, \frac{3}{7}$	1 <mark>1</mark> ,	is $\frac{an}{br}$	+10 n+c,∀	n ∈ N,	then find	d the va	lue of (a +	b + c)	
8.2	If $\sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2}} + \sqrt{1 + \frac{1}{2^2}}$	$-\frac{1}{2^2}+\frac{1}{3^2}$	+ \sqrt{1+}	$\frac{1}{3^2} + \frac{1}{4^2}$	$\frac{-}{2}$ +	+ √1+	1 (1999)	$\frac{1}{(20)^{2}}$	$\frac{1}{00)^2} =$	$x - \frac{1}{x}$, th	en find	
	the value of x											
	DPP No. # B18 (JEE-ADVANCED)											
Total N Single Multipl	tal Marks : 29 Max. Time : 24 min. ngle choice Objective ('-1' negative marking) Q.1 to Q.3 (3 marks 3 min.) [09, 09] ultiple choice objective ('-2' negative & Partial marking) Q.4 to Q.8 (4 marks 3 min.) [20, 15]											
	Question No.	1	2	3	4	5	6	7	8	Total		
	Marks Obtained											
1.	In the expansion of (7 ^{1/} (A) 730	³ + 11 ^{1/9}) (B) 729	⁶⁵⁶¹ , the	e numb	er of terr (C) 72	ms free f 25	rom rac	dicals is: (D) 7	750			
2.	The coefficient of the middle term in the binomial expansion in powers of x of $(1 + \alpha x)^4$ and of $(1 - \alpha x)^6$ is the same, if α equals :											
	(A) $-\frac{5}{3}$ (B) $\frac{10}{3}$ (C) $-\frac{3}{10}$ (D) $\frac{3}{5}$											
3.	If the coefficients of r^{th} , and r satisfy the equat (A) $m^2 - m(4r - 1) + 4r^2$ (C) $m^2 - m(4r+1) + 4r^2$	$(r + 1)^{th} a$ ion : $r^{2} + 2 = 0.$ $r^{2} + 2 = 0.$	and (r +	.2) th teri	ms in the (B) m (D) m	e binomi ² – m(4r ² – m(4r	al expa (+1) + 4 (-1) + 4	nsion of 4r² – 2 = ŀr² – 2 =	f (1 +y)" ⊧ 0. 0.	n are in AP,	then m	
4.2	Difference of squares c (A) 4	of two dist (B) 3	inct odd	d natura	al numb (C) 6	ers is alv	vays a i	multiple (D) {	of. 3			
5.	If P and Q are sum and	d product	respec	tively o	f all real	values o	of x sat	isfying tl	he equa	tion 4 – x	- 2 =	
	(A) $ P + Q = 143$	(B) P +	+ Q = ⁻	127	(C) F	P + Q = ⁻	127	(D)	P + Q	= 142		
6.	The set of all values of	'x whicl	h satisfi	ies the	inequati	on 1		x + x	$\left \geq \frac{1}{2} \right $	belongs to)	
	(A) [-1,1]	(B) (- a	∞ , − 1]		(C) [1 , ∞)		(D)	[–1, 2]			
7.	The value of x satisfyin	g										
	$2\log_{\frac{1}{4}}(x+5) > \frac{9}{4}\log_{\frac{1}{3\sqrt{3}}}$	$(9) + \log_{\frac{1}{3}}$	₍₂₎	is/are								
	(A) (-5, -4)	(B) (–3,	-1)		(C) (-	-4, -1)		(D) ((5,2)			
8.24	The simultaneous equation (A) $\left(\frac{4}{3}, \frac{4}{3}\right)$	ations, y = (B)	$\left \begin{array}{c} x+2 \\ \frac{4}{3} \end{array} \right $	x & y	= 4 + x (C)	$- \mathbf{x} $ hat $-\frac{4}{3}, \frac{4}{3}$	ave the	solution (D)	set give $\left(\frac{4}{3}, 4\right)$	en by :		

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DPP No. # B19 (JEE– MAIN)																	
Total M Single Single	al Marks : 45 Max. Time : 45 min. gle choice Objective ('-1' negative marking) Q.1 to Q.10 (3 marks 3 min.) [30, 30] gle Integer Questions ('-1' negative marking) Q.11 to Q.15 (3 marks 3 min.) [15, 15]																
Ques	tion No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Marks	s Obtained																
1.	The numb (A) 300	per of	times	the di (B	git 3 v) 269	will be	e writte	en whe	en list (C) 27	ing the	e inte	gers fi	rom 1 (D) 3	to 100 302	00 is:		
2.24	If 'm' deno of magnit magnitude (A) 2. ¹⁰ C _e	otes th tude a e, thei	ne nur and 'r n (m -	nber (n'is t - n) ha (B	of 5 d the co as the) ${}^{10}C_4$	igit nu prresp value	umber: oondin	s whe g figu	n eac ire w (C) ºC	h suc hen tl	cessiv he di	ve digi gits a	its are re in (D) °	in the their ℃ ₅	eir des ascer	scend nding	ing order order of
3.	Number of 4 digit positive integers if the product of their digits is divisible by 3, is(A) 2700(B) 6628(C) 7704(D) 5464																
4.	Let the co-efficients of x ⁿ in $(1 + x)^{2n}$ & $(1 + x)^{2n-1}$ be P & Q respectively, then $\left(\frac{P + Q}{Q}\right)^5 =$																
	(A) 9			(B) 27			((C) 81				(D) r	none d	of thes	se	
5.	The total (A) 50	numb	er of c	listinc (B	t term) 202	s in th	ne exp	ansio (n of, ((C) 51	(x + a)	¹⁰⁰ + ((x – a)	¹⁰⁰ afte (D) r	er sim none c	plifica of thes	tion is se	:
6.	The value $(1 + x)^{10}$ a	e of m	i, for	which	n the	coeffi	cients	of the	e (2m	+ 1) th	1 and	(4m -	+ 5) th	terms	in the	e expa	ansion of
	$(1 + x)^{10}$ are equal, is (A) 3 (B) 1 (C) 5 (D) 8																
7.	STATEME STATEME (A) S (B) S (C) S (C) S (D) S (E) B	ENT - TATE TATE TATE TATE TATE TATE TATE oth S	1 :If r 2 : ² MENT MENT MENT MENT MENT MENT	i is ev C ₁ + ^{2r} -1 is -1 -1 is ENT-1 -1 is 1 MENT	en, th $C_3 + \frac{1}{2}$ true, true, S alse, S are	en ²ⁿ C ₅ + STAT STAT STATE STATE STAT false	 - EMEN EMEN EMEN EMEN	C ₃ + ² + ²ⁿ C; NT-2 i NT-2 is IT-2 is	²ⁿ C ₅ + _{2n - 1} = is true s true false s true	= 2 ^{2n -} e and e and	+ ² "C ¹ . STA STA	n-1 = TEME FEMEI	2 ^{2n – 1} NT-2 NT-2	is cor	rrect e corre	explar	nation for planation
8.2	For some	natur	al N, t	he nu	mber	of po	sitive	integr	al 'x' s	satisfy	ing th	e equ	ation				
	(A) one	D! +	+ X	! = (N (B) two			((C) thi	ree			(D) I	None	of the	se	
9.	Sum of th	e last	30 co	oefficie	ents ir	the e	expan	sion c	of (1 +	x) ⁵⁹ ,	wher	ı expa	Inded	in aso	endin	ig pov	vers of x,
	is (A) 2 ²⁹			(B) 228			((C) ⁶⁰ (C ₃₀ – 2	2 ¹⁹		(D) 2	2 ⁵⁸			
10.2	Coefficier	nt of x	⁴⁸ in	$\sum_{=0}^{50} 50$	С _г . (х	(– 2) ^r	. 3 ^{50–r}	, is									
	(A) ${}^{50}C_2$ (B) ${}^{48}C_2$ (C) 348 (D) none of these																
11.	1. Solve the following equations : (i) $ x - 2 = \sqrt{x - 4}$ (ii) $\frac{ x - 2 }{x - 1} = \frac{1}{x - 1}$																
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 $x^{2} - 4x + 4$ 12. \geq 1

13. Solve the following inequations

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(i)
$$\frac{3}{x-2} < 1$$
 (ii) $\frac{2x-1}{x^2} \ge 1$ (iii) $\frac{x^2-7|x|+10}{x^2-6x+9} < 0$

14. If
$$\sum_{i=1}^{7} i^2 x_i = 1$$
 and $\sum_{i=1}^{7} (i+1)^2 x_i = 12$ and $\sum_{i=1}^{7} (i+2)^2 x_i = 123$ then find the value of $\sum_{i=1}^{7} (i+3)^2 x_i$

Circles with centres P, Q & S are touching each other externally as shown in the figure at points A, B & 15. C . If the radii of circles with centres P, Q & S are 1, 2 and 3 respectively then the length of chord AB is



DPP No. # B20 (JEE-ADVANCED)

Total M Compr Single Single Match	larks : 29 ehension ('–1' negative choice Objective ('-1' r Integer Questions ('-1' the Following (each ro	(3 m (3 m (3 m (8 m	Max. Time : 29 min. (3 marks 3 min.) [09, 09] (3 marks 3 min.) [09, 09] (3 marks 3 min.) [03, 03] (8 marks, 8 min.) [08, 08]									
	Question No.	1	2	3	4	5	6	7	8	Total		
	Marks Obtained											
Compr	ehension # 3 (6 to 8) Let P = $\sum_{r=1}^{50} \frac{{}^{50+r}C_r(2r-1)}{{}^{50}C_r(50+r)}$	- , Q = 2	$\sum_{r=0}^{50} \left({}^{50} \mathbf{C}_r \right)$	² , R =	$\sum_{r=0}^{100} (-1)^r ($	¹⁰⁰ C _r) ²						
1.24	The value of $(P - Q)$ is (A) 1	equal to (B) –1)		(C) 2 ^s	60		(D) 2	2 ¹⁰⁰			
2.	The value of (P – R) is (A) 1	equal to (B) –1	1		(C) 2 ^s	60		(D) :	(D) 2 ¹⁰⁰			
3.	The value of (Q + R) is (A) 2P + 1	equal to (B) 2P) — 1		(C) 2I	P + 2		(D) 2P – 2				
4.2	The sum $\sum_{r=0}^{n} (r + 1) C_{r}$	² is equa	al to :									
	(A) $\frac{(n+2)(2n-1)!}{n!(n-1)!}$	(B) (n	+2)(2n) n!(n-1)	n + 1)! I)!	(C) ($\frac{n+2}{n!(n+1)}$	(n+1)! 1)!	(D)	(n+2)(n+2)(n+2)(n+2)(n+2)(n+2)(n+2)(n+2)	(2n-1)! (1+1)!		
5.	In the binomial expar a/b equals:	ision of	a –	b) ⁿ , n ≥	≥5, the	sum o	of the 5	^{ith} and	6 th ter	ms is zero	. Then	
	(A) $\frac{n-5}{6}$		(C)	5 -4		(D) $\frac{6}{n-5}$						

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DPP	s BOOK	LET-2			VIKAAS (JA	MATHEMATICS	3
6.	If x is	positive, the	first negative term in the	expansion of $(1+x)^{\frac{2}{5}}$	7 is :		
	(A) 7t	h term	(B) 5th term	(C) 8th term	(D) 6	Sth term.	
7.æ	lf n is	any positive	integer, then find the nu	nber whose square is	1111 - 2n times	- <u>2222</u> n times	
8.	Colu	mn-l				Column-	
	(A)	Number o	f real solutions of the equ	uation x – 1 + x – 3	$3 = \frac{3}{2}$ is	(P) –	1

• •	2	()	
(B)	If sin x + sin ² x = 1 then the value of $\cos^2 x + \cos^4 x$ equals	(Q)	0
(C)	If $\log_{10}(x^2 + x) = \log_{10}(x^3 - x)$ then the product of all solutions		
	of the equation is	(R)	1
(D)	If $1 + x + x^2 + x^3 = 0$ where $x \in R$ then the value of		
	1 + x + x ² + x ³ + x ⁴ ++ x ²⁰⁰⁸ + x ²⁰⁰⁹ equals	(S)	2

DPP No. # B21 (JEE-ADVANCED) Special DPP on Binomial Theorem and Fundamental of Mathematics-II

Total Marks : 52 Single choice Ob Multiple choice o Single Integer Qu	Fotal Marks : 52Max. Time : 45 min.Single choice Objective ('-1' negative marking) Q.1 to Q.5(3 marks 3 min.) [15, 15]Multiple choice objective ('-2' negative & Partial marking) Q.6 to Q.12(4 marks 3 min.) [28, 21]Single Integer Questions ('-1' negative marking) Q.13 to Q.15(3 marks 3 min.) [09, 09]															
Question No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Marks Obtained																

1. If
$$\sum_{r=0}^{n} (-1)^{r} \cdot {}^{n}C_{r} \left[\frac{1}{2^{r}} + \frac{3^{r}}{2^{2r}} + \frac{7^{r}}{2^{3r}} + \dots \text{ to m terms} \right] = k \left(1 - \frac{1}{2^{m}} \right)$$
, then $k = (A) \frac{1}{2^{n} - 1}$ (B) $\frac{1}{2^{2n} - 1}$ (C) $\frac{1}{2^{2n} + 1}$ (D) $\frac{1}{2^{n} + 1}$
2. The expression $\frac{1}{2^{n}} \left[\left[\frac{1 + \sqrt{4x + 1}}{2^{n}} \right]^{7} - \left[\frac{1 - \sqrt{4x + 1}}{2^{n}} \right]^{7} \right]$ is a polynomial in x of definition.

The expression
$$\frac{1}{\sqrt{4x+1}} \left[\left[\frac{1}{2} \right] - \left[\frac{1}{2} \sqrt{4x+1} \right] \right]$$
 is a polynomial in x of degree
(A) 7 (B) 6 (C) 4 (D) 3

3. The figure shows a rectangle ABCD with a semi-circle and a circle inscribed inside it as shown. What is the ratio of the area of the circle to that of the semi-circle?

(A)
$$(\sqrt{2}-1)^2$$
 (B) $2(\sqrt{2}-1)^2$ (C) $(\sqrt{2}-1)^2/2$ (D) $2(\sqrt{2}-1)^4$

4. If
$$\sum_{r=0}^{2n} a_r (x-1)^r = \sum_{r=0}^{2n} b_r (x-2)^r$$
 and $b_r = (-1)^{r-n}$ for all $r \ge n$, then $a_n = (A)^{2n+1}C_{n-1}$ (B) ${}^{3n}C_n$ (C) ${}^{2n+1}C_n$ (D) 0



cs

DPPs	BOOKLET-2			VIKAAS	G (JA MATHEMATICS
5.	p is a prime number and (A) p divides N	d n {}^{2n}C_n, (B) p ² divides N	then (C) p cannot div	ides N	(D) None of these
6.	The sum of the greates $(A) - 10$	t and the smallest terms (B) –21	in (x + 12) ²¹ is ze (C) –28	ro then a	x can take values. (D) –6
7.æ	The continued product $(A)^{2n}P_n$ (C) (n + 1) (n + 2)(n + 3)	2.6.10.14 to n factor)(n + n)	s is equal to (B) ²ⁿ C _n (D) 2 ⁿ . (1.3.5	2n – 1))
8.	The soltuion of $ x^2 + 3x $	$x + x^2 - 2 \ge 0$ is :			
	(A) (−∞, 1)	(B) (0, 1)	$(C)\left(-\infty,-\frac{2}{3}\right]$		(D) $\left[\frac{1}{2},\infty\right)$
9.	Which of the following e (A) $x^2 - 2x + 5 + \pi^x = 0$	equations have no real so	olutions ? (B) log _{1.5} (cot ^{_1} x-	-sgn(e ^x))) = 2
	(C) $x^4 - 2x^2 \sin^2 \frac{\pi x}{2} + 1 =$: 0	(D) all of these		
10.2	The solution set satisfy	ing the inequality, $\frac{\sqrt{21-2}}{2}$	$\frac{4a-a^2}{a+1} \le 1 \text{ cor}$	ntains :	
	(A) [-7, -1)	(B) [2, 3]	(C) [2, ∞)		(D) [- 7, 0)
11.	The co–efficient of x^4 in (A) ${}^{12}C_3$	the expansion of $(1 - x + (B))^{13}C_3$	+ 2x ²) ¹² is: (C) ¹² C ₈ + 4 ¹² C ₁₀	0 + 6 ¹² C	C ₉ (D) ¹² C ₃ + 3 ¹³ C ₃ + ¹⁴ C ₄
12.๖	$ \begin{array}{l} \text{If } (1+x)^n = C_0 + C_1 x + 0 \\ C_0 - C_1 + C_2 - \dots + (\\ (A) \ (-1)^{m-1} \ ^{n-1} C_{m-1} \end{array} $	$\begin{array}{l} C_2 x^2 + \ldots + C_n x^n, \ m \geq 2 \\ -1)^{m-1} C_{m-1} = (-1)^{m-1} \\ (B) \ (-1)^{m-1} \ ^n C_{m-1} \end{array}$	⁻¹ C _{m-1} . (C) (-1) ^{m-1 n-1} C	'n –m	(D) $(1)^{m-1} {}^{n}C_{n-m}$
13.	Solve the equation :				
	x+1 - x + 3 x-1 -2	x–2 = x+2			

Solve the following (Q. 14-15)

- **14.** $|(x^2 + 2x + 2) + (3x + 7)| < |x^2 + 2x + 2| + |3x + 7|$
- **15.** $|x^2 1| + |x^2 4| \le 3$

DPP_No. # B22 (JEE-ADVANCED)

Total Marks : 29Max. Time : 29 mSingle choice Objective ('-1' negative marking) Q.1 to Q.7(3 marks 3 min.)Match the Following (each row '(2, -1)' negative marking) Q.8(8 marks, 8 min.)											
	Question No.	7	8	Total]						
	Marks Obtained										
1.24	Number of non-empty subsets of {1, 2, 3, 4, 5, 6, 7, 8} having exaclt element k for some k = 1, 2,,8 is									and do not	contain the
	(A) 63 (B) 255 (C) 127 (D) 31										



DPPs	BOOKL	_ET-2			VIKAAS (JA MATHEMATICS
2.	If the e	expansion in pow	vers of x of the func	tion $\frac{1}{(1-ax)(1-bx)}$	is
	$a_{0} + a_{1}$ (A) $\frac{a^{n}}{d}$	$x + a_2 x^2 + a_3 x^3 + b^n$, then a_n is : (B) $\frac{a^{n+1} - b^{n+1}}{a^{n+1} - b^{n+1}}$	(C) $\frac{b^{n+1}-a^{n+1}}{a^{n+1}-a^{n+1}}$	(D) $\frac{b^n - a^n}{a}$
	D	— a	b – a	b—a	b-a
3.	lf x is	so small that x ³	and higher powers	s of x may be neglect	ted, then $\frac{(1+x)^{3/2} - (1+\frac{1}{2}x)}{(1-x)^{1/2}}$ may be
	approx	kimated as :			
	(A) $\frac{x}{2}$	$-\frac{3}{8}x^2$	(B) $-\frac{3}{8}x^2$	(C) $3x + \frac{3}{8}x^2$	(D) $1 - \frac{3}{8}x^2$
4.	The su	um of the series	$\sum_{r=1}^{n} (-1)^{r-1} C_r(a-r)$, n>1 is equal to :	
	(A) n .	2 ⁿ⁻¹ + a	(B) 0	(C) a	(D) None of these
5.১	$\sum_{k=1}^{360} \left(\frac{1}{k} \right)$	$\frac{1}{\sqrt{k+1} + (k+1)\sqrt{k}}$) is the ratio of two	relative prime positive	e integers m and n. The value of (m + n)
	is equa (A) 43	al to	(B) 41	(C) 39	(D) 37
6.2	Numbe	er of ways in whi	ch 3 tickets can be	selected from a set of	500 tickets numbered 1, 2, 3,, 500
	so that (A) 500	t the number on 1 0	them are in arithme (B) ⁵⁰⁰ C ₃	etic progression is (C) 62250	(D) None of these
7.	Sum c digits)	of all the 4-digit is	numbers which ca	n be formed using th	e digits 0, 3, 6, 9 (without repetition of
8.	(A) 119 If y = f	9988 (x) has following	(B) 115992 graph	(C) 3996	(D) None of these
	2	., .		∱ ^y	
			\frown		
			\rightarrow	×	
	Match	the column by fi	llina the followina 4	× 4 matrix	
		,			۸y
	(A)	$\mathbf{v} = \mathbf{f}(\mathbf{x}) $		(q)	
		, , , , , , , , , ,			
		f (x)			y y
	(D)	$\mathbf{y} = \mathbf{I}(\mathbf{x})$		(4)	×
					[↓] y
	(C)	y = f(- x)		(r)	$\longrightarrow x$
					y y
	(D)	y = f(x)		(s)	x

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DPP No. # B23 (JEE-ADVANCED)

Total Marks : 34 Single choice Objective ('-1' negative marking) Q.1 to Q.5 Single Integer Questions ('-1' negative marking) Q.6 Match the Following (each row '(2, -1)' negative marking)Q.7 to Q.8								(3 (3 (8	Ma marks marks marks	ix. Time : 34 min. 3 min.) [15, 15] 3 min.) [03, 03] 5, 8 min.) [16, 16]		
		Question No.	1	2	3	4	5	6	7	8	Total	
		Marks Obtained										
1.ര.	lf t P(: tak (A) (C)	the quadratic polynomi $x_1 = a_1 x^2 + 2b_1 x + c_1 a_1 a_1 x^2 + 2b_1 x + c_2 a_1 x^2 + 2b_1 x + c_1 a_1 a_2 x^2 + 2b_1 x^2 + 2b$	als defind $Q(x) \in R. W$ lues on	ned on = a ₂ x ² /hat car ly I as neg	real coo + 2b ₂ x h we sa gative v	efficient + c ₂ y for the alues	s e trinom (B) (D)	iial g(x) g(x) tak nothing	= a ₁ a ₂) es nega definite	x² + b₁t ative va e can b	D ₂ x + c ₁ c ₂ ? Ilues only e said about g(x)	
2.	Th (A)	e exponent of 12 in 10 97	00! is (B) 58			(C) 4	8		(D) None	of these	
3.	(A) 97(B) 58(C) 48(D) None of theseNumber of words each consisting of two vowels and two consonants which can be made out of the letters of the word 'DEVASTATION' is (A) 126(B) 198(C) 1512(D) 1638											
4.2	Th (A)	e number of zeroes at 16	the end (B) 15	d of 70!	is	(C) 1	4		(D) 20		
5.	Th (A)	e coefficient of x⁵ in (1) 21	+ 2x + (B) 25	3x² +) ^{-3/2} is	: (C) 2	6		(D) none	of these	
6.	lt S⊧	is known for $x \neq 1$ = 1 + 2x + 3x ² ++ (r	that 1 n + 1) x ^r	+ X ¹ .	+ X ² +	+X ^{n–1}	$=\frac{1-2}{1-2}$	r' , he	ence fi	nd the	sum of the series	
7.	Ма	tch the followings :										
	Co	lumn - I							Co	olumn	- 11	
	(A)	If $x = 3$, then log	₄ (2 log₃	s (1 + lo	g ₂ (1 +	3 log₃ x	:))) is eo	qual to	(p) 3	}	
	(B) If x = 100, then $3^{\log_3 \log \sqrt{x}} - \log x + \log^2 x$ is equal to (q) 1 (base of log is 10)											
	(C) If one of the root	of the e	equatio	n				(r)	-	<u>1</u> 2	
		$2(\log_x \sqrt{5})^2 - 3 \log^2 (\log_x \sqrt{5})^2$	og _× (a) -	+ 1 = 0	is √5 , t	hen the	e other i	root is				
	(D) If $\log_2 (4.3^x - 6) - \log_2 (9^x - 6) = 1$, then x is equal to (s) 5											



DPF	DPPs BOOKLET-2										VIKAAS (JA MATHEMATICS							
8.2	Match	the co	lumn									Column II						
	(A)	Area	of the	regio	n enc	losed	by 2	x + 3	B y ≤	6 is				() (- п р)	12		
	(B) OPQR is a square and sides PQ and QR resp of the square and the equal to					d M, N are the mid points of the pectively. If the ratio of the areas triangle OMN is λ : 6, then λ is								(q)	2		
	(C)	If slop	e of th	ne stra	aight	line th	nrougł	n the	point ((1, 2),	whos	е		(r)	4		
		distan	ce fro	m the	poin	t (3, 1) has	the g	reates	st valu	ie, is	$\frac{m}{6}$,						
		then m is equal to																
	(D)	D) Area of $\triangle ABC$ is 20 sq. units where points A, B and C are (s) 16 (4, 6), (10, 14) and (x, y) respectively. If AC is perpendicular to BC, then number of positions of C is																
						DPP	No.	# B2	24 (JI	EE-I	MAIN)						
Total Sing	Marks : 4 e choice (5 Object	ive ('-	·1' ne	gativ	e mar	king)	Q.1	to Q.1	5			(3	Ma marks	ax. Tir 3 mi	ne:45 n.) [4	5 min. 5, 45]	
Que	stion No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total	
Mark	s Obtained																	
1.	All possible three digit even numbers which can be formed with the condition that if 5 is one of the digit, then 7 is the next digit, is								the digit,									
	(A) 5			(B) 32	5			(C)	345			(D)) 365				
2.	A numb conditic (A) 640	number of different seven digit numbers that can be written using only three digits 1, 2 & 3 u ndition that the digit 2 occurs exactly twice in each number, is) 640 (B) 672 (C) 512 (D) none of these						under the										
3.	Numbe (A) 251	r of na	tural n	iumbe (ers be B) 24	tweer 3	100 ו	& 100	00 suc (C)	ch tha 258	t at lea	ast one	e of th (D)	eir dig) 252	its is 6	3, is		
4.2	A class picnic to a doll to (A) 15	contai o Appu o each	ins 4 I Ghar girl in	boys , a dif the g (and g feren roup. B) 12	girls t grou If the	. Ever p beir total	ry sur ng sei numb	nday f nt eve per of ((C)	ive str ry we dolls c 8	udents ek. Di distribi	s, inclu uring, t uted w	uding the pic tas 85 (D)	at leas cnic, th , then) 5	st thre le clas value	e boys s teac of g is	go for a her gives	
5.	Let A,B BD is	,C,D b	e colli	inear	points	s in th	at or	der. S	uppos	se AB	: CD	= 3 : 2	2 and	BC : A	AD = 1	: 5. T	hen AC :	
	(A) 1 : 1			(B) 11	: 10			(C)	16 : 1	1		(D)) 17 : 1	3			
6.	If A & B are the points $(-3, 4)$ and $(2, 1)$, then the co-ordinates of the point C on AB produced such that AC = 2 BC are :							such that										
	(A) (2,	4)		(B) (3	8, 7)			(C)	(7, –2	2)		(D)	$\left(-\frac{1}{2}\right)$	$,\frac{5}{2}$			
7.24	lf in tria	angle A	ABC ,	A ≡	(1, 1	0),	circur	ncent	tre ≡	$\left(-\frac{1}{3}\right)$, <u>2</u>)	and	orthoo	centre	$\equiv \left(\frac{1}{3}\right)$	$(\frac{1}{5}, \frac{4}{3})$	then the	
	co-ordir	nates c	of mid-	-point	of sic	le opp	osite	to A i	s :		0)			- L) -	、			
	(A) (1,	- 11/3)	(В) (1	, 5)			(C)	(1, –	3)		(D)) (1,6)			
				(Re	eg. & Co	orp. Offi	ce : CG	Tower,	A-46 &	52, IPIA,	Near Cit	y Mall, J	halawar	Road, Ko	ota (Raj.)	-324005	
		for bett		_e °	We	ebsite: <u>v</u>	www.res	onance		E-mail :	contact@	resonar	nce.ac.in		PA	GE NO.	-28	

8.	If the 6	therm in the exp	bansion of $\left[\frac{1}{x^{8/3}} + x\right]$	$x^2 \log_{10} x \Big ^{-8}$ is 5600,	then x =	
	(A) 10		(B) 8	(C) 11	(D) 9	
9.	If the s	econd term of th	he expansion $\left[a^{1/13}\right]$	$+\frac{a}{\sqrt{a^{-1}}}\right]^n$ is 14a ^{5/2} , the	the value of $\frac{{}^{n}C_{3}}{{}^{n}C_{2}}$ is:	
	(A) 4		(B) 3	(C) 12	(D) 6	
10.	The co	-efficient of x in	the expansion of (1 -	$-2x^{3}+3x^{5}$) $\left(1+\frac{1}{x}\right)$) ⁸ is :	
	(A) 56		(B) 65	(C) 154	(D) 62	
11.24	lf (1!)² (A) 27	+ (2!) ² + (3!) ² + .	+ (99!) ² + (100!) ² (B) 28	is divided by 100, t (C) 17	he remainder is (D) 14	
12.	The co (A) 4	efficients of thre	e consecutive terms (B) 5	of (1 + x) ⁿ⁺⁵ are in t (C) 6	he ratio 5 : 10 : 14. Then n (D) 7	=
13.2a	STATE	MENT - 1 : The	term independent of	f x in the expansion	of $\left(x + \frac{1}{x} + 2\right)^{m}$ is $\frac{(2m)!}{(m!)^{2}}$	
	STATE (A)	MENT - 2 :The STATEMENT-1 STATEMENT-1	coefficient of x ^b in the I is true, STATEME	e expansion of (1 + NT-2 is true and S	x) ⁿ is ⁿ C _b . STATEMENT-2 is correct e	xplanation for
	(B)	STATEMENT-1	l is true, STATEME	NT-2 is true and S	TATEMENT-2 is not correct	ct explanation
	(C) (D) (E)	STATEMENT-1 STATEMENT-1 Both STATEME	l is true, STATEMEN l is false, STATEMEI ENTS are false	IT-2 is false NT-2 is true		
14.	If both	roots of x^2 –	$2ax + a^2 + a - 3$	= 0 are less that	n 3, then :	
15.	(A) a - If letter	< ∠ s of the word "P k of the word 'P	$(B) 2 \le a \le 3$ ARKAR" are written ARKAR' is	(\mathbf{C}) $3 < \mathbf{a} \le 0$	e manner as they are in a di	ictionary, then

(A) 98 (B) 99 (C) 100 (D) 101

DPP No. # B25 (JEE-ADVANCED)

Total Marks : 28 Single choice Objective ('-1' negative marking) Q.1 to Q.4 Multiple choice objective ('-2' negative & Partial marking) Q.5 to Q.8									Max. Time : 24 min. (3 marks 3 min.) [12, 12] (4 marks 3 min.) [16, 12]			
	Question No.	3	3 4 5 6				8	Total				
	Marks Obtained											
1. Number of different ways in which 8 different books can be distributed among a student receives at least 2 books is					3 students	s, if each						
	(A) 2940	(B) 260	00		(C) 2	409		(D) 2446			
2. Let N be the number of quadratic equations with coefficients from {0, 1, 2, 3, 9} su solution of each equation. Then the value of N is						9} such th	nat 0 is a					
	(A) 2 ⁹	(B) infi	nite		(C) 9	0		(D) 900			

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3. If the line y = x cuts the curve $x^3 + 3y^3 - 30xy + 72x - 55 = 0$ in points A, B and C, then the value of $\frac{4\sqrt{2}}{55}$ OA.OB.OC (where O is the origin), is (A) 55 (B) $\frac{1}{4\sqrt{2}}$ (C) 2 (D) 4

4. The angle bisectors of angle A for the triangle ABC whose coordinates of the vertices are A(-8, 5); B(-15, -19) and C(1, -7) has the equations (A) 11 x + 2y + 3 = 0(B) 2x - 11y + 71 = 0(C) 11x + 2y + 78 = 0(D) 2x - 11y + 7 = 0

5. The vertices of a triangle are A(x₁, x₁ tan α), B(x₂, x₂ tan β) and C(x₃, x₃ tan γ). If the circumcentre of triangle ABC coincides with the origin and H(a, b) be the orthocentre, then $\frac{a}{b} =$

(A)	$\frac{x_1 + x_2 + x_3}{x_1 \tan \alpha + x_2 \tan \beta + x_3 \tan \gamma}$	(B) $\frac{x_1 \cos \alpha + x_2 \cos \beta + x_3 \cos \gamma}{x_1 \sin \alpha + x_2 \sin \beta + x_3 \sin \gamma}$
(C)	$\tan \alpha + \tan \beta + \tan \gamma$	(D) $\cos \alpha + \cos \beta + \cos \gamma$
(0)	tan α .tan β .tan γ	$\sin \alpha + \sin \beta + \sin \gamma$

6. The sides of a triangle are the straight lines x + y = 1; 7y = x and y + x = 0. Then which of the following is an interior point of the triangle? (A) circumcentre (B) centroid (C) incentre (D) orthocentre

7. If
$$S_n = \sum_{r=1}^{n} \frac{r}{1.3.5.7...(2r+1)}$$
 then
(A) $S_n = \frac{1}{2} \left[1 - \frac{1}{1.3.5...(2n+1)} \right]$ (B) $S_{\infty} = \frac{1}{2}$
(C) $\frac{1}{4} \left[1 + \frac{1}{1.3.5...(2n-1)} \right]$ (D) $S_{\infty} = \frac{1}{4}$

8. If $(3\sqrt{3} + 5)^n = p + f$, where p is an integer and f is a proper fraction, then the value of $(3\sqrt{3} - 5)^n$, n $\in N$ is

(A) 1 - f, if n is even (B) 1 - f, if n is odd (C) f, if n is odd

(D) f, if n is even

DPP No. # B26 (JEE-ADVANCED)

Total Marks : 28	Max. Time : 24 min.
Comprehension ('-1' negative marking) Q.1 to Q.2	(3 marks 3 min.) [06, 06]
Single choice Objective ('-1' negative marking) Q.3 to Q.6	(3 marks 3 min.) [12, 12]
Multiple choice objective ('-2' negative & Partial marking) Q.7 to Q.8	(4 marks 3 min.) [08, 06]

Question No.	1	2	3	4	5	6	7	8	Total
Marks Obtained									

Comprehension #1 (1 to 2)

P is a set containing n elements. Subset A of P is chosen and the set P is reconstructed by replacing the elements of A. A subset B of P is chosen again.

- 1. The number of ways of choosing A and B such that B contains just one element more than A is (A) 2^n (B) ${}^{2n}C_{n-1}$ (C) ${}^{2n}C_n$ (D) $(3^n)^2$
- 2. The number of ways of choosing A and B such that B is a subset of A is (A) ${}^{2n}C_n$ (B) 4n (C) 3n (D) None of these

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- **3.** For natural numbers m, n if $(1 y)^m (1 + y)^n = 1 + a_1y + a_2y^2 + \dots$ and $a_1 = a_2 = 10$, then (m, n) is : (A) (35, 20) (B) (45, 35) (C) (35, 45) (D) (20, 45)
- 4.2. If $s_n = \sum_{r=0}^{n} \frac{1}{{}^{n}C_r}$ and $t_n = \sum_{r=0}^{n} \frac{r}{{}^{n}C_r}$, then $\frac{t_n}{s_n}$ is equal to-(A) $\frac{n}{2}$ (B) $\frac{n}{2} - 1$ (C) n - 1 (D) $\frac{2n - 1}{2}$
- 5. If the equation $x^2 + ax + b = 0$ has distinct real roots and $x^2 + a|x| + b = 0$ has only one real root, then (A) b = 0, a > 0 (B) b = 0, a < 0 (C) b > 0, a < 0 (D) b < 0, a > 0
- 6. Statement-1 : $\sum_{r=0}^{n} (r+1) {}^{n}C_{r} = (n+2) 2^{n-1}$ Statement-2 : $\sum_{r=0}^{n} (r+1) {}^{n}C_{r} x^{r} = (1+x)^{n} + nx (1+x)^{n-1}$

(A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.

- (B) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1
- (C) Statement-1 is True, Statement-2 is False
- (D) Statement-1 is False, Statement-2 is True
- 7. The number of ways in which four different letters can be put in their four addressed envelopes such that
 - (A) at least two of them are in the wrong envelopes, are 23
 - (B) at least two of them are in the wrong envelopes, are 25
 - (C) exactly two of them are in the wrong envelopes, are 6
 - (D) exactly two of them are in the wrong envelopes, are 7
- 8. If N = 6m (where m is obtained in question number 35) then :
 - (A) total number of divisors of N is 36
 - (B) total number of divisors of N in form of (2n + 1) is 12 (n \in Natural)
 - (C) The number of ways in which N can be resolved as product of two factors is 18
 - (D) The number of ways in which N can be resolved as product of two coprime factors is 8.

DPP No. # B27 (JEE-ADVANCED)

Total Marks : 34									Max. Time : 29 min.			
Single choice Objective ('-1' negative marking) Q.1								(3 marks 3 min.) [03, 03]				
Multiple of	Multiple choice objective ('-2' negative & Partial marking) Q.2 to Q.6								(4 marks 3 min.) [20, 15]			
Single In	teger Questions ('-1' r	negativ	e mark	ing) Q.	7			(3 marks 3 min.) [03, 03]				
Match the	e Following (each row	<mark>/ '(2, -1</mark>))' negat	ive ma	rking) (Q.8		(8 marks, 8 min.) [08, 08]				
						1	1			[1	
	Question No.	1	2	3	4	5	6	7	8	Total		

Question No.	1	2	3	4	5	6	7	8	l otal
Marks Obtained									

1. Orthocentre of an acute triangle ABC is at the origin and its circumcentre has the co-ordinates $\left(\frac{1}{2}, -\frac{1}{2}\right)$

. If the base BC has the equation 4x - 2y = 5, then the radius of the circle circumscribing the triangle ABC, is

(C) $\frac{3}{\sqrt{2}}$

 $(A)\sqrt{\frac{5}{2}}$

(B) √3

(D) √6



2. There are 720 permutations of the digits 1, 2, 3, 4, 5, 6 suppose these permutations are arranged from smallest to largest numerical values beginning from 123456 and ending with 654321. (A) Number falls on the 124th position is 213564 (B) The position of the number 321546 is 267 (C) Number falls on the 124th position is 223564 (D) The position of the number 321546 is 261 3. There all 10 questions, each question is either True or False. Number of diff. sequences of incorrect answers is equal to : (A) No. of ways in which a normal coin tossed 10 times would fall in a definite order if both heads and tails are present. (B) No. of ways in which a multiple choice guestion containing 10 alternatives with one or more than one correct alternatives, can be answered. (C) No. of ways in which it is possible to draw a sum of money with 10 coins of different donominations taken some or all at time. (D) No. of different selections of 10 indistinguishable things taken some or all at a time. 4.2 5 Indian & 5 American couples meet at a party & shake hands. If no wife shakes hands with her husband & no Indian wife shakes hands with a male, then the number of hand shakes that takes place in the party is m then (A) m = 135(B) m is divisible by 5 (C) m is divisible by 7 (D) m is divisible by 3 The coefficient of x^4 in $\left(\frac{1+x}{1-x}\right)^2$, |x| < 1, is 5. (A) 4 (C) $10 + {}^{4}C_{2}$ (B) -4 (D) 16 In the expansion of $(x + y + z)^{25}$ (A) every term is of the form ${}^{25}C_r$. ${}^{r}C_k$. x^{25-r} . y^{r-k} . z^k 6. the coefficient of x8 y9 z9 is 0 (B) (C) the number of terms is 325 (D) none of these 7.2 If S1, S2, S3,, S2n are the sums of infinite geometric series whose first terms are respectively 1 , 2, 3,, 2n and common ratio are respectively, $\frac{1}{2}, \frac{1}{3}, \dots, \frac{1}{2n+1}$, find the value of $S_{1^2} + S_{2^2} + \dots + S_{2n-1}^2$. Match the column : 8.2 Column II Column I If x, y, z be positive real numbers such that $log_{(2x)} z = 3$, (A) (p) 10 $log_{(5y)} z = 6$ and $log_{(xy)} z = 2/3$, then the value of z is in the form of m/n in lowest form then (n - m) is equal to (B) Let $0 \le a, b, c, d \le \pi$, when b & c are not complementary 6 (q) such that $2 \cos a + 6 \cos b + 7 \cos c + 9 \cos d = 0$ and, $2 \sin a - 6 \sin b + 7 \sin c - 9 \sin d = 0$ If $\frac{\cos(a+d)}{\cos(b+c)} = \frac{m}{n}$, where m & n are relatively prime positive numbers, then the value of (m + n) is equal to (C) The range of values of x for which the equation $x^2 - x + \sin^2 \alpha = 0$ (r) 1 have real solutions for all real values of α , is [a, b], then a + b equals (D) The value of $64\sqrt{3} \sin\frac{\pi}{48} \cos\frac{\pi}{48} \cos\frac{\pi}{24} \cos\frac{\pi}{12} \cos\frac{\pi}{6}$, is 9 (s) Reg. & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.)-324005 Resonance® Website: www.resonance.ac.in | E-mail : contact@resonance.ac.in Educating for better tomorrow PAGE NO.-32 Toll Free : 1800 258 5555 | CIN: U80302RJ2007PLC024029

ANSWERKEY

DPP	No. # B1			
11.	$\cos \theta = -\frac{5}{13}, \tan \theta = \frac{12}{5},$	$\theta = \frac{5}{12}$	DPP	No. # B8
15.	(i) $\frac{\pi}{2}, \frac{5\pi}{2}$	(ii) $\frac{\pi}{1}, \frac{11\pi}{1}$	8.	(i) [1, 3] ∪ {0}
	6 6 π 4π	$6^{\prime} 6^{\prime} 6^{\prime} 6^{\prime} 5 \pi - 7 \pi$		(ii) [−3, − 2] ∪ [2, 3]
	(iii) $\frac{\pi}{3}, \frac{4\pi}{3}$ ((iv) $\frac{5\pi}{4}$, $\frac{7\pi}{4}$	DPP	No. # B9
	(v) $\frac{2\pi}{2}, \frac{4\pi}{2}$	(vi) $\frac{5\pi}{2}$, $\frac{11\pi}{2}$.	6.	No
	3 3	6 6	7.	year 2005
DPP	No. # B2		8.	$x \in \left[\frac{3}{2}, 2\right)$
7.2a	0 8. 9		9.	$X \in \left[\frac{3}{2}, \infty\right)$
DPP	No. # B5			
13.	(i) 4		11.	(i) x = 2
				(ii) x = 3
	(ii) $\begin{cases} -(x^3 + 8) & \text{if } x \\ 0 & 0 \end{cases}$	K < −2		(iii) x = 0, 11
	(x^3+8) if x	< ≥ −2	12.	False
	$\begin{bmatrix} -3x-2 & x \end{bmatrix}$	< –3	13.	x = 0, 8
	(iii) $\begin{cases} -x+4 & , -3 \\ x+4 & 0 \end{cases}$	$\leq \mathbf{x} < 0$	14.	x = -10, -6, 0, 4
	3x+2, 03	$\geq X < 1$ $X \geq 1$	15.	$x = 0, \pm 4, 8$
14	(i) <u> </u>		DPP	No. # B10
14.	(1) $2 - \sqrt{3}$	-	6.	3, 7, 11, 15, 19,
	(ii) $-\pi + 3 + \sqrt{5} - \sqrt{5}$	3	7.	3059
	(iii) 4√3 – ∛2		8.	2007
15	125		חחח	2000
	14		UPP	NO. # B11
DPP	No. # B6		25.	$\frac{\cot 1^{\circ}}{90}$
7.	[0, 8/5] ∪ [5/2, ∞)		26.	max = 25, min = -25
8.	(i) x = -4, 2		27.	$max = \sqrt{13}$, $min = -\sqrt{13}$
	(ii) No solution		28.	no Solution
	(iii) x∈[–5, 1]		DPP	No. # B12
DPP	No. # B7			
8.	(i) [–3, 3]		7.	0
[(ii) [–1, 5]			
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DPP No. # B8

8.	(i) [1, 3] ∪ {0}
	(ii) [−3, − 2] ∪ [2, 3]
DPP	No. # B9
6.	No
7.	year 2005
8.	$x \in \left[\frac{3}{2}, 2\right)$
9.	$X \in \left[\frac{3}{2}, \infty\right)$
11.	(i) x = 2
	(ii) $x = 3$
10	$\begin{array}{ll} (III) & X = 0, \ I I \\ Falso \end{array}$
12.	x = 0.8
14.	x = -10, -6, 0, 4
15.	$x = 0, \pm 4, 8$
DPP	No. # B10
6.	3, 7, 11, 15, 19,
7.	3059
8.	2007 2008
DPP	No. # B11
25.	<u>cot 1⁰</u> 90
26.	max = 25, min = -25
27.	$max = \sqrt{13}$, $min = -\sqrt{13}$
28.	no Solution
DPP	No. # B12
7.	0

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DPP No. # B14

6. 2, 5, 8,....

- **7.** 4, 9, 14
- **8.** $(4, -2), (\frac{5}{2}, -5)$

10. $x \in (3/4, 1) \cup (1, \infty)$

(ii)

- 11. $x \in (-\infty, 0] \cup [4, \infty)$
- **12.** $x \in (-8, 0) \cup (0, 8)$

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$$13. \qquad x \in \left(\frac{1}{9}, 9\right)$$

15. (i)
$$\begin{cases} -(x^2 - 3x - 4) & \text{if } x \in (-1, 4) \\ x^2 - 3x - 4 & \text{if } x \in (-\infty, -1] \cup [4, \infty) \end{cases}$$

(ii)
$$\begin{cases} (x^2 - 7x + 10) & \text{if } x \le 2\\ -(x^2 - 7x + 10) & \text{if } 2 < x < 5 \end{cases}$$

DPP No. # B13





DPP No. # B16

8.
$$\frac{1}{2\sqrt{2}}$$

DPP No. # B17

7. 3

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8. $x = 2000, -\frac{1}{2000}$

DPP No. # B19

- **11.** (i) $x \in \phi$ (ii) x = 3
- **12.** $x \in (-\infty, 1] \cup [3, \infty)$
- **13.** (i) $x \in (-\infty, 2) \cup (5, \infty)$ (ii) $x \in \{1\}$ (iii) $(-5, -2) \cup (2, 3) \cup (3, 5)$
- **14.** 334
- **15.** $\sqrt{2}$

DPP No. # B20

7. <u>333.....3</u> n times

8. (A) Q; (B) R; (C) S; (D) Q

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- DPP No. # B21 13. $\mathbf{X} \in [2, \infty) \cup \{-2\}$ $X < -\frac{7}{3}$ 14. $x \in [-2, -1] \cup [1, 2]$ 15. DPP No. # B22 $(A) \rightarrow (r), (B) \rightarrow (p), (C) \rightarrow (q), (D) \rightarrow (s)$ 8. **DPP No. # B23** $\frac{(n+1)x^{n+2}-(n+2)x^{n+1}+1}{(1-x)^2}$ 6. $(A) \rightarrow (r), (B) \rightarrow (p), (C) \rightarrow (s), (D) \rightarrow (q)$ 7. $(A) \rightarrow (p), (B) \rightarrow (s), (C) \rightarrow (p), (D) \rightarrow (r)$ 8. DPP No. # B27 $\frac{n (2n+1) (4n+1)}{3} - 1$ 7.
 - $\textbf{8.} \qquad (A) \rightarrow (s), \, (B) \rightarrow (p), \, (C) \rightarrow (r), \, (D) \rightarrow (q)$



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