



SHRI VIDHYABHARATHI MATRIC HR.SEC.SCHOOL
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COMMON PUBLIC EXAMINATION -MAY -2022

XI - MATHEMATICS

TENTATIVE ANSWER KEY

PART - I

Q.No	CODE - A	CODE - B	MARKS
1.	(d) discontinuous	(c) $\frac{2}{3}$	1
2.	(d) A+B is symmetric	(d) $1-2^{-n}$	1
3.	(b) e^4	(a) $2x^2e^{\frac{x}{2}} - 8xe^{\frac{x}{2}} + 16e^{\frac{x}{2}} + c$	1
4.	(d) 18	(c) N	1
5.	(c) 10	(b) e^4	1
6.	(c) N	(d) ∞	1
7.	(c) does not exit	(d) discontinuous	1
8.	(d) ∞	(d) 5^5	1
9.	(c) $\frac{2x^3}{3} - x^2 + x + c$	(b) $-2\hat{i} - \hat{j} + 9\hat{k}$	1
10.	(a) 0.56	(a) $\sec \theta$	1
11.	(a) $\sec \theta$	(c) 8	1
12.	(b) $-2\hat{i} - \hat{j} + 9\hat{k}$	(d) 8	1
13.	(a) $2x^2e^{\frac{x}{2}} - 8xe^{\frac{x}{2}} + 16e^{\frac{x}{2}} + c$	(c) does not exit	1
14.	(d) 5^5	(d) $\frac{1}{2}, -2$	1
15.	(c) $\frac{2}{3}$	(a) 0.56	1
16.	(d) $\frac{1}{2}, -2$	(c) 10	1
17.	(d) $\vec{b} - \vec{a}$	(d) A+B is symmetric	1
18.	(d) 8	(d) $\vec{b} - \vec{a}$	1
19.	(c) 8	(d) 18	1
20.	(d) $1-2^{-n}$	(c) $\frac{2x^3}{3} - x^2 + x + c$	1

PART - II

21.	$ 2x-17 =3 \Rightarrow 2x-17=\pm 3$ $x=10, x=7$	2
22.	$\sin 50^\circ + \sin 20^\circ = 2 \sin \frac{50^\circ+20^\circ}{2} \cos \frac{50^\circ-20^\circ}{2}$ $= 2 \sin 35^\circ \cos 15^\circ$	2

23.	$\cos 135^\circ = \cos (180^\circ - 45^\circ) = -\cos 45^\circ = \frac{-1}{\sqrt{2}}$ Note: Any other method	2
24.	The total number of outcome = 2^5 (or) 32	2
25.	The first 4 terms of the sequence $a_1, a_2, a_3, a_4 = 1, 2, 3, 6$	2
26.	The equation of line is $\frac{y-1}{2} = \frac{x-1}{-3} \Rightarrow 2x+3y-5 = 0$	2
27.	$ A = \begin{vmatrix} 0 & \sin \alpha & \cos \alpha \\ \sin \alpha & 0 & \sin \beta \\ \cos \alpha & -\sin \beta & 0 \end{vmatrix} = 0$	2
28.	Let $\vec{a} = 5\hat{i} - 3\hat{j} + 4\hat{k}$ unit vector = $\pm \frac{5\hat{i} - 3\hat{j} + 4\hat{k}}{\sqrt{50}}$ (or) $\frac{5\hat{i} - 3\hat{j} + 4\hat{k}}{\sqrt{50}}$ (or) $\frac{-(5\hat{i} - 3\hat{j} + 4\hat{k})}{\sqrt{50}}$	2
29.	$\frac{dy}{dx} = 3x^2 + 10x + 3$	2
30.	$\int (x-11)^7 dx = \frac{(x-11)^8}{8} + c$	2
PART - III		
31.	$A = \{9, 13, 17, 21\} \Rightarrow n(A) = 4$ $n[p(A)] = 2^4 = 16$	1 2
32.	$\frac{x}{(x+3)(x-4)} = \frac{A}{x+3} + \frac{B}{x-4}$ $A = \frac{3}{7}, B = \frac{4}{7}$ $\frac{x}{(x+3)(x-4)} = \frac{3}{7(x+3)} + \frac{4}{7(x-4)}$	2 1
33.	The number of permutation = $\frac{13!}{2!2!13!}$	3
34.	$(x+2)^{-\frac{2}{3}} = 2^{-\frac{2}{3}} \left(1 + \frac{x}{2}\right)^{-\frac{2}{3}}$ $= 2^{-\frac{2}{3}} \left[1 - \frac{x}{3} + \frac{5x^2}{36} - \dots\right], x < 2$	1 2
35.	Distance = $\left \frac{5(1)+12(2)-3}{\sqrt{5^2+12^2}} \right $ $= \frac{26}{13} = 2$	2 1
36.	$\begin{vmatrix} 1 & 1 & 1 \\ x & y & z \\ x^2 & y^2 & z^2 \end{vmatrix} = \begin{vmatrix} 1 & 0 & 0 \\ x & y-x & z-x \\ x^2 & y^2-x^2 & z^2-x^2 \end{vmatrix} \begin{matrix} C_2 \rightarrow C_2 - C_1 \\ C_3 \rightarrow C_3 - C_1 \end{matrix}$ $= (x-y)(y-z)(z-x)$ Note: Any other method	1 2

37.	Let $\vec{a} = 5\hat{i} + 3\hat{j} + 4\hat{k}$ $\vec{b} = 6\hat{i} - 8\hat{j} - \hat{k}$ $\vec{a} \cdot \vec{b} = 2; \vec{a} = \sqrt{50}; \vec{b} = \sqrt{101}$ $\theta = \cos^{-1} \left(\frac{\sqrt{2}}{5\sqrt{101}} \right)$ Note: Any other method	1 2
38.	$x^2 + y^2 = 1$ Differentiate we get, $2x + 2y \frac{dy}{dx} = 0$ $\frac{dy}{dx} = -\frac{x}{y}$	2 1
39.	Given $f'(x) = 4x - 5$ Integrate we get $f(x) = 2x^2 - 5x + c \dots (1)$ when $f(2) = 1 \Rightarrow c = 3$ (1) becomes $f(x) = 2x^2 - 5x + 3$	1 1 1
40.	Let A be the event of die shows an even number Let B be the event of getting 6 $P(A) = \frac{3}{6}; P(A \cap B) = \frac{1}{6}$ $P(\text{getting } 6) = P(B/A) = \frac{P(A \cap B)}{P(A)} = \frac{1}{3}$	1 2
PART – IV		
41.(a)	$n(A) = 2250; n(B) = 1250; n(C) = 500$ $n(A \cap B) = 250; n(B \cap C) = 200; n(C \cap A) = 200; n(A \cap B \cap C) = 150$ $n(A \cap B' \cap C') = n(A) - n(A \cap B) - n(A \cap C) + n(A \cap B \cap C) = 1950$ Note: Any other method	2 3
41.(b)	Wkt $\int \frac{f'(x)}{f(x)} dx = \log f(x) + c$ $\int \frac{2x+4}{x^2+4x+6} dx = \log x^2+4x+6 + c$ Note: Any other method	5
42.(a)	$LHS = \frac{\cot(180^\circ + \theta) \sin(90^\circ - \theta) \cos(-\theta)}{\sin(270^\circ + \theta) \tan(-\theta) \operatorname{cosec}(360^\circ + \theta)}$ $= \frac{\cot \theta \cos \theta \cos \theta}{(-\cos \theta)(-\tan \theta) \operatorname{cosec} \theta}$ $= \cos^2 \theta \cot \theta$	3 2
42.(b)	$\int x \cos x dx = x \sin x - \int \sin x dx$ $= x \sin x + \cos x + c$	3 2

43.(a)	Let $p(n) = 1^3 + 2^3 + 3^3 + \dots + n^3 = \left[\frac{n(n+1)}{2} \right]^2$ Put $n = 1 \therefore p(1)$ is true Assume that $p(k) = 1^3 + 2^3 + 3^3 + \dots + k^3 = \left[\frac{k(k+1)}{2} \right]^2$ is true To prove $p(k+1) = 1^3 + 2^3 + 3^3 + \dots + k^3 + (k+1)^3 = \left[\frac{(k+1)(k+2)}{2} \right]^2$ $LHS = \left[\frac{k(k+1)}{2} \right]^2 + (k+1)^3$ $= \frac{(k+1)^2(k+2)^2}{4} = \left[\frac{(k+1)(k+2)}{2} \right]^2 \therefore p(k+1) \text{ is true}$ By mathematical induction $P(n)$ is true for $n \geq 1$	1 1 2 1
43.(b)	$\frac{dx}{dt} = a(1 - \cos t); \frac{dy}{dt} = a \sin t$ $\frac{dy}{dx} = \frac{\sin t}{1 - \cos t}$	3 2
44.(a)	$12x^2 + 2kxy + 2y^2 + 11x - 5y + 2 = 0$ $a=12; h=k; b=2; g=\frac{11}{2}; f=\frac{-5}{2}; c=2$ condition is $abc + 2fgh - af^2 - bg^2 - ch^2 = 0$ $4k^2 + 55k + 175 = 0$ $k = -5, \frac{-35}{4}$	1 2 2
44.(b)	$\lim_{x \rightarrow 0} \frac{\tan 2x}{\sin 5x} = \frac{2 \lim_{x \rightarrow 0} \frac{\tan 2x}{2x}}{5 \lim_{x \rightarrow 0} \frac{\sin 5x}{5x}}$ $= \frac{2}{5}$	3 2
45.(a)	$\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} \times \begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} = \begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} \times \begin{vmatrix} -a & -b & -c \\ c & a & b \\ b & c & a \end{vmatrix}$ $= \begin{vmatrix} 2bc - a^2 & c^2 & b^2 \\ c^2 & 2ca - b^2 & a^2 \\ b^2 & a^2 & 2ab - c^2 \end{vmatrix}$	2 3
45.(b)	$LHS = \log \left(\frac{75}{16} \right) - 2 \log \left(\frac{5}{9} \right) + \log \left(\frac{32}{243} \right)$ $= \log 75 - \log 16 - 2 \log 5 + 2 \log 9 + \log 32 - \log 243$ $= \log 3 + \log 25 - \log 16 - \log 25 + \log 81 + \log 16 + \log 2 - \log 81 - \log 3$ $= \log 2$ Note: Any other method	2 1 2

46.(a)	$\vec{AB}=2\hat{i}-3\hat{j}+6\hat{k} \Rightarrow \vec{AB} =7$ $\vec{BC}=6\hat{i}-2\hat{j}-3\hat{k} \Rightarrow \vec{BC} =7$ $\vec{CA}=-8\hat{i}+5\hat{j}-3\hat{k} \Rightarrow \vec{CA} =\sqrt{98}$ By Pythagoras theorem $CA^2 = AB^2 + BC^2$ $\therefore$ The given points form a right angle triangle	1 1 1 1 1
46.(b)	$\cos 15^\circ = \cos(45^\circ - 30^\circ) = \frac{1}{\sqrt{2}} \frac{\sqrt{3}}{2} + \frac{1}{\sqrt{2}} \frac{1}{2} = \frac{\sqrt{3}+1}{2\sqrt{2}}$ $\tan 165^\circ = \tan(120^\circ + 45^\circ) = \frac{1-\sqrt{3}}{1+\sqrt{3}}$	2 3
47.(a)	Let A_1, A_2 be urn -I and urn- II Let B be the event of selecting black ball $P(A_1) = \frac{1}{2}; P(B/A_1) = \frac{6}{10}$ and $P(A_2) = \frac{1}{2}; P(B/A_2) = \frac{2}{4}$ (i) $P(\text{The ball is black}) = P(A_1).P(B/A_1) + P(A_2).P(B/A_2)$ $= \frac{1}{2} \times \frac{6}{10} + \frac{1}{2} \times \frac{2}{4}$ $= \frac{11}{20}$ (ii) $P(A_1/B) = \frac{P(A_1)P(B/A_1)}{P(A_1)P(B/A_1) + P(A_2)P(B/A_2)}$ $= \frac{6}{11}$	1 2 2
47.(b)	The required form $x \cos \alpha + y \sin \alpha = p$ $\frac{\cos \alpha}{-\sqrt{3}} = \frac{\sin \alpha}{-1} = \frac{p}{4}$ $\cos \alpha = \frac{-\sqrt{3}}{2}, \sin \alpha = \frac{-1}{2}, p=2$ $\alpha = 210^\circ = \frac{7\pi}{6}$ $x \cos \frac{7\pi}{6} + y \sin \frac{7\pi}{6} = 2$	2 1 2

MARK ANALYSIS

(WITHOUT CHOICE)

PART	Questions	Total Questions	Book Back Questions	Interior/Creative Questions	Total Marks
I	1 Mark	20	18	2	20
II	2 Marks	10	7	3	20
III	3 Marks	10	8	2	30
IV	5 Marks	14	14	-	70
Total Marks			126	14	140
Percentage			90%	10%	100%

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ஸ்ரீ வித்யபாரதி

மெடரிக் மேல்நிலைப்பள்ளி (TM/EM)

சக்கராம்பாளையம், எலச்சிபாளையம், திருச்செங்கோடு (வ), நாமக்கல் (மா) - 637 202.

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கனவுகள் மெய்ய்பட வேண்டும்.

தொடர்ந்து 12 ஆண்டுகளாக +2 பொதுத் தேர்வில் மாநில அளவில் சிறப்பிடம் பெற்ற ஒரே பள்ளி...

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ஸ்ரீ வித்யபாரதி NEET / JEE கோச்சிங் சென்டர்

2017-2018
540
720

2018-2019
560
720

2019-2020
575
720

2021-2022
621
720

ஸ்ரீ வித்யபாரதியின் கடந்த 5 ஆண்டு சாதனைகள்

+2

2016-2017
1186
1200

2017-2018
1177
1200

2018-2019
583
600

2019-2020
587
600

2020-2021
591.56
600

+1

2017-2018
573
600

2018-2019
புதிய பாடத்திட்டத்தில்
தேர்வெழுதிய முதல்
ஆண்டிலேயே
மாவட்டத்தில்
முதலிடம்

2018-2019
578
600

2019-2020
571
600

10th

2015-2016
497
500

2016-2017
496
500

2017-2018
494
500

2018-2019
492
500

2019-2020
498
500

2022 - 23 ஆம் கல்வியாண்டிற்கான

LKG முதல் +1 வரை அட்மிஷன் முன்பதிவு நடைபெறுகிறது.