

**TNTET (RE) – OCTOBER - 2012**

**PAPER II (Maths & Science) - KEY ANSWERS (With Maths Solutions)**

*Exclusively Prepared For*

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Question No.	Question Booklet Series Code			
	A	B	C	D
1	B	C	B	A
2	A	D	B	A
3	B	B	D	C
4	B	A	C	A
5	C	D	A	A
6	B	A	C	B
7	B	A	D	A
8	D	C	B	B
9	D	A	A	B
10	D	A	D	C
11	A	B	B	A
12	A	A	B	D
13	C	B	D	D
14	A	B	D	C
15	A	C	D	D
16	B	A	A	C
17	B	D	A	D
18	D	D	C	B
19	C	C	A	A
20	A	D	A	D
21	C	B	A	B
22	D	B	D	B
23	B	D	D	D
24	A	C	C	D

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25	D	A	D	D
26	A	B	B	B
27	D	B	A	B
28	D	D	B	D
29	C	D	B	C
30	D	D	C	A
31	D	C	C	B
32	D	A	A	B
33	B	B	C	B
34	D	C	B	C
35	B	D	D	A
36	B	C	C	D
37	B	A	D	C
38	B	C	B	A
39	C	B	D	A
40	A	D	B	B
41	C	D	B	C
42	A	C	B	D
43	B	A	B	B
44	D	A	C	D
45	A	B	A	B
46	C	C	C	C
47	A	D	A	A
48	C	B	B	B
49	B	D	D	C
50	D	B	A	D
51	D	C	C	C
52	C	A	A	A
53	A	B	B	C
54	A	D	C	B
55	B	A	D	D
56	C	B	D	C
57	A	B	C	A
58	B	B	A	B
59	C	C	A	D

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60	D	A	B	A
61	A	C	B	A
62	A	B	C	B
63	C	D	D	D
64	B	A	C	C
65	A	A	B	B
66	A	B	C	C
67	B	C	A	B
68	D	A	A	C
69	C	C	C	A
70	B	B	B	A
71	C	C	A	B
72	B	D	B	C
73	D	C	A	A
74	A	B	D	C
75	A	C	C	B
76	B	B	D	C
77	C	A	C	D
78	A	D	B	C
79	C	C	D	B
80	B	D	A	C
81	C	A	A	B
82	D	A	B	A
83	C	C	D	D
84	B	B	C	C
85	C	A	B	D
86	B	A	A	A
87	A	B	B	A
88	D	D	C	C
89	C	C	A	B
90	D	B	C	A
91	A	B	B	A
92	A	B	D	D
93	B	D	C	A
94	B	D	D	B

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95	C	C	B	A
96	A	A	C	D
97	C	D	C	B
98	C	A	B	A
99	B	B	Correct option not available	A
100	D	A	A	B
101	D	C	A	D
102	A	A	C	D
103	B	C	C	C
104	B	D	B	B
105	A	D	C	C
106	B	D	D	B
107	A	B	A	D
108	C	A	B	C
109	C	A	B	D
110	D	B	A	B
111	C	B	A	C
112	A	A	C	C
113	C	C	C	B
114	D	C	B	Correct option not available
115	D	D	D	A
116	B	D	A	A
117	B	D	A	C
118	D	C	B	C
119	D	B	B	D
120	C	C	C	C
121	A	D	A	B
122	C	A	D	B
123	C	B	A	D
124	B	B	B	D
125	C	A	A	C
126	C	B	D	C
127	C	D	B	A
128	B	C	A	C
129	Correct option not available	D	A	D

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130	A	B	B	D
131	B	A	D	B
132	D	C	D	A
133	C	C	C	C
134	D	B	B	C
135	B	D	C	D
136	D	C	B	D
137	D	C	B	A
138	C	B	D	B
139	B	Correct option not available	D	B
140	C	A	C	A
141	D	A	C	A
142	B	A	A	C
143	A	B	C	C
144	A	B	D	B
145	B	C	D	D
146	A	A	B	A
147	D	C	A	A
148	A	C	C	B
149	B	B	C	B
150	A	C	D	C

### TNTET (RE) Oct. 2012 Paper 2 Mathematics question solutions

Question series code : C

C- 96.

The value of  $\frac{(67.542)^2 - (32.458)^2}{73.458 - 40.374}$

Use the identity  $a^2 - b^2 = (a+b)(a-b)$

$$\frac{(67.542)^2 - (32.458)^2}{73.458 - 40.374} = \frac{(67.542 + 32.458)(67.542 - 32.458)}{35.084} = \frac{100 \times 35.084}{35.084} = 100 \quad (c)$$

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C - 97.

$$\frac{(13)^2 + (7)^2}{(13)^2 + (7)^2 - x} = 20$$

Use the identity  $a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$

$$\frac{(13)^2 + (7)^2}{(13)^2 + (7)^2 - x} = 20$$

$$(13 + 7)\{13^2 + 7^2 - (13)(17)\} = 20[13^2 + 7^2 - x]$$

$$20[13^2 + 7^2 - 91] = 20[13^2 + 7^2 - x]$$

$$x = 91 \quad (\text{C})$$

C- 98

Let x and y are the two numbers

Product  $xy = 40$

sum of the squares  $= x^2 + y^2 = 106$

$$(x + y)^2 = x^2 + y^2 + 2xy$$

$$= 106 + 2(40) = 186$$

$$x + y = 14$$

$$xy = 40$$

solving the above two equations  $x = 9; y = 5 \quad (\text{B})$

C- 99.  $x = 5 + 2\sqrt{6}$  then the value of  $\frac{1}{x} = 5 - 2\sqrt{6}$

The value of  $\frac{(x-1)}{x} = 1 - \frac{1}{x}$

$$= 1 - (5 - 2\sqrt{6}) = -4 + 2\sqrt{6}$$

No choice is equal to the answer . answer wrong

C-100.

Let P be the required mark for pass

Mark scored by A = 30% which is 15 less than the passing minimum

$$\text{i.e., } P - 15 = 0.3x \Rightarrow 10P - 150 = 3x \text{ ----} \rightarrow (1)$$

Mark scored by B = 40% which is 35 more than the passing minimum

$$\text{i.e., } P + 35 = 0.4x \Rightarrow 10P + 350 = 4x \text{ ---} \rightarrow (2)$$

Divide (2) by (1)

$$\frac{10P + 350}{10P - 150} = \frac{4}{3}$$

$$30P + 1050 = 40P - 600$$

$$10P = 1050 - 600 = 450$$

$$P = 45 \quad \text{Choice (C)}$$

C-101 .

The unit digit value of  $(264)^{102} + (264)^{103}$

$$(264)^{102} [1 + 264] = (264)^{102} [265]$$

$$= [(264)^{51}]^2 (265)$$

The square of even number is even.

When even number is multiplied by a number ending with 5, the unit digit of the product is zero

C-102.

Let the consignment value is  $x$  and its cost price is  $a$

$\frac{2}{3}$  of consignment sold at profit of 5%

$$\text{profit \%} = \frac{\text{profit}}{\text{cost price}} \times 100$$

$$\frac{5}{100} = \frac{\text{profit}}{\frac{2}{3}a}$$

$$\text{profit} = (5x \frac{2}{3} a) / 100 = \frac{10a}{300}$$

$$\text{Loss} = \frac{2a}{300}$$

$$\text{Net profit} = 400$$

$$\text{profit} - \text{loss} = 400$$

$$\frac{10a}{300} - \frac{2a}{300} = 400$$

$$8a = 400(300)$$

$$8a = 120000 \implies a = 15000$$

C- 103.

Three numbers are in the ratio 3 : 4 : 5

The numbers are  $3x$ ,  $4x$ ,  $5x$

Sum of the squares = 1250

$$(3x)^2 + (4x)^2 + (5x)^2 = 1250$$

$$9x^2 + 16x^2 + 25x^2 = 1250$$

$$50x^2 = 1250 \implies x^2 = 25$$

$$x = 5,$$

Hence the numbers are 15, 20, 25

Sum of the numbers  $15 + 20 + 25 = 60$

C-104

$$A = P \left( 1 + \frac{r}{100} \right)^n$$

$$r = 5 \quad 3P = P \left( 1 + \frac{5}{100} \right)^n$$

$$3 = \left( \frac{21}{20} \right)^n \Rightarrow n = 22 \frac{1}{2} Y$$

C- 105

circumference of the circle = circumference of square

$$2\pi r = 4a \Rightarrow a = \frac{\pi r}{2}$$

$$\frac{\text{Area of the circle}}{\text{Area of the square}} = \frac{\pi r^2}{a^2} = \frac{\pi r^2}{\left( \frac{\pi r}{2} \right)^2} = 4 : \pi$$

$$4 : \frac{22}{7} \Rightarrow 14 : 11$$

choice (C)

C- 111.

Let the first investment be  $P_1$  @ the rate of 6 % for 2years

Second investment is  $P_2$  @ the rate of 7% for 2 years

$$\text{Also } \frac{P_1}{4} = \frac{P_2}{5} \Rightarrow P_2 = \frac{5P_1}{4}$$

Net income = 354

$$I_1 + I_2 = 354$$

$$\frac{P_1 n r_1}{100} + \frac{P_2 n r_2}{100} = 354$$

$$12P_1 + 17.5P_2 = 35400 \quad (\text{after substituting the value of } P_0)$$

$$P_1 = \frac{354000}{295}$$

$$P_1 = 1200, P_2 = \frac{5 \times 1200}{4} = 1500$$

$$\text{Sum of the investment} = P_1 + P_2 = 1200 + 1500 = 2700$$

Choice (A)

C -112. Let P be the principle,

For 5 years  $A = 2P$

$$2P = P \left( 1 + \frac{r}{100} \right)^5 \Rightarrow 2 = \left( 1 + \frac{r}{100} \right)^5$$

Maths Solution Attached In Last Page



For n years  $A = 8P$

$$8P = P \left( 1 + \frac{r}{100} \right)^n$$

$$8 = \left( 1 + \frac{r}{100} \right)^n$$

$$2^3 = \left( 1 + \frac{r}{100} \right)^n$$

$$\left[ \left( 1 + \frac{r}{100} \right)^5 \right]^3 = \left( 1 + \frac{r}{100} \right)^n$$

$$n = 15$$

C-113.

new length  $l' = l + 20\% \text{ of } l$        $b' = b + 20\% \text{ of } b$

$$l' = \left( \frac{120}{100} \right) l$$

$$b' = \left( \frac{120}{100} \right) b$$

$$\text{New area} = A' = l' b' = \frac{144}{100} lb$$

$$\text{Change in area} = \frac{144}{100} lb - lb = \frac{44}{100} lb$$

$$\% \text{ increase in Area} = \frac{\frac{44}{100} lb}{lb} \times 100 = 44 \text{ Choice (C)}$$

c- 114.

Let x, y, be the no of boys and girls respectively

$$x + y = 100 \text{ ---} \rightarrow (1)$$

From data,

$$3.6x + 2.4 y = 312$$

$$36x + 24 y = 3120$$

$$3x + 2y = 260 \text{ ----} \rightarrow (2)$$

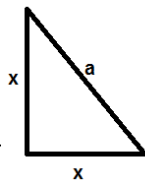
Solving (1) and (2)  $y = 40$  Choice (B)

C- 115

Sum of the term is 5

C-116.

Perimeter of the isosceles right triangle is  $6 + 3\sqrt{2}$



$$x + x + a = 6 + 3\sqrt{2}$$

$$2x + a = 6 + 3\sqrt{2}$$

$$\text{Also } x^2 + x^2 = a^2 \rightarrow a^2 = 2x^2$$

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$$a = x\sqrt{2}$$

$$2x + x\sqrt{2} = 6 + 3\sqrt{2}$$

$$2x + x\sqrt{2} = 2(3) + 3\sqrt{2}$$

$$x = 3$$

$$\text{Area of the triangle} = \frac{1}{2}bh = \frac{1}{2}x^2 = \frac{9}{2} = 4.5m^2$$

C-117

By trial method applying Division algorithm  
Divident = Q(Divisor) + Remainder

A)  $43 = 10 \times 4 + 3$  ;  $91 = 22 \times 4 + 3$  ;  $183 = 45 \times 4 + 3$   $\rightarrow$  remainder equal  
for other choices remainders are not equal

Choice (A)

C- 118.

$$a + b + c = 13 ; a^2 + b^2 + c^2 = 69$$

Use the identity  $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$

$$(13)^2 = 69 + 2(ab + bc + ca)$$

$$169 = 69 + 2(ab + bc + ca)$$

$$100 = 2(ab + bc + ca)$$

$$ab + bc + ca = 50 \quad \text{Choice (B)}$$

C- 119.

$$4^{61} + 4^{62} + 4^{63} + 4^{64} = 4^{61} [1 + 4 + 16 + 64]$$

$$= 4^{61} [85]$$

$$= 4^{60} \times 4 \times 85 = 4^{60} \times 340$$

It is divisible by 10 Choice (B)

C- 120

Choice C

WISH YOU ALL SUCCESS