(1) cracking
(2) polymerisation
(3) reduction
(4) distillation

74. Polythene is industrially prepared by the polymerisation of
(1) methane (2) acetylene
(3) ethylene (4) ethane

75. Natural rubber is a polymer of
(1) ethylene
(2) vinyl chloride
(3) isoprene
(4) styrene

MATHEMATICS

76. If $\log\left(\frac{5c}{a}\right)$, $\log\left(\frac{3b}{5c}\right)$ and $\log\left(\frac{a}{3b}\right)$ are in AP, where a, b, c are the lengths of sides of
(1) an isosceles triangle
(2) an equilateral triangle
(3) a scalene triangle
(4) None of these

77. The solution set of
$$\left|\frac{x+1}{x}\right| + |x+1| = \frac{(x+1)^2}{|x|}$$ is
(1) $\{x \mid x \geq 0\}$
(2) $\{x \mid x > 0 \cup \{-1\}$
(3) $\{-1, 1\}$
(4) $\{x \mid x \geq 1$ or $x \leq -1$

78. If $z(2 - i2\sqrt{3})^2 = i(\sqrt{3} + i)^4$ then amplitude of z is
(1) $\frac{5\pi}{6}$ (2) $\frac{\pi}{6}$
(3) $\frac{\pi}{6}$ (4) $\frac{7\pi}{6}$

79. The total number of ways in which six '+' and four '–' signs can be arranged in a line such that no two '–' signs occur together is
(1) $\frac{7!}{3!}$ (2) $6! \times \frac{7!}{3!}$
(3) 35 (4) None of these

80. If α, β are non real numbers satisfying $x^3 - 1 = 0$ then the value of
$$\begin{vmatrix} \lambda+1 & \alpha & \beta \\ \alpha & \lambda+\beta & 1 \\ \beta & 1 & \lambda+\alpha \end{vmatrix}$$ is equal to
(1) 0 (2) λ^3
(3) $\lambda^3 + 1$ (4) None of these

81. The sum of the numerical coefficients in the expansion of $\left(\frac{1}{x} + 2x\right)^n$ is equal to 6561. The constant term in the expansion is
(1) 1
(2) 16.8_{C_4}
(3) 2^{12}
(4) None of these

82. If $A = \begin{vmatrix} 4 & -1 & -4 \\ 3 & 0 & -4 \\ 3 & -1 & -3 \end{vmatrix}$ then A^2 is equal to
(1) 4 (2) I
(3) A^T (4) None of these

83. If $\frac{2\sin\alpha}{1+\sin\alpha+\cos\alpha} = \lambda$ then $\frac{1+\sin\alpha-\cos\alpha}{1+\sin\alpha}$ is equal to
(1) $\frac{1}{\lambda}$ (2) λ
(3) $1 - \lambda$ (4) $1 + \lambda$

84. If $2\tan^2 x - 5\sec x$ is equal to 1 for exactly 7 distinct values of $x \in \left[0, \frac{n\pi}{2}\right]$, $n \in N$, then the greatest value of n is
(1) 6 (2) 12
(3) 13 (4) 15

85. The number of real solutions of
$\tan^{-1}\sqrt{x(x+1)} + \sin^{-1}\sqrt{x^2+x+1} = \frac{\pi}{2}$ is
(1) zero (2) one
(3) two (4) infinite

86. In a ΔABC, $a = 5$, $b = 4$ and $\tan\frac{c}{2} = \sqrt{\frac{7}{9}}$. The side c os
(1) 6 (2) 3
(3) 2 (4) None of these

87. If the line segment joining (2, 3) and (–1, 2) is divided internally in the ratio 3 : 4 by line $x + 2y = k$ then k is
(1) $\frac{41}{7}$ (2) $\frac{5}{7}$
(3) $\frac{36}{7}$ (4) $\frac{31}{7}$

88. Two lines represented by the equation $x^2 - y^2 - 2x + 1 = 0$ are rotated about the point (1, 0), the line making the bigger angle with the positive direction of the x-axis being turned by 45° in the clock wise sense and the other line being turned by 15° in the anticlockwise sense. The combined equation of the pair of lines in their new positions is
(1) $\sqrt{3x^2} - xy + 2\sqrt{3x} - y + \sqrt{3} = 0$
(2) $\sqrt{3x^2} - xy - 2\sqrt{3x} + y + \sqrt{3} = 0$
(3) $\sqrt{3x^2} - xy - 2\sqrt{3x} + \sqrt{3} = 0$
(4) None of these

89. The equation of the circumcircle of the regular hexagon whose two consecutive vertices have the coordinates (–1, 0) and (1, 0) and which lies wholly above the x-axis, is
(1) $x^2 + y^2 - 2\sqrt{3}y - 1 = 0$
(2) $x^2 + y^2 - \sqrt{3}y - 1 = 0$
(3) $x^2 + y^2 - 2\sqrt{3}x - 1 = 0$
(4) None of these

90. The tangents to the pasabola $y^2 - 4x$ at the point (1, 2) and (4, 4) meet on the line
(1) $x = 3$ (2) $x + y = 4$
(3) $y = 3$ (4) None of these

91. For the hyperbola $\frac{x^2}{\cos^2\alpha} - \frac{y^2}{\sin^2\alpha} = 1$, which of the following remains constant when α varies ?
(1) abscissae of vertices
(2) abscissae of foci
(3) eccentricity
(4) directrix

92. The range of the function $f(x) = x^2 + \frac{1}{x^2+1}$ is
(1) $[1, +\infty]$ (2) $[2, +\infty]$
(3) $\left[\frac{3}{2}, +\infty\right)$ (4) None of these

93. If $n = f(x^3)$, $N = g(x^2)$, $f'(x) = \cos x$ and $g'(x) = \sin x$ then $\frac{du}{dv}$ is
(1) $\frac{3}{2}x.\cos x^3.\text{cosec}x^2$

(2) $\frac{2}{3}\sin x^3.\sin x^2$

(3) $\tan x$

(4) None of these

94. $\lim_{x\to 0}\left\{\frac{\log_e(1+x)}{x^2}+\frac{x-1}{x}\right\}$ is equal to

(1) $\frac{1}{2}$

(2) $-\frac{1}{2}$

(3) 1

(4) None of these

95. If $f(x) = px^2 - q, x \in [0, 1)$
$x + 1, x \in [1, 2]$
and $f(1) = 2$ then the value of the pair (p, q) for which $f(x)$ cannot be continuous at $x = 1$ is

(1) (2, 0) (2) (1, 1)
(3) (4, 2) (4) (1, 1)

96. x and y are the sides of two squares such that $y = x - x^2$. The rate of change of the area of the second square with respect to that of the first square is

(1) $2(1 - x^2)\,x$
(2) $2x^2 - 3x + 1$
(3) $2(2x^2 - 3x + 1)$
(4) None of these

97. Let $f(x) = \frac{a}{x} + x^2$. If it has a maximum of $x = -3$ then a is

(1) -1 (2) 16
(3) 1 (4) None of these

98. Let $f: R \to R$ be a function such that $f(x) = ax + 3\sin x + 4\cos x$. Then $f(x)$ is invertible if.

(1) $a \in (-5, 5)$
(2) $a \in (-\infty, -5)$
(3) $a \in (5, +\infty)$
(4) None of these

99. $\int e^{-x}(1 - \tan x)\sec x\,dx$ is equal to

(1) $e^{-x}\sec x + c$
(2) $e^{-x}\tan x + c$
(3) $-e^{-x}\tan x + c$
(4) None of these

100. Let $a_n = \int_0^{\frac{\pi}{4}} \tan^n x\,dx$. Then $a_2 + a_4$, $a_3 + a_5$, $a_4 + a_6$ are in

(1) AP (2) GP
(3) HP
(4) None of these

ANSWERS

1.(1)	**2.**(3)	**3.**(1)	**4.**(3)
5.(2)	**6.**(1)	**7.**(2)	**8.**(4)
9.(4)	**10.**(4)	**11.**(1)	**12.**(3)
13.(4)	**14.**(2)	**15.**(2)	**16.**(3)
17.(1)	**18.**(1)	**19.**(3)	**20.**(4)
21.(1)	**22.**(3)	**23.**(2)	**24.**(4)
25.(2)	**26.**(3)	**27.**(3)	**28.**(3)
29.(4)	**30.**(2)	**31.**(3)	**32.**(1)
33.(3)	**34.**(3)	**35.**(1)	**36.**(4)
37.(3)	**38.**(1)	**39.**(1)	**40.**(2)
41.(2)	**42.**(3)	**43.**(4)	**44.**(3)
45.(3)	**46.**(1)	**47.**(1)	**48.**(2)
49.(2)	**50.**(2)	**51.**(3)	**52.**(4)
53.(4)	**54.**(4)	**55.**(1)	**56.**(2)
57.(4)	**58.**(1)	**59.**(4)	**60.**(3)
61.(4)	**62.**(2)	**63.**(3)	**64.**(2)
65.(3)	**66.**(2)	**67.**(3)	**68.**(4)
69.(2)	**70.**(2)	**71.**(2)	**72.**(3)
73.(2)	**74.**(3)	**75.**(3)	**76.**(4)
77.(1)	**78.**(4)	**79.**(3)	**80.**(2)
81.(2)	**82.**(2)	**83.**(2)	**84.**(4)
85.(3)	**86.**(1)	**87.**(1)	**88.**(2)
89.(1)	**90.**(3)	**91.**(2)	**92.**(1)
93.(1)	**94.**(1)	**95.**(4)	**96.**(2)
97.(4)	**98.**(1)	**99.**(4)	**100.**(3)

EXPLANATIONS

1. (1) The Simple Past is used to indicate an action completed in the past. It often occurs with adverbs or adverbial phrases of past time. For example,

Sita has written a novel last year. **–Incorrect**
↓
Present Perfect
Sita wrote a novel last year. **–Correct**
↓
Simple Past

Therefore, I passed.....is the correct sentence.

2. (3) In the sentence 'isn't it' should be replaced by 'does not it'.

3. (1) Until and unless are negative. Hence, 'not' should never be used to express negative sense. For example,

Unless he does not labour hard, he cannot succeed. **Incorrect**
↓ ↓
Negative Negative
Unless he labours hard, he cannot succeed. **–Correct**
↓ ↓
Negative Affirmative
If he does not labour hard, he cannot succeed. **–Correct**

Therefore, unless you give.....is the correct sentence.

4. (3) The word **Indictment (Noun)** means : accusation, allegation, charge, impeachment, incrimination, prosecution, etc. Its synonym is **allegation**.

5. (2) The word **Ostensible (Adjective)** means : alleged, apparent, outward, plausible, presumed, pretended, professed, supposed, etc. Its synonym is **pretended**.

6. (1) The word **Nerveless (Adjective)** means : afraid, cowardly, debilitated, enervated, feeble, nervous, timid, weak, etc. Its synonym is **feeble**.

7. (2) The word **Far-reaching (Adjective)** means : broad, extensive, important, momentous, significant, sweeping, widespread, etc. Its antonym is **insignificant**.

8. (4) The word **Meaningful (Adjective)** means : expressive, important, pointed, purposeful, relevant, serious, significant, speaking, suggestive, useful, valid, warning, worthwhile, etc. Its antonym is **worthless**.

9. (4) The word **Unscrupulous (Adjective)** means : corrupt, crooked, discreditable, dishonest, dishonourable, immoral, improper, ruthless, shameless, unethical, unprincipled, etc. Its antonym is **ethical**.

76. (4) $2\log\frac{3b}{5c} = \log\frac{5c}{a} + \log\frac{a}{3b}$

$\Rightarrow \left(\frac{3b}{5c}\right)^2 = \frac{5c}{a}\cdot\frac{a}{3b} \Rightarrow 3b = 5c$

Also $b^2 = ac$. so, $9ac = 25c^2$ or $9a = 25c$.

$\therefore \frac{9a}{5} = 5c = 3b$

$\Rightarrow \frac{a}{5} = \frac{b}{3} = \frac{c}{\frac{9}{5}} \Rightarrow b + c < a$

78. (4) $z = \frac{i\left(\sqrt{3}+i\right)^4}{4\left(1-\sqrt{3}i\right)^2} = \frac{i}{4}\cdot$

$\frac{\left(2+2\sqrt{3}i\right)^2}{-2-2\sqrt{3}i} = \frac{i\left(-2+2\sqrt{3}i\right)}{2\left(-1-\sqrt{3}i\right)}$

$= \frac{\sqrt{3}+i}{1+\sqrt{3}i} = \frac{\left(\sqrt{3}+i\right)\left(1-\sqrt{3}i\right)}{1+3}$

$$= \frac{2\sqrt{3} - 2i}{4} = \frac{\sqrt{3}}{2} - \frac{i}{2}$$

$$\therefore \text{amp } z = -\tan^{-1}\frac{1}{\sqrt{3}}$$

79. (3) '–' Sings will be put between two '+' sings or at the two ends. There are 7 places for four '–' sings. So, the required number of ways

$$= {}^{7}C_4 = \frac{7!}{4!3!}$$

(There being no arrangement as the '+' sings are identical aswell as '–' sings are identical)

80. (2) $\Delta = (\lambda + 1 + \alpha + \beta)$

$$\begin{vmatrix} 1 & 1 \\ \lambda + B & 1 \\ 1 & \lambda + \alpha \end{vmatrix}$$

using $R_1 \to R_1 + R_2 + R_3$

$$= \lambda \begin{vmatrix} 1 & 0 & 0 \\ \alpha & \lambda + \beta - \alpha & 1 - \alpha \\ \beta & 1 - \beta & \lambda + \alpha - \beta \end{vmatrix}$$

$$= \lambda \begin{vmatrix} \lambda + \beta - \alpha & 1 - \alpha \\ 1 - \beta & \lambda + \alpha - \beta \end{vmatrix}$$

$$= \lambda\left\{\lambda^2 - (\alpha^2 - \beta^2) - (1-\alpha)(1-\beta)\right\}$$

$= \lambda^3 - \lambda\{\alpha^2 + \beta^2 - 2\alpha\beta + 1 - \alpha - \beta + \alpha\beta\} = 0$

because $\alpha^2 = \beta$, $\beta^2 = \alpha$, $\alpha\beta = 1$

81. (2) The sum of all the numerical coefficients in the expansion is obtained by putting $x = 1$ in the expression

$$\therefore \left(\frac{1}{1} + 2.1\right)^n = 6561$$

$\therefore 3^n = 3^8 \therefore n = 8$

$$\text{In } \left(\frac{1}{x} + 2x\right)^8, \; t_r + 1$$

$$= {}^{8}C_r \cdot \left(\frac{1}{x}\right)^{8-r} \cdot (2x)^r$$

This is constant if $2r - 8 = 0$, i.e., $r = 4$

$\therefore$ The constant term

$= t_5 = {}^{8}C_4 \cdot 2^4$

83. (2) $\dfrac{1 + \sin\alpha - \cos\alpha}{1 + \sin\alpha}$

$$= \frac{(1 - \sin\alpha)^2 - \cos^2\alpha}{1 + \sin\alpha(1 + \sin\alpha + \cos\alpha)}$$

$$= \frac{2\sin\alpha + 2\sin^2\alpha}{(1 + \sin\alpha)(1 + \sin\alpha + \cos\alpha)}$$

$$= \frac{2\sin\alpha}{1 + \sin\alpha + \cos\alpha} = \lambda$$

84. (4) Here, $(2\sec x + 1)(\sec x - 3) = 0$; but $|\sec x| \geq 1$. So, $\sec x = 3$, which gives two values of θ in each of $[0, 2\pi]$, $[2\pi, 4\pi]$, $[4\pi, 6\pi]$, and value in $\left(6\pi, 6\pi + \frac{3\pi}{2}\right]$

85. (3) Clearly, $x(x + 1) \geq 0$ and $x^2 + x + 1 \leq 1$. Together they imply $x(x + 1) = 0$.

$\therefore x = 0, -1$. When $x = 0$,

$$\text{LHS} = \tan_0^{-1} + \sin_1^{-1} = \frac{\pi}{2}$$

when $x = -1$, LHS

$= \tan^{-1} 0$

$+ \sin^{-1}\sqrt{1 - 1 + 1} = 0 + \sin^{-1} 1$

$= \dfrac{\pi}{2}$

86. (1) $\tan^2\dfrac{C}{2} = \dfrac{(s-a)(s-b)}{s(s-c)}$

$$= \frac{(9 + c - 10)(10 + c - 8)}{(9 + c)(9 - c)}$$

$$= \frac{c^2 - 1}{81 - c^2} \therefore \frac{7}{9} = \frac{c^2 - 1}{81 - c^2}$$

$\Rightarrow c = 6$

90. (3) The tangents to the parabola $y^2 = 49x$ at the point $(at_1^2, 2at_1)$ and $at_2^2, 2at_2)$ meet at $(at_1t_2, a(t_1 + t_2))$. Here $a = 1$, $t_1 = 1$, $t_2 = 2$

So, they meet at (2, 3), which is one the line $y = 3$

91. (2) Here, $a = \cos\alpha$; $b = \sin\alpha$.

$b^2 = a^2(e^2 - 1) \Rightarrow \sin^2\alpha = \cos^2\alpha(e^2 - 1) \Rightarrow e^2 - 1 = \tan^2\alpha$

$\Rightarrow e = \sec\alpha$

So, $ae = 1$

$\therefore$ abscissae of foci $= \pm ae = \pm 1$

92. (1) $f(x) = x^2 + \dfrac{1}{x^2 + 1} - 1 + 1$

$$= 1 + x^2 - \frac{x^2}{1 + x^2}$$

$$= 1 + x^2\left(1 - \frac{1}{1 + x^2}\right) \geq 1 \text{ for all}$$

$x \in R$

The domain f = R. Clearly, as x increases $f(x)$ increases.

93. (1) $\dfrac{du}{dv} = \dfrac{\frac{du}{dx}}{\frac{dv}{dx}}$

$$= \frac{f'(x^3).3x^2}{g'(x^2).2x} = \frac{\cos x^3 . 3x^2}{\sin x^2 . 2x}$$

$$= \frac{3}{2} x \cos x^3 \cdot \text{cosec } x^2$$

94. (1) Limit

$$= \lim_{x \to 0} \frac{\log_e(1 + x) + x^2 - x}{x^2}$$

$$= \lim_{x \to 0} \frac{\left(x - \frac{1}{2}x^2 + \frac{1}{3}x^3 \ldots\ldots\right) + x^2 - x}{x^2} = \frac{1}{2}$$

96. (2) We have to find $\dfrac{d(y^2)}{d(x^2)}$

Here, $\dfrac{dy}{dx} = 1 - 2x$

$$\therefore \frac{d(y^2)}{d(x^2)} = \frac{\frac{d(y^2)}{dx}}{\frac{d(x^2)}{dx}}$$

$$= \frac{2y\frac{dy}{dx}}{2x} = \frac{y}{x} \cdot (1 - 2x)$$

$$= \frac{(x - x^2)(1 - 2x)}{x}$$

98. (1) $f'(x) = a + 3\cos x - 4\sin x$

$= a + 5\cos(x + \alpha)$, where

$\cos\alpha = \dfrac{3}{5}$.

$\therefore a - 5 \leq f'(x) \leq a + 5$

$\therefore f'(x) > 0$ if $a + 5 > 0$, i.e; $a > -5$, and $f'(x) < 0$ if $a - 5 < 0$, ie, $a < 5$

Hence $f(x)$ is strictly monotonic if $a \in (-5, 5)$ and hence it will be invertble.

99. (4) Putting $x = -z$,

$$I = \int -e^z(\sec z + \sec z \tan z)\, dz$$

$$\therefore I = -\int -e^z\left\{e^z\left\{\sec z + \frac{d}{dz}(\sec z)\right\}\right\} dz$$

$= -e^z \sec z + k$

$= -e^{-x} \sec x + k$

100. (3) $a_n + a_{n+2}$

$$= \int_0^{\frac{\pi}{4}} (\tan^n x + \tan^{n+2} x)\, dx, \; n \geq 2$$

$$= \int_0^{\frac{\pi}{4}} \tan^n x \sec^2 x\, dx$$

$$= \left[\frac{\tan^{n+1} x}{n+1}\right]_0^{\frac{\pi}{4}} = \frac{1}{n+1} \quad \square\square\square$$

INDIAN NAVY SSR EXAM

MODEL PRACTICE SET

INDIAN NAVY (SSR) AND APPRENTICE ARTIFICER EXAMS

ENGLISH

Directions (1 – 3) : In the following questions, some of the sentences have errors and some have none. Find out which part of a sentence has an error. The number of that part is the answer. If there is no error, your answer is (4) i.e. No error.

1. I have passed (1)/ the examination (2)/ two years ago (3)/. No error (4)

2. The earth moves (1)/ round the Sun. (2)/ Isn't it ? (3)/. No error (4)

3. Unless you do not give (1)/ the keys of the safe (2)/you will be shot (3)/. No error (4)

Directions (4 – 6) : In the following questions, out of the four alternatives, choose the one which **expresses the right meaning** of the given word.

4. INDICTMENT
(1) decoration (2) achievement
(3) allegation (4) observance

5. OSTENSIBLE
(1) secretive (2) pretended
(3) ferocious (4) depressing

6. NERVELESS
(1) feeble (2) lamenting
(3) genius (4) airnless

Directions (7–9) : In the following questions, choose the word **opposite in meaning** to the given word.

7. FAR-REACHING
(1) fruitful (2) insignificant
(3) discouraging (4) secluded

8. MEANINGFUL
(1) absolute (2) disturbing
(3) guilty (4) worthless

9. UNSCRUPULOUS
(1) common (2) futile
(3) proper (4) ethical

Directions (10–12) : In the following questions, sentences are given with blanks to be filled in with an appropriate and suitable word. Four alternatives are suggested for each question. Choose the correct alternative out of the four.

10. Many things have happened ____ I met you last.
(1) before (2) when
(3) from (4) since

11. The affluent life styles of contemporary politicians are in sharp contrast to the _____ ways of living of the freedom fighters.
(1) austere (2) agnostic
(3) stingy (4) extravagant

12. The villagers _____ the death of their leader by keeping all the shops closed.
(1) announced (2) protested
(3) mourned (4) consoled

Directions (13–15) : In the following questions, four alternatives are given for the idiom/phrase printed in bold. Choose the alternative which best expresses the meaning of the idiom/phrase in **bold**.

13. The green-eyed monster strikes a woman the moment she sees her husband talking to another pretty woman.
(1) Anger (2) Hatred
(3) Envy (4) Jealousy

14. To fight tooth and nail
(1) To fight a losing battle
(2) To fight resolutely
(3) To have a physical fight
(4) To lodge a formal protest

15. At one's wit's end
(1) to understand thoroughly
(2) to be puzzled
(3) to be a stupid person
(4) to behave irrationally

Directions (16–18) : In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/ sentence.

16. Expert in the scientific study of birds
(1) Dermatologist
(2) Zoologist
(3) Ornithologist
(4) Astronaut

17. Building in which dead bodies are kept for a time
(1) Mortuary
(2) Monastery
(3) Sanatorium
(4) Crematorium

18. One who believes that gaining pleasure is the most important thing in life
(1) Hedonist
(2) Pessimist
(3) Misanthrope
(4) Philistine

Directions (19-23) : In the following questions, you have a brief passage with 5 questions following the passage. Read the passage carefully and choose the best answer to each question out of the four alternatives.

The United Nations Fourth World Women 's Conference had a colourful start at Beijing on September 4th. This is the century's most crucial conference which aimed at changing the status quo of women's lives characterised by inequality.

In a preliminary session, Ms. Aung Suu Kyi, the Nobel Peace Prize winner said that expanding women's power will bring greater peace and tolerance to the world.

"It is not the prerogative of men alone to bring light to this world. Women with their capacity for compassion and self-sacrifice, with their courage and perseverance have done much to dissipate the darkness of intolerance and hate", said Ms. Suu Kyi.

In the afternoon session Ms. Ayako Yamaguchi, a Japanese delegate, launched a petition against beauty pageants. "What right do men have to evaluate women in a few minutes ? All women are beautiful. Beauty is something different for everyone", Ms. Ayako Yamaguchi said.

"Beauty contests are used as trade and exploitation. The training is very vigorous, but it is the organisers, not the women, who get the full benefit", said Ms. Ranjana Bhargava. "After the competition, the women become trapped and the abuse and the bad things begin. The women are tainted, no one else will accept them".

43. Service tax was introduced in India in
(1) 1991 (2) 1992
(3) 1993 (4) 1994

44. One of the groups of people inhabiting the Asiatic tundra is the
(1) Vedda (2) Pygmy
(3) Samoyed (4) Guacho

45. The preamble was proposed before the Drafting Committee by
(1) B. N. Rao
(2) B. R. Ambedkar
(3) Jawaharlal Nehru
(4) Sardar Patel

46. The words 'Socialist Secular' and 'the unity and integrity of the nation' were added to the constitution by the ____ Amendment.
(1) 42nd
(2) 44th
(3) 52nd
(4) none of the above

47. How many times has the preamble of the Indian constitution been amended so far ?
(1) once (2) twice
(3) thrice (4) never

48. Which of the players have scored 200 individual runs in ODI ?
(1) Graeme Smith
(2) Sachin Tendulkar
(3) Ricky Ponting
(4) M.S. Dhoni

49. The reddish colour of the soil is
(1) Copper (2) Iron
(3) Strontium
(4) None of these

50. According to revised GDP data for the fiscal 2010-11, per capita income is _____ per annum.
(1) Rs. 50000 (2) Rs. 53331
(3) Rs. 6000 (4) Rs. 6500

GENERAL SCIENCE

51. When the speed of a body is doubled, its kinetic energy becomes
(1) double (2) half
(3) quadruple (4) one-fourth

52. Winding a watch is actually the process of storing
(1) electrical energy
(2) pressure energy
(3) kinetic energy
(4) potential energy

53. Conservation of energy means that
(1) energy can be created as well as destroyed
(2) energy can be created but not destroyed
(3) energy cannot be created but can be destroyed
(4) energy can neither be created nor destroyed.

54. A person climbing a hill bends forward in order to
(1) avoid slipping
(2) increase speed
(3) reduce fatigue
(4) increase stability

55. The period of revolution of a geostationary satellite is
(1) 24 hours (2) 30 days
(3) 365 days
(4) changing continuously

56. If an apple is released from an orbiting spaceship, it will
(1) fall towards the earth
(2) move along with the spaceship at the same speed
(3) move at a higher speed
(4) move at a lower speed

57. The density of sea water increases as
(1) depth and salinity decrease
(2) depth decreases and salinity increases.
(3) depth increases and salinity decreases.
(4) depth and salinity increase

58. When a ship enters a sea from a river
(1) it rises a little
(2) it sinks little
(3) it remains at the same level
(4) it rises or sinks depending on the material it is made of

59. The numerous minute pores in the epidermis of a leaf are called
(1) hydathodes (2) lenticels
(3) perforation (4) stomata

60. In some plants, water oozes through certain pores that remain permanently open. This phenomenon is called
(1) evaporation
(2) guttation
(3) transpiration
(4) vaporization

61. Which of the following is not a stem modification ?
(1) arrowroot
(2) garlic
(3) ginger
(4) sweet potato

62. From which part of the plant is turmeric, a commonly used colourant and antiseptic, obtained ?
(1) root (2) stem
(3) fruit (4) flower

63. Clove, the commonly used spice, is obtained from the
(1) root (2) stem
(3) flowerbud (4) fruit

64. The living growing part of human hair is
(1) hair shaft (2) hair root
(3) hair follicle
(4) hair papilla

65. Blood is formed in the human adult by the
(1) heart (2) spleen
(3) bone marrow
(4) None of these

66. One of the organs that excretes water, fat and various catabolic wastes in the
(1) kidney
(2) skin
(3) spleen
(4) salivary glands

67. The substance made from only carbon is
(1) sugar (2) acetic acid
(3) graphite (4) methane

68. The purest gold is of
(1) 20 carat (2) 40 carat
(3) 25 carat (4) 24 carat

69. The greatest number of compounds are formed by the element
(1) hydrogen (2) carbon
(3) oxygen (4) nitrogen

70. 'Gobar gas' contains mainly
(1) carbondioxide
(2) methane
(3) acetylene
(4) ethylene

71. Soap is prepared by heating caustic soda with
(1) kerosene oil
(2) linseed oil
(3) petroleum
(4) almond oil

72. Heavy water
(1) contains more dissolved air
(2) contains more dissolved minerals and salts
(3) contains deuterium in place of hydrogen
(4) contains organic impurities.

73. PVC plastics are obtained from vinyl chloride by the process of