Booklet Serial No. : 0403

TEST BOOKLET SERIES

TEST BOOKLET

AE (E)

A

Time Allowed : 2 Hours]

[Maximum Marks : 100

All questions carry equal marks.

INSTRUCTIONS

1. Immediately after the commencement of the examination, you should check that test booklet does not have any unprinted or torn or missing pages or items, etc. If so, get it replaced by a complete test booklet.

2. **Encode clearly the test booklet series A, B, C or D as the case may be in the appropriate place in the answer sheet.**

3. Write your Roll Number only in the box provided alongside. Do not write anything else on the Test Booklet.

4. This Test Booklet contains 100 items (questions). Each item comprises four responses (answers). Choose only one response for each item which you consider the best.

5. After the candidate has read each item in the Test Booklet and decided which of the given responses is correct or the best, he has to mark the circle containing the letter of the selected response by blackening it completely with Black or Blue ball pen. In the following example, response "C" is so marked :

Ⓐ   Ⓑ   ⬤   Ⓓ

6. Do the encoding carefully as given in the illustrations. While encoding your particulars or marking the answers on answer sheet, you should blacken the circle corresponding to the choice in full and no part of the circle should be left unfilled.

7. You have to mark all your responses ONLY on the ANSWER SHEET separately given according to 'INSTRUCTIONS FOR CANDIDATES' already supplied to you. *Responses marked on the Test Booklet or in any paper other than the answer sheet shall not be examined.*

8. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of correct responses marked by you in the Answer Sheet. There will be no negative marking.

9. Before you proceed to mark responses in the Answer Sheet fill in the particulars in the front portion of the Answer Sheet as per the instructions sent to you.

10. After you have completed the test, hand over the Answer Sheet only, to the Invigilator.

Time Allowed : 2 Hours]   [Maximum Marks : 100

1.   The capacitance of a parallel plate capacitor increases with :

    (A)   Larger plate area and shorter distance between plates

    (B)   Smaller plate area and shorter distance between plates

    (C)   Smaller plate area and higher applied voltage

    (D)   Larger plate area, longer distance between plates and higher applied

         voltage

2.   Two spheres of radii R_1 and R_2 $(R_2 > R_1)$ are connected by a conducting

    wire. Each of the spheres has been given a charge q. Now :

    (A)   Sphere of radius R_1 will have greater potential

    (B)   Sphere of radius R_2 will have greater potential

    (C)   Potential of both the spheres will be equal

    (D)   Sphere of radius R_1 will have zero potential

3.   Two heaters of rating 1 kW, 250 V are connected in series across 250 V supply,

    the power taken by the heaters will be :

    (A)   2 kW   (B)   1/4 kW

    (C)   1/2 kW   (D)   1 kW

4. A 100 W, 100 V lamp is to be operated on 250 V supply, the value of additional resistance to be connected in series will be :

(A) 250 ohms

(B) 100 ohms

(C) 150 ohms

(D) 50 ohms

5. Is it possible to prevent the switching spark produced during switching off of an inductance by very fast operation of the switch ?

(A) No, the faster the circuit is opened, the higher is the self induced voltage

(B) Yes, as long as the circuit is opened fast enough

(C) Yes, as long as the switch can withstand the high switching speed

(D) Yes, if the current is less than 50 A

6. Two coils have inductances of 4 mH and 9 mH and a coefficient of coupling of 0.5. If the two coils are connected in series aiding, the total inductance will be :

(A) 19 mH

(B) 16 mH

(C) 7 mH

(D) 10 mH

7. If $V = a + jb$ and $I = c + jd$, then power is given by :

(A) $ac + ad$

(B) $ac + bd$

(C) $bc - ad$

(D) $bc + ad$

8. An LC circuit resonant at 1000 kHz has a Q of 100. The band width between half power points equals :

    (A)   10 kHz between 995 kHz and 1005 kHz

    (B)   10 kHz between 1000 kHz and 1010 kHz

    (C)   5 kHz between 995 kHz and 1000 kHz

    (D)   200 kHz between 900 kHz and 1100 kHz

9. An a.c. network has two sources. The application of Superposition theorem gives the currents due to the two sources through a branch as $5 \angle 45°A$ and $5 \angle 90°A$. The total current in that branch is :

    (A)   10 A   (B) $2.32 \angle 30°A$

    (C) $9.24 \angle 67.5°A$ (D)   0A

10. A flat slab of dielectric ($\varepsilon_r = 5$) is placed normal to a uniform electric field with a flux density $D = 1\ C/m^2$. The slab is uniformly polarized. Polarization 'P' in the slab (in C/m^2) will be :

    (A)   0.8   (B)   1.2

    (C)   4.0   (D)   6.0

11. The ratio of charge stored by two metallic spheres raised to the same potential is 6. The ratio of the surface areas of the spheres is :

(A) 6

(B) $\frac{1}{6}$

(C) $\frac{1}{\sqrt{6}}$

(D) 36

12. V.B is based on :

(A) Ampere's law

(B) Ohm's law

(C) Faraday's law

(D) Gauss's law

13. Which law is synonymous to the occurrence of diamagnetism ?

(A) Ampere's law

(B) Maxwell's law

(C) Coulomb's law

(D) Lenz's law

14. Match List-I with List-II and select the *correct* answer using the codes given below :

List I (Expression)

(a) $\nabla^2 V = -\dfrac{\rho_v}{\epsilon}$

(b) $\nabla^2 V = 0$

(c) $\oiint D.ds = Q$

(d) $\iiint (\nabla . D)dv = \oiint D.ds$

List II (Law/Theorem/Equation)

(1) Gauss's law

(2) Divergence theorem

(3) Laplace's equation

(4) Poisson's equation

(5) Coulomb's law

Codes :

	(a)	(b)	(c)	(d)
(A)	(4)	(2)	(5)	(1)
(B)	(3)	(1)	(2)	(4)
(C)	(2)	(3)	(4)	(5)
(D)	(4)	(3)	(1)	(2)

15. If a fan blade of length 2R rotates in a time period T in a magnetic field B, the induced voltage in the blade will be :
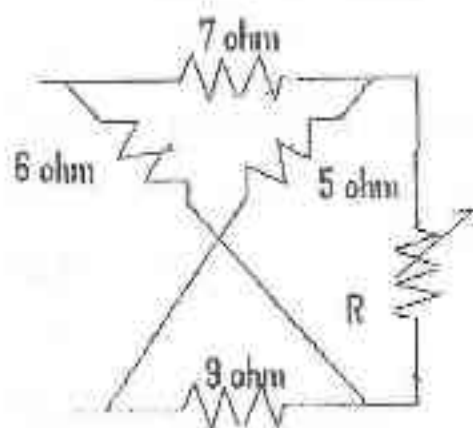
(A) 2 RBT

(B) RBT

(C) $\dfrac{\pi R^2 B}{T}$

(D) $\pi R^2 BT$

16. In the lattice network, the value of R for the maximum power transfer to the load is :

(A)   5 ohm

(B)   6.5 ohm

(C)   8 ohm

(D)   9 ohm

17. Two two-port networks a and b having A, B, C, D parameters as :

$A_a = D_a = 4$ and $A_b = D_b = 3$

$B_a = 5, C_a = 3$ $B_b = 4, C_b = 2$

are connected in cascade in the order of a, b. The equivalent A parameter of the combination is :

(A)   17

(B)   22

(C)   24

(D)   31

18. The voltage ratio transfer function of an active filter is given by

$$\frac{V_1(s)}{V_2(s)} = \frac{s^2 + c}{s^2 + as + b}$$

The circuit in a question is a $V_1(s)/V_2(s) = [(s^2 + c)/(s^2 + as + b)]$

(A) Low pass filter

(B) High pass filter

(C) Band pass filter

(D) Band reject filter

19. A 3-phase, 3 wire supply feeds a load consisting of three equal resistors connected in star. If one of the resistors is open-circuited, then percentage reduction in the load will be :

(A) 75

(B) 66.66

(C) 50

(D) 33.33

20. An initially relaxed RC series circuit network with R = 2 M-ohm and C = 1μF is switched on to a 10 V step input. The voltage across the capacitor after 2 seconds will be :

(A) Zero

(B) 3.68 V

(C) 6.32 V

(D) 10 V

21. Unified Power Flow Controller (UPFC) is a :

   (A) Shunt-series FACTS controller

   (B) Series-shunt FACTS controller

   (C) Series-series FACTS controller

   (D) Shunt-shunt FACTS controller

22. The value of boost factor is equal to unity when TCSC is operated in :

   (A) Capacitive Boost Mode

   (B) Inductive Boost Mode

   (C) Blocking Mode

   (D) Bypass Mode

23. Run away speed of a Pelton wheel is :

   (A) Full load speed

   (B) Actual speed operating at no load

   (C) No load speed when governor mechanism fails

   (D) 80% greater than the normal speed

24. If, for a given alternator in economic operation mode, the incremental cost

is given by IC = 0.012P + 8 Rs/MW, $\dfrac{dP_L}{dP}$ = 0.2 and plant penalty factor

(λ) = 25, then the power generation is :

(A) 1000 MW   (B) 1250 MW

(C) 750 MW   (D) 1500 MW

25. If inductance and capacitance of a system are 1 H and 0.01 µF respectively

and the instantaneous value of current interrupted is 10 A, then voltage across

the breaker contacts will be :

(A) 50 kV   (B) 100 kV

(C) 60 kV   (D) 75 kV

26. An over-current relay, having a current setting of 12.5% is connected to a

supply circuit through a current transformer of ratio 400/5. The pick-up value

of current is :

(A) 6.25 A   (B) 10 A

(C) 12.5 A   (D) 15 A,

27. Steady state stability of a power system is improved by :

   (A) Reducing fault clearing time

   (B) Using double circuit line instead of single circuit line

   (C) Single pole switching

   (D) Decreasing generator inertia

28. For a 15-bus system power system with 3 voltage-controlled buses, the size of Jacobian matrix of Newton-Raphson method used to solve load flow problem is :

   (A) 25×25

   (B) 12×12

   (C) 24×24

   (D) 11×11

29. Increasing the amplifier gain of a control system :

   (A) usually reduce the steady state error but results in oscillatory transient response

   (B) usually increases the steady state error but results in oscillatory transient response

   (C) usually increases the steady state error but reduces oscillation of the transient response

   (D) usually reduces steady state error and oscillations of the transient response

30. In a multivariable control system there is :

(A) more than one input variable but one unique output

(B) one input variable but variable outputs

(C) more than one input variable or more than one output variable

(D) more than one input variable and more than one output variable

31. For a feedback system having the characteristic equation

$$1 + \frac{K}{s(s+1)(s+2)} = 0,$$

The angle of the straight line asymptotes with the real axis, along with the root locus tend to infinity are given by :

(A) 30°, 90°, 180°

(B) 30°, 180°, 300°

(C) 60°, 180°, 300°

(D) 30°, 60°, 120°

32. Addition of a zero to the open-loop transfer function has the effect of :

(A) shifting the root-locus to the right thereby increasing stability and decreasing settling time

(B) shifting the root-locus to the right thereby increasing stability and settling time

(C) shifting the root-locus to the left thereby increasing stability and settling time

(D) shifting the root-locus to the left thereby increasing stability and decreasing settling time

33. Which one of the following gives the transfer function of a phase-lag compensation network ?

(A) $\dfrac{1 + s\alpha T}{1 + sT}; \alpha < 1$

(B) $\dfrac{1 + s\alpha T}{1 + sT}; \alpha > 1$

(C) $\dfrac{1 + s\alpha T}{1 + sT}; \alpha = 1$

(D) $\dfrac{1 - s\alpha T}{1 + sT}; \alpha < 1$

34. The transfer function of an integral compensator is given by :

(A) $\dfrac{1}{s}$

(B) $\dfrac{1}{s^2}$

(C) $\dfrac{K}{s}$

(D) None of these

35. If the dominant complex poles of a higher order control system are nearer to the imaginary axis in s-plane, then the nature of time response will be :

(A) oscillatory type

(B) non-oscillatory type

(C) sustained oscillation type

(D) steady state

36. The steady state error for an input $2u(t)$ applied to a type 0 system is :

(A) $\dfrac{1}{2(1 + K_p)}$

(B) $\dfrac{2}{(1 + K_p)}$

(C) $\dfrac{2}{K_p}$

(D) 0

AE (E)—A

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P.T.O.

37. The steady state error for a type 2 system subjected to unit ramp input is :

   (A) 1   (B) ∞

   (C) $\dfrac{1}{K}$ (D) 0

38. A milliammeter of resistance 100 Ω is connected in series with a circuit. Its power consumption is 0.1 mW. Supposing it is replaced with a milliammeter of 200 Ω resistance, the power consumed will be :

   (A) 0.2 mW   (B) 0.05 mW

   (C) 0.1 mW   (D) 1 mW

39. A 1 mA d' Arsonval movement has a resistance of 100 Ω. It is to be converted to a 10 V voltmeter. The value of multiplier resistance is :

   (A) 999 Ω (B) 9999 Ω

   (C) 9900 Ω (D) 990 Ω

40. The power consumption in PMMC instruments is typically about :

   (A) 0.25 W to 2 W   (B) 0.25 mW to 2 mW

   (C) 25 μW to 200 μW   (D) 2 W to 3 W

41. In a household single phase induction type wattmeter, the wattmeter can be reversed by :

   (A)   reversing the supply terminals

   (B)   reversing the load terminals

   (C)   opening the meter connections and reversing either the potential coil terminals or current coil terminals

   (D)   opening the meter and reversing connections of both potential and current coil terminals

42. If an induction type energy meter runs fast, it can be slowed by :

   (A)   lag adjustment

   (B)   light load adjustment

   (C)   adjusting the position of braking magnet and making it come closer to the centre of the disc

   (D)   adjusting the position of braking magnet and making it move away from the centre of the disc

43. Light load adjustment for induction type energy meter is usually done at :

(A) 10% of full load current   (B) 5% of full load current

(C) 50% of full load current   (D) 1% of full load current

44. Frequency can be measured by using :

(A) Maxwell's Bridge   (B) Schering Bridge

(C) Heaviside Campbell bridge   (D) Wein's bridge

45. Maxwell's inductance-capacitance bridge is used for measurement of inductance of :

(A) low Q coils   (B) medium Q coils

(C) high Q coils   (D) low and medium Q coils

46. The power in a circuit is measured by measuring a current through a resistor. The current is measured with an accuracy of ± 1.5% and the tolerance band of the resistor ± 0.5%. The error is limiting or guarantee error. The accuracy with which power is measured :

(A) ±1.125%   (B) ±3.5%

(C) ±2%   (D) ±2.5%

47. The voltage of a circuit is measured by a voltmeter having an input impedance comparable with the output impedance of the circuit thereby causing error in voltage measurement. This error may be called :

(A) gross error

(B) random error

(C) error caused by misuse of instrument

(D) error caused by loading error

48. Two resistances $100\ \Omega \pm 5\ \Omega$ and $150\ \Omega \pm 15\ \Omega$ are connected in series. If the deviations are standard deviations, the resultant resistance can be expressed as :

(A) $250 \pm 20\ \Omega$ (B) $250 \pm 10\ \Omega$

(C) $250 \pm 15.8\ \Omega$ (D) $250 \pm 10.6\ \Omega$

49. For a second order system, the settling time for $\pm\ 2\%$ band is :

(A) $\dfrac{3}{\xi\omega_n}$ (B) $\dfrac{5}{\xi\omega_n}$

(C) $2\xi\omega_n$ (D) $\dfrac{4}{\xi\omega_n}$

50. A second order under damped system has a damping factor of 0.8, it is subjected to a sinusoidal input of unit amplitude. It has resonant peak of :

(A) 108%

(B) 92%

(C) 20%

(D) it has no resonant peak

51. The following amplifier configuration yields the largest power gain of all transistor amplifier configurations :

(A) Common base

(B) Common emitter

(C) Common collector

(D) Emitter base

52. Which family of logic circuits used FETs ?

(A) TTL

(B) CMOS

(C) Both TTL and CMOS

(D) Neither TTL nor CMOS

53. Common Mode Rejection ratio for a differential amplifier is the ratio of :

(A) Differential gain/Common mode gain

(B) Differential gain/Integrated gain

(C) Integrated gain/Differential gain

(D) Common mode gain/Differential gain

54. An operational amplifier for analog computers should have :

    (A)   High drift and low power output

    (B)   High voltage output and low drift

    (C)   High power output and low output impedance

    (D)   High output impedance and low input impedance

55. A scale change amplifier has a gain of 10,000 and the percentage error is 0.06%. The input resistance is 100 kΩ. The feedback resistor should be :

    (A)   50 kΩ (B)   100 kΩ

    (C)   250 kΩ (D)   500 kΩ

56. For a Schmitt trigger, the upper and lower trip voltage are 3 V and 1 V, and high and low states are 15 V and 2 V. The output for a sinusoidal input of 10 V peak will lie between :

    (A)   1 V and 3 V   (B)   2 V and 15 V

    (C)   3 V and 15 V   (D)   10 V and 15 V

57. The resolution of a 12 bit D/A converter using a binary ladder with + 10 V as the full scale output will be :

    (A)   2.44 mV   (B)   3.50 mV

    (C)   4.32 mV   (D)   5.12 mV

58. Which of the following is the most stable oscillator ?

(A) Wein's bridge Oscillator

(B) Hartley's Oscillator

(C) Colpitt's Oscillator

(D) Crystal Controlled Oscillator

59. A discrete time signal is expressed as $x(n) = u(n - 2)$. Its z-transform is :

(A) $\dfrac{1}{1 - z}$

(B) $\dfrac{1}{1 - z^{-1}}$

(C) $\dfrac{z}{1 - z}$

(D) $\dfrac{z^{-2}}{1 - z^{-1}}$

60. The z-transform of equation $x(n) = \delta(n) - 0.95\ \delta(n - 6)$ is :

(A) $1 - 0.95\ z$

(B) $1 - 0.95\ z^{-1}$

(C) $1 - 0.95\ z^{-6}$

(D) $1 - 0.95\ z^{6}$

61. Which of the following interrupts has highest priority ?

(A) RST 5.5

(B) RST 7.5

(C) TRAP

(D) INTR

62. The number of bits needed to address 4 K memory is :

(A) 6

(B) 8

(C) 12

(D) 16

AE (E)—A

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63. The expression $F = \overline{A}\overline{B} + \overline{A}B$ can be simplified to :

(A) $F = A$

(B) $F = A$

(C) $F = \overline{A}B$

(D) None of the above

64. Match the following :

Column I	Column II
(a) Pop	(i) to save data in the stack
(b) Push	(ii) to read data from the stack
(c) Stack	(iii) a portion of memory reserved for return address and data
(d) Mask	(iv) a byte used with an ANI instruction to blankout certain bits

	(a)	(b)	(c)	(d)
(A)	(i)	(ii)	(iii)	(iv)
(B)	(ii)	(i)	(iii)	(iv)
(C)	(iii)	(iv)	(i)	(ii)
(D)	(iv)	(i)	(iii)	(ii)

65. What is the addressing mode used in instruction LDA 0345 H ?

(A) Direct
(B) Indirect

(C) Indexed
(D) Immediate

66. Corona also acts as a :

(A) Safety valve
(B) Transformer

(C) Insulator
(D) Relay

67. Which of the following insulators will be selected for high voltage applications ?

(A) Strain
(B) Disc

(C) Suspension
(D) Pin

68. The sag of a transmission line with 50 m span is 1 m. What will be the sag if the height of the transmission line is increased by 20% ?

(A) 1.2 m
(B) 2 m

(C) 1.25 m
(D) 1 m

69. Ward-Leonard control is basically a :

(A) Voltage control method

(B) Field diverter method

(C) Shunt armature control

(D) Armature resistance control method

70. During the short circuit test on a small transformer, the frequency is increased from 50 Hz to 200 Hz, the copper losses will increase by a factor of :

(A) 16   (B) 4

(C) 1   (D) 1/4

71. The main reason for generation of harmonics in transformer could be :

(A) fluctuating load

(B) poor insulation

(C) mechanical vibrations

(D) saturation of core

72. Two transformers are operated in parallel. These transformers do not have equal percentage impedances. This is likely to result in :

(A) short circuiting of secondaries

(B) power factor of one of the transformer is leading while that of the other is lagging

(C) transformers having higher copper losses will have negligible core losses

(D) loading of the transformers not in proportion to their kVA ratings

73. Commutation overlap in the phase controlled a.c. to d.c. converters is due to :

(A) load inductance

(B) harmonic content of load current

(C) switching operation in the converter

(D) source inductance

74. A single phase full bridge inverter can operate in load-commutation mode in case load consists of :

(A) RL

(B) RLC underdamped

(C) RLC overdamped

(D) RLC critically damped

75. The simplest method of eliminating third harmonic from the output voltage waveform of a single phase bridge inverter is to use :

(A) Inverters in series

(B) Single pulse modulation

(C) Stepped wave inverters

(D) Multiple pulse modulation

76. A delta connected induction motor being fed by a three phase a.c. to d.c. inverter and operated in constant V/f control mode requires during starting a :

(A) Star-delta starter   (B) DOL starter

(C) Auto-transformer starters   (D) Three point starter

77. If capacitor of single phase motor is short circuited :

(A) The motor will not start

(B) The motor will burn

(C) The motor will run in reverse direction

(D) The motor will run in same direction rt. reduced r.p.m.

78. Under which of the following conditions, hunting of synchronous motor is likely to occur ?

(A) Periodic variation of load

(B) Over-excitation

(C) Overloading for long periods

(D) Small and constant load

79. In case one phase of three phase synchronous motor is short circuited, the motor will :

   (A)   Not run

   (B)   Run at two third of speed

   (C)   Run with excessive vibrations

   (D)   Take less than rated load

80. A chopper can be used on :

   (A)   pulse width modulation only

   (B)   frequency modulation only

   (C)   amplitude modulation only

   (D)   both PWM and FM

81. Who is the author of *Temples and Legends of Himachal Pradesh* ?

   (A)   P.C. Roy Chaudhary   (B)   K.L. Vaidya

   (C)   H. Geotz   (D)   S.S. Shashi

82. Which pass joins Kinnaur to Tibet ?

   (A)   Hamta   (B)   Kangla

   (C)   Pir Panjal   (D)   Shipki

83. To which god do the devotees offer Minjar on the conclusion of Minjar fair ?

    (A) Indra

    (B) Agni

    (C) Varuna

    (D) Maruta

84. In which field has Musafir Ram Bharadwaj been given Padam Shri ?

    (A) Literature

    (B) Instrumental music

    (C) Vocal music

    (D) Painting

85. According to 2011 Census data, what is the density of population in Lahaul-Spiti District ?

    (A) 2

    (B) 9

    (C) 13

    (D) 22

86. With whom is Bhunda festival of Nirmand associated ?

    (A) Vishwamitra

    (B) Brehaspati

    (C) Parshuram

    (D) Bhrigu

AE (E)—A

P.T.O

87. Who was the Chairman of the H.P. Territorial Council ?

(A) Thakur Ram Lal

(B) Vidya Dhar

(C) Jaiwant Ram

(D) Thakur Karam Singh

88. Which category of cows and buffaloes are covered under the Livestock Insurance Scheme of H.P. Government ?

(A) Those giving two liters or more milk per day

(B) Those giving five liters or more milk per day

(C) Those giving ten liters or more milk per day

(D) Those giving fifteen liters or more milk per day

89. In the 200 points roaster 1st, 30th, 73rd, 101st, 130th and 173rd positions are reserved for different categories of physically challenged in Himachal Pradesh Class III and Class IV govt. jobs. Which of them are reserved for visually challenged ?

(A) 1st and 101st

(B) 30th and 73rd

(C) 73rd and 130th

(D) 130th and 173rd

AE (E)—A

90. At which place in Bilaspur District has the HPMC a project for setting up cold rooms for packing/grading of fruits, vegetables, flowers and culinary herbs ?

   (A) Jukhala

   (B) Ghumarwin

   (C) Shah Talai

   (D) Kandraur

91. What is Salwa Judum ?

   (A) A Peasant Organisation of Andhra Pradesh

   (B) A Militant Women Outfit in U.P.

   (C) An Anti-Drug Organisation in Punjab

   (D) An Anti-Naxal Outfit in Chhattisgarh

92. How old was telegraph service when it was closed in India in 2013 ?

   (A) 163 years

   (B) 172 years

   (C) 177 years

   (D) 179 years

93. Which Indian city is called the garden city ?

   (A) Chandigarh

   (B) New Delhi

   (C) Bengaluru

   (D) Udaipur

94. Which is the only film made in Bollywood on a living person ?

    (A) Shaheed   (B) Pan Singh Tomar

    (C) Dr. Kotnis Ki Amar Kahani (D) Bhag Milkha Bhag

95. Who was the life long companion of Guru Nanak Dev ?

    (A) Bhai Dyala   (B) Bhai Ram Singh

    (C) Mardana   (D) Madho Dass

96. Who is the first democratically elected woman head of Liberia ?

    (A) Yingluck Shinawatra

    (B) Ellen Johnson Sirleaf

    (C) Laura Chinchilla Miranda

    (D) Julia Gillard

97. With which game is Christiano Ronaldo associated ?

(A) Hockey   (B) Tennis

(C) Athletics   (D) Football

98. Which day is observed as Earth Day ?

(A) April 07   (B) April 22

(C) June 05   (D) October 03

99. Who invented Penicillin ?

(A) Alexander Fleming   (B) Graham Bell

(C) Edward Jenner   (D) Marconi

100. Which planet is most distant from the Sun ?

(A) Pluto   (B) Mars

(C) Neptune   (D) Saturn