

084/2023

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. If $\delta(x)$ represents Dirac delta function, which of the following is wrong ?
- (A) $\delta(x-a) = (-) \delta(a-x)$
(B) $f(x) \delta(x-a) = f(a) \delta(x-a)$
(C) $\delta[c(x-a)] = \frac{1}{|c|} \delta(x-a)$, where C is a real number
(D) $\int_{-\infty}^{\infty} \delta(x-a) \delta(x-b) dx = \delta(a-b)$
2. The value of Hermite polynomial $H_3(0)$ is given by:
- (A) 1 (B) 0
(C) 6 (D) (-) 6
3. What is the value of the integral $\int_0^{2\pi} d\phi \int_0^\pi \sin \theta d\theta Y_1^0(\theta, \phi) (Y_1^0(\theta, \phi))^*$? The spherical harmonic $Y_l^0(\theta, \phi) = \sqrt{\frac{(2l+1)}{4\pi}} P_l^0(\cos \theta)$, where $P_l^0(\cos \theta)$ is associated legendre polynomial. $(Y_l^0)^*$ represents complex conjugate of y_l^0 :
- (A) 0 (B) 1
(C) $\frac{3}{4\pi}$ (D) $\frac{1}{4\pi}$
4. Which of the following is true about the Bessel and the neumann functions?
- (A) Neumann function $N_n(r)$ can represent a finite solution for Bessel's equation at $r=0$
(B) Bessel function $J_n(r)$ cannot represent a finite solution for Bessel's equation at $r=0$
(C) Most general solution of Bessel's equation is $AJ_n(r) + BN_n(r)$ except at origin $r=0$, where A and B constants
(D) Most general solution of Bessel's equation is $AJ_n(r) + BN_n(r)$ including at origin $r=0$
5. Consider the integral $\int_C \frac{z^2}{z^2 - 6z - 8}$, where c is a circle defined by $|z|=3$. The value of the integral is :
- (A) $(-) 4\pi i$ (B) $16\pi i$
(C) $(-) 12\pi i$ (D) $12\pi i$

A

3

[P.T.O.]

6. If the function $(x^3 + ax^2y^2) + i(3x^2y - y^3)$ is analytic, the value of 'a' is :
- (A) 2 (B) 3
(C) (-) 3 (D) (-) 1
7. Consider a function $f(x) = x^2$ in the interval $(-\pi, \pi)$ which may be expanded as a Fourier series. What is the value of the following infinite series ?
- $$\frac{1}{1} - \frac{1}{4} + \frac{1}{9} - \frac{1}{16} + \dots +$$
- (A) $\frac{\pi^3}{12}$ (B) 2π
(C) $\frac{\pi^2}{12}$ (D) $\frac{\pi^2}{6}$
8. Constraints on a simple pendulum with rigid support is :
- (A) Holonomic (B) Nonholonomic
(C) Rheonomous (D) Holonomic and Scleronomous
9. An electron is moving with a velocity v in an electromagnetic field of vector potential A and scalar potential Φ . The Lagrangian of the electron is :
- (A) $\frac{1}{2}mv^2 + e\Phi - e(A.v)$ (B) $\frac{1}{2}mv^2 - e\Phi - e(A.v)$
(C) $\frac{1}{2}mv^2 + e\Phi + e(A.v)$ (D) $\frac{1}{2}mv^2 + e(A.v)$
10. A particle is moving in an elliptical orbit under the influence a central potential $V(r) = \frac{(-k)}{r}$. The maximum and minimum distance of the particle from centre of force are r_1 and r_2 . If the eccentricity of the elliptical path is 0.5, then what is the ratio of maximum velocity and minimum velocity of the particle?
- (A) 2 (B) 3
(C) 4 (D) 0.25
11. A horizontal circular platform is rotating anticlockwise about an axis passing through the center with a constant angular velocity Ω . A person seated at the centre shoots a bullet of mass m horizontally with a speed 10m/s. The acceleration of bullet in the reference frame of the observer will be :
- (A) 20Ω to his left (B) 10Ω to his left
(C) 20Ω to his right (D) 5Ω to his right

12. Which of the following transformation matrix corresponds to rotation by an angle Φ , any one of the Euler angles?

(A)
$$\begin{bmatrix} -\cos\Phi & \sin\Phi & 0 \\ \sin\Phi & \cos\Phi & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

(B)
$$\begin{bmatrix} \cos\Phi & -\sin\Phi & 0 \\ \sin\Phi & \cos\Phi & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

(C)
$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos\Phi & \sin\Phi \\ 0 & -\sin\Phi & \cos\Phi \end{bmatrix}$$

(D)
$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos\Phi & \sin\Phi \\ 0 & \sin\Phi & -\cos\Phi \end{bmatrix}$$

13. Logistic map is defined by the equation $X_{n+1} = A X_n(1 - X_n)$, where A is the control parameter and X_n and X_{n+1} , are values of some variable X after n^{th} and $n+1^{th}$ iterations respectively. The range of X and A are $0 \leq X \leq 1$ and $0 \leq A \leq 4$ respectively. Then the equilibrium points of the system, for $A = 1.25$ are :

- (A) 0.5, which is a stable equilibrium point only
 (B) 0, a stable point and 1, an unstable equilibrium point
 (C) 0.2, an unstable equilibrium point and 0, a stable equilibrium point
 (D) 0, an unstable stable equilibrium point and 0.2 a stable equilibrium point

14. If S represents Hamilton's characteristics function, the Hamilton Jacobi equation for a free particle of mass m is :

(A)
$$\frac{1}{2} \left(\frac{\partial S}{\partial q} \right)^2 + \left(\frac{\partial S}{\partial t} \right) = 0$$

(B)
$$\frac{1}{2m} \left(\frac{\partial S}{\partial q} \right)^2 + \left(\frac{\partial S}{\partial t} \right) = 0$$

(C)
$$\frac{1}{2} \left(\frac{\partial S}{\partial q} \right)^2 = 0$$

(D)
$$\frac{1}{2m} \left(\frac{\partial S}{\partial q} \right)^2 + \frac{1}{2} \left(\frac{\partial S}{\partial t} \right) = 0$$

15. Which of the following is not a Hermitian operator?

(A) $(i\hbar) \frac{\partial}{\partial t}$

(B) $(-i\hbar) \frac{\partial}{\partial x}$

(C) $(-)\frac{\hbar^2}{2m} \frac{\partial^2}{\partial x^2}$

(D) $\hbar \frac{d}{dx}$

16. If σ_x, σ_y and σ_z are Pauli's spin matrices, $\sigma_x \sigma_y + 2\sigma_y \sigma_x$ is equal to :

(A) $(-i)\sigma_z$

(B) 0

(C) $i\sigma_z$

(D) 1

17. Consider an elastic scattering of particles in $l = 1$ states (p states). If the corresponding phase shift $\delta_1 = 45^\circ$ and magnitude of incident wave vector is equal to $\sqrt{3\pi} fm^{-1}$, then the total scattering cross section in units of fm^2 is:
- (A) 1 (B) 3π
(C) 2 (D) 0.5
18. If A and B represents Einstein's coefficient for spontaneous emission and stimulated emission respectively for a particular frequency f . R represents the ratio between A and B. If frequency is doubled, what will be the new ratio?
- (A) 2R (B) 8R
(C) 4R (D) 0.5R
19. A one-dimensional simple harmonic oscillator with Hamiltonian $H_0 = \frac{p^2}{2m} + \frac{1}{2}kx^2$ is subjected to a small perturbation, $H' = \alpha x + \beta x^3 + \gamma x^4$. The first order correction to ground state energy is give by :
- (A) $3\gamma\left(\frac{\hbar}{2m\omega}\right)^2$ (B) $\alpha + \beta\left(\frac{\hbar}{m\omega}\right) + \gamma\left(\frac{\hbar}{2m\omega}\right)^2$
(C) $\alpha + 3\beta\left(\frac{\hbar}{2m\omega}\right)^2$ (D) 0
20. Which of the following statement is true about Klein-Gordan equation?
- (A) The wave functions of the equations are not Lorentz invariant
(B) It has positive energy solutions only
(C) They are first order equations in time
(D) It can represent spin-0 particles like Pions
21. \hat{J} represents angular momentum operator and $|j, m\rangle$ represents simultaneous eigen states of operators \hat{J}^2 and \hat{J}_z . What is the matrix representation of \hat{J}^2 in $|j, m\rangle$ basis for $j = 2$?
- (A) $6\hbar^2 \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$ (B) $2\hbar \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$
(C) $\hbar \begin{pmatrix} 0 & 0 & 1 \\ 0 & 0 & 1 \\ 0 & 0 & 1 \end{pmatrix}$ (D) $\sqrt{2}\hbar \begin{pmatrix} 0 & 0 & 1 \\ 0 & 0 & 1 \\ 0 & 0 & 1 \end{pmatrix}$

27. Consider a one-dimensional harmonic oscillator of mass m and frequency ν . Its Hamiltonian is given by $H = \frac{P^2}{2m} + kx^2$. What will be number of cells in the two-dimensional phase space within the energy range between 0 and E ?
- (A) E (B) $E\nu$
 (C) $\frac{E}{h\nu}$ (D) $\frac{h\nu}{E}$
28. Which of the following is true about Pauli's Paramagnetism as temperature T tends to zero Kelvin?
- (A) Paramagnetic susceptibility (χ_0) is inversely proportional to temperature
 (B) Paramagnetic susceptibility (χ_0) is directly proportional to temperature
 (C) Paramagnetic susceptibility (χ_0) is proportional to density of Fermi gas
 (D) Magnetic saturation occurs at low temperatures
29. Consider a JFET with shorted gate drain current $I_{DSS} = 10 \text{ mA}$. It has a drain current $I_D = 4.9 \text{ mA}$ at a gate source voltage of $V_{GS} = (-)1.8 \text{ V}$. The minimum drain source voltage at which the drain current becomes constant is :
- (A) 5 V (B) 6 V
 (C) 1.8 V (D) 2.1 V
30. The input resistance and feedback resistance of an inverting operational amplifier is $1 \text{ k}\Omega$ and $10 \text{ k}\Omega$ respectively. The open loop gain is (-114 dB) . If unity-gain bandwidth is 2 MHz, then closed loop bandwidth is:
- (A) 200 kHz (B) 100 kHz
 (C) 228 kHz (D) 456 kHz
31. An inverting operational amplifier is used to differentiate a given signal. The values of input capacitance C and feedback resistance R_F , to get a faithful differentiation for a signal of 10kHz is :
- (A) $C = 0.047 \mu\text{F}$ and $R_F = 1 \text{ k}\Omega$ (B) $C = 0.47 \mu\text{F}$ and $R_F = 10 \text{ k}\Omega$
 (C) $C = 0.47 \mu\text{F}$ and $R_F = 22 \text{ k}\Omega$ (D) $C = 1 \mu\text{F}$ and $R_F = 10 \text{ k}\Omega$
32. A first order low-pass Butterworth filter has a passband gain of 2. If the gain at 1kHz is 1.41, what will be the gain at 10 kHz?
- (A) 2 (B) 1
 (C) 0.1 (D) 0.2

33. Calculate the modulation depth, when a transmitter radiates a signal of 10.125 kW after modulation and 9kW without modulation of the signal :
- (A) 80% (B) 67%
(C) 50% (D) 100%
34. If the number of quantisation levels in a PCM (Pulse Code Modulation) system is increased from 8 to 64, the bandwidth of the channel changes by :
- (A) a factor of 8 (B) a factor of 4
(C) a factor of 2 (D) a factor of $\frac{1}{4}$
35. Which of the following statement is incorrect about satellite communications?
- (A) A communication satellite is repeater between many transmitting stations and many receiving stations
(B) Uplink frequency is higher than downlink frequency
(C) The Global Positioning System uses 'one way communication' from satellite to users, so that user does not require a transmitter
(D) None of these
36. Which of the following is Register Indirect Addressing?
- (A) MVI A,05 H (B) MOV A, B
(C) MOV A, M (D) LDA 2500H
37. A microprocessor acts as a central processing unit for a microcomputer. Which of the following can be part/parts of such a microprocessor?
- (A) Registers (B) RAM
(C) Peripheral Devices (D) All the above
38. 8085 microprocessor has 5 MHz frequency. An instruction cycle consists of an Opcode Fetch and Memory Read which requires 4T states and 3T states to execute. The time required to execute the instruction cycle is :
- (A) 35 μs (B) 0.7 μs
(C) 1.4 μs (D) 7 μs
39. The frequency of the crystal oscillator in the 8051 microcontroller is 12 MHz. The time required for one machine cycle is :
- (A) 12 μs (B) $\frac{1}{12} \mu s$
(C) 1 μs (D) 6 μs

40. Which of the following combination of registers are used as register pairs for 16-bit operations in 8085?
- (A) B-D (B) C-E
(C) E-L (D) H-L
41. An 8-bit Analog to Digital converter operates over a range of 0–10.24 V. The binary representation of 2.56V signal is:
- (A) 00000010 (B) 00010000
(C) 00000100 (D) 01000000
42. Which of the following statement is true about sample and Hold circuit?
- (A) It stabilizes the comparator's threshold voltage during conversion process
(B) It stabilizes the input analog signal during conversion process
(C) The analog signal frequency should be significantly higher than the frequency of Sample-Hold voltage
(D) None of these
43. Which of the following statements are correct for Beta plus decay?
- (i) Can happen if the daughter nucleus is more stable than the mother nucleus
(ii) Can take place only if the rest mass of the parent nuclide is at least two electron masses
(iii) A neutron is converted to a proton
(iv) Conserves Lepton number
- (A) (i), (ii) and (iii) (B) (ii), (iii) and (iv)
(C) (i), (ii) and (iv) (D) (i), (iii) and (iv)
44. The binding energy per nucleon :
- (A) increases steadily as we go to heavier elements
(B) decreases steadily as we go to heavier elements
(C) is approximately constant throughout the periodic table, except for very light nuclei
(D) has a maximum near iron in the periodic table
45. The conditions under which Fick's law was derived are:
- (i) Flux contributions are negligible beyond a few mean free paths
(ii) Contribution to the flux is mostly from in-elastic scattering reactions
(iii) Neutron flux is slowly varying
(iv) Neutron flux is dependent of time
- (A) (i) and (ii) are correct (B) (ii) and (iii) are correct
(C) (ii) and (iv) are correct (D) (i) and (iii) are correct

46. The unknown particle 'x' in the nuclear reaction: $\bar{k}^- + p \rightarrow k^+ + x$
- (A) Mesons (B) Hyperons
(C) Photons (D) Nucleons
47. The stable nuclei for a mass number 27 will have an atomic number corresponding to:
- (A) Sodium (B) Aluminium
(C) Magnesium (D) Silicon
48. Which statement is incorrect about quarks?
- (A) Λ^0 consists of 3 quarks (B) π^- consists of 3 quarks
(C) μ consists of 2 quarks (D) τ consists of 2 quarks
49. Filters used in XRD may eliminate
- (A) $K_{\alpha 1}$ (B) $K_{\alpha 2}$
(C) K_{β} (D) All the above
50. The attenuation mechanism due to optical fibers is because of:
- (A) dispersion and absorption and depends on cladding and not core material
(B) absorption and scattering and depends on cladding and core material
(C) dispersion and scattering and depends on core material alone
(D) absorption alone but depends on cladding and core material
51. In semiconductor laser, the emission of radiation is :
- (A) Is perpendicular to the direction of the exciting electron
(B) Is parallel to the direction of the exciting electron
(C) Is longitudinal to the direction of the exciting electron
(D) Is antiparallel to the direction of the exciting electron
52. The holographic setup should be arranged so that the vibrations due to mechanical, acoustic or thermal effects should not produce a path variations more than :
- (A) $\lambda/2$ (B) $\lambda/4$
(C) $\lambda/6$ (D) $\lambda/8$
53. The relative index change of a fibre is 0.0032 and the core refractive index is 2. Then its numerical aperture is :
- (A) 0.016 (B) 0.017
(C) 0.16 (D) 0.17
54. A fibre cable has an acceptance angle of 30° and a core index of refraction 1.6. The refractive index of cladding is:
- (A) 1.52 (B) 1.65
(C) 1.71 (D) 1.75
55. A relative population of $2/e$ is represented as the ratio of population of 2 energy states at temperature of 300K. The wavelength of the radiation emitted at that temperature is:
- (A) 1.2×10^{-6} m (B) 2.4×10^{-6} m
(C) 3.4×10^{-6} m (D) 4.8×10^{-6} m

56. The pulsing technique that is capable of producing the shortest pulse is:
 (A) Q-switching (B) Mode-locking
 (C) Cavity damping (D) Mechanical Chopper
57. The vibrational frequency of non-rigid rotator of hydrogen chloride whose centrifugal distortion constant and rotational constant are given as 10.44 cm^{-1} and $5.28 \times 10^{-4} \text{ Cm}^{-1}$ will be:
 (A) 4720 cm^{-1} (B) 6720 cm^{-1}
 (C) 5860 cm^{-1} (D) 7080 cm^{-1}
58. A Mossbauer nucleus ^{57}Fe makes the transition from the excited state of energy of $23 \times 10^{-16} \text{ J}$ to the ground state. The recoil velocity is then:
 (A) $1.05 \times 10^{-16} \text{ J}$ (B) $2.05 \times 10^{-16} \text{ J}$
 (C) $3.05 \times 10^{-16} \text{ J}$ (D) $4.05 \times 10^{-16} \text{ J}$
59. The Larmor frequency of a F-19 with gyromagnetic ratio 40.05 MHz/T in a magnetic field strength of 3 T is about:
 (A) 60 MHz (B) 30 MHz
 (C) 180 MHz (D) 120 MHz
60. The normal modes of vibrations of CO_2 molecules::
 (A) Symmetric stretching and Symmetric bending are IR active
 (B) Symmetric stretching is IR active but Symmetric bending are IR inactive
 (C) Symmetric stretching is IR inactive but Symmetric bending are IR active
 (D) Symmetric stretching and Symmetric bending are both IR inactive
61. The rotational Raman spectra of symmetric top molecule, the frequencies of R-branch lines appear as:
 (A) equally spaced lines with spacing equal to B
 (B) equally spaced lines with spacing equal to $2B$
 (C) equally spaced lines with spacing equal to $3B$
 (D) equally spaced lines with spacing equal to $4B$
62. The frequency at which the transition between the two spin states of a free electron may be observed at a field strength of 0.2 T with $g = 2.0025$ and nuclear magnetic moment $9.3 \times 10^{-24} \text{ J}$ is:
 (A) $5.6 \times 10^9 \text{ s}^{-1}$ (B) $4.8 \times 10^9 \text{ s}^{-1}$
 (C) $1.9 \times 10^9 \text{ s}^{-1}$ (D) $8.4 \times 10^9 \text{ s}^{-1}$
63. Concerning nuclear spin and NMR, which of the following statements is false?:
 (A) Nuclei with $I = 0$ readily undergo NMR
 (B) All nuclei can undergo NMR except those containing even numbers of both protons and neutrons
 (C) Every element in the periodic table has at least one isotope that can undergo NMR
 (D) Across the periodic table nuclear spins with values ranging from 0 to 8 is found to undergo NMR

64. The interplanar spacing between (221) planes of copper with lattice constant 3.62\AA is :
 (A) 1.2 nm (B) 1.2\AA
 (C) 7.2 nm (D) 7.2\AA
65. The magnetic induction of an iron rod which is subjected to a magnetic field of 2000 Am^{-1} whose susceptibility is 599 will be :
 (A) 0.75 T (B) 2.05 T
 (C) 0.91 T (D) 1.51 T
66. Which is the correct statement with regard to the Einstein-Debye phonon model?
 (A) Total specific heat depend on electronic specific heat proportional to square of temperature and Vibrational specific heat proportional to cube of temperature
 (B) Total specific heat depend on electronic specific heat proportional to cube of temperature and Vibrational specific heat proportional to square of temperature
 (C) Total specific heat depend on electronic specific heat and Vibrational specific heat where both are proportional to cube of temperature
 (D) Total specific heat depend on electronic specific heat proportional to temperature and Vibrational specific heat proportional to cube of temperature
67. The polarization of an electric field of 10^8 Vm^{-1} with a medium having dielectric constant of 2 is :
 (A) $8.85 \times 10^{-4}\text{ coulomb m}^{-2}$ (B) $8.85 \times 10^{-6}\text{ coulomb m}^{-2}$
 (C) $2.65 \times 10^{-4}\text{ coulomb m}^{-2}$ (D) $2.65 \times 10^{-6}\text{ coulomb m}^{-2}$
68. The critical field of a superconductor at 2K having critical temperature of 8K at zero magnetic field and critical field of 0.04 T at 0 K is:
 (A) .0075 T (B) .0375 T
 (C) .0625T (D) .0525 T
69. The incorrect statement regarding first Brillouin zone is :
 (A) It is the first Wigner-Seitz cell about a reciprocal lattice point in reciprocal space
 (B) The locus of points in reciprocal space that have no Bragg planes between them and the origin
 (C) is the region of reciprocal space in which a point has one Bragg Plane between it and the origin
 (D) is the region of that is a subset of the region enclosed by the 2nd Bragg plane in all directions
70. The temperature above which an anti-ferromagnetic material becomes paramagnetic is the :
 (A) Critical temperature (B) Curie temperature
 (C) Weiss temperature (D) Neel Temperature

75. At which of the following stages of Piaget's theory of cognitive development is a child confronted with confusing ideas?

- (A) Concrete operational stage (B) Sensorimotor stage
(C) Formal operational stage (D) Preoperational stage

76. Match the statement given in the List A with the List B :

List A

List B

- | | |
|---|---------------------------|
| (i) Research by the user for the user | (1) Experimental research |
| (ii) Research to establish the existence of cause-and-effect relationship between two variables | (2) Fundamental research |
| (iii) Research for adding new knowledge to the existing repository of knowledge | (3) Action research |
| | (4) Applied research |

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|-----|-----|------|-------|
| | (i) | (ii) | (iii) |
| (A) | (3) | (2) | (1) |
| (B) | (4) | (3) | (1) |
| (C) | (3) | (1) | (2) |
| (D) | (4) | (1) | (2) |

77. Which one of the following refers to the authenticity or genuineness of the document?

- (A) External Criticism (B) External Validity
(C) Internal Validity (D) Internal Criticism

78. Which of the following is the correct sequence of steps in historical research?

- (i) Identify primary and secondary data sources.
(ii) Analyze the data and develop a narrative exposition of the findings.
(iii) Evaluate the authenticity and accuracy of source materials.
(iv) Collection of data
- (A) (i), (iv), (iii), (ii) (B) (ii), (iii), (iv), (i)
(C) (ii), (iv), (i), (iii) (D) (iii), (i), (iv), (ii)

79. Which of the following options most appropriately explains 'Research Ethics'?
- (A) It states how to write a research report with stylistic language.
 - (B) To avoid presenting other's work as own
 - (C) Description of methodology
 - (D) It provides a common set of do's and don'ts of conducting ethical research
80. An academic lecture or presentation to an audience on certain topics of educational nature, it is called :
- (A) Conference
 - (B) Workshop
 - (C) Seminar
 - (D) Symposium
81. The Constitution of India exhibits federal characteristics, eventhough it does not explicitly define India as a federal state. Which of the following statements are TRUE about the federal characteristics of the Indian Constitution?
- (i) The Constitution provides for an independent and impartial judiciary.
 - (ii) The Constitution establishes institutional checks and balances to limit the power of both states and the centre.
 - (iii) The central government possesses more powers than state governments, making the constitution more unitary in nature.
- (A) Only (i) and (ii)
 - (B) Only (ii) and (iii)
 - (C) Only (i) and (iii)
 - (D) All the above (i), (ii) and (iii)
82. The Indian Constitution includes a comprehensive chapter on fundamental rights. Which of the following statements regarding fundamental rights in the Indian Constitution is/are TRUE?
- (i) The right to life and liberty prohibits discrimination based on religion, race, caste, sex, or birthplace.
 - (ii) Individuals can approach the judiciary in India to enforce their fundamental rights under the right to constitutional remedy.
 - (iii) Cultural and educational rights protect the interests of minorities by preserving their language, script and culture.
- (A) Only (i) and (ii)
 - (B) Only (ii) and (iii)
 - (C) Only (i) and (iii)
 - (D) All the above (i), (ii) and (iii)

83. Which of the following is NOT true about the Indian judiciary?
- (A) It is responsible for interpreting the Constitution
 - (B) It consists of the Supreme Court and several High Courts in different states
 - (C) It serves as a check on the powers of the executive and legislative branches of the government
 - (D) The doctrine of “due process of law” gives the judiciary more power than the legislature.

84. Find the appropriate match between the columns of constitutional Amendments in India and the Goals of Amendment in the following table. Then, select the correct answer group :

Constitutional Amendments		Goals of Amendment	
(i) 102 nd Amendment	(1) The Bill aims to give State governments the power to identify socially and educationally backward OBCs		
(ii) 103 rd Amendment	(2) To extend the reservation of seats for Scheduled Castes and Scheduled Tribes in the Lok Sabha and State Assemblies until 2030		
(iii) 104 th Amendment	(3) To reserve seats for economically weaker sections of society in government educational institutions and public employment.		
(iv) 105 th Amendment	(4) Create a National Commission for Backward Classes and grant the President the authority to identify socially and educationally disadvantaged groups.		

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|-----|-----|------|-------|------|
| | (i) | (ii) | (iii) | (iv) |
| (A) | (1) | (2) | (3) | (4) |
| (B) | (2) | (1) | (4) | (3) |
| (C) | (3) | (2) | (1) | (4) |
| (D) | (4) | (3) | (2) | (1) |

85. Though instituted much later, the fundamental duties are an inevitable part of the Indian Constitution. Which of the following statement is/are TRUE about the fundamental duties enshrined in the Constitution?

- (i) They are a set of moral and ethical obligations that every citizen of India is expected to fulfil.
- (ii) These are not legally enforceable but promote responsibility and patriotism among citizens.
- (iii) They cover a specific range of areas and are limited to duties related to the Constitution, the national flag and anthem.
- (iv) They are complementary to the fundamental rights enshrined in the Indian Constitution.

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|------------------------------|---|
| (A) Only (i), (ii) and (iii) | (B) Only (ii), (iii) and (iv) |
| (C) Only (i), (ii) and (iv) | (D) All the above (i), (ii), (iii) and (iv) |

86. Which of the following is NOT one of the effects of the emergency provisions mentioned in the Indian Constitution?
- (A) The President can issue ordinances that have the same force as Acts of Parliament.
 - (B) The life of the Rajya Sabha can be extended by one year at a time.
 - (C) The Centre can give directions to the state governments on any matter.
 - (D) The fundamental rights of citizens can be suspended during a national emergency.
87. The Constitution of India contains an exclusive provision for amendment. Which of the following statements is TRUE about the amendment procedure in the Constitution of India?
- (i) Amendments related to the admission or establishment of new states can be made by a simple majority of the two houses of Parliament.
 - (ii) The amendment procedure balances the need for flexibility with the need for stability and continuity.
 - (iii) The parliament has initiated the “basic structure” doctrine of the Constitution, which cannot be amended.
- (A) Only (i) and (ii)
 - (B) Only (ii) and (iii)
 - (C) Only (i) and (iii)
 - (D) All the above (i), (ii) and (iii)
88. Which of the following statements about the Directive Principles of State Policy (DPSP) in the Indian Constitution is NOT true?
- (A) The DPSPs are meant to guide the government in its policy-making and decision-making.
 - (B) The Directive Principles aim to improve people’s welfare by incorporating socio-economic and political conditions into all aspects of life.
 - (C) The DPSPs are enforceable by any court in India.
 - (D) The DPSP seeks to establish economic and social democracy in the country.
89. Which among the following are the functions of the NHRC?
- (i) To enquire complaints of violation of human rights or negligence in the prevention of violation by a public servant
 - (ii) To study human rights treaties and international instruments, and recommend their effective implementation to the government.
 - (iii) To spread human rights awareness and encourages efforts in human rights literacy at national and international levels.
 - (iv) To hear complaints related to service matters and matters that are sub-judice.
- (A) Only (i), (ii) and (iii)
 - (B) Only (ii), (iii) and (iv)
 - (C) Only (i), (iii) and (iv)
 - (D) All the above (i), (ii), (iii) and (iv)

96. Match the following :

- (i) Rajyasamacharam (1) Moorkoth Kumaran
(ii) Vivekodayam (2) Swami Guruprasad
(iii) Gajakesari (3) Basel Mission Society
(iv) Mithavadi (4) Ezhava Gazette

- (i) (ii) (iii) (iv)
(A) (2) (1) (4) (3)
(B) (3) (4) (1) (2)
(C) (4) (1) (2) (3)
(D) (3) (4) (2) (1)

97. Find out the incorrect statement/statements from the following :

- (i) Bhaskara Menon is regarded as the first detective novel in Malayalam.
(ii) Kerala Sangeetha Nataka Academy was inaugurated by Pandit Jawaharlal Nehru, the then Prime Minister of India, on 26 April 1958.
(iii) M.K. Sanu was the President of Purogamana Kala Sahithya Sangham during 1988-90.
(iv) Lilathilakam is a 16th Century treatise on Malayalam grammar and poetics.

- (A) (i) only
(B) (ii) and (iv) only
(C) (i) and (iii) only
(D) (iv) only

98. Match the following :

- | | |
|-------------------------------|---|
| (i) Parvathy Nenmenimangalam | (1) Agnipushpangal |
| (ii) Lalithambika Antharjanam | (2) KPCC President in 1944 |
| (iii) A.V. Kuttimalu Amma | (3) Founder and editor of the journal "Shreemati" |
| (iv) Justice Anna Chandy | (4) Antharjana Samajam |

- | | | | | |
|-----|-----|------|-------|------|
| | (i) | (ii) | (iii) | (iv) |
| (A) | (4) | (1) | (2) | (3) |
| (B) | (3) | (4) | (1) | (2) |
| (C) | (2) | (4) | (3) | (1) |
| (D) | (1) | (3) | (4) | (2) |

99. Find out the wrong pair from the following table :

- | | | |
|-----------------------------|-----|--|
| (i) Dr. Ayyathan Gopalan | – | Rao Sahib |
| (ii) K.P. Vallon | – | 'Adhakrithan' magazine |
| (iii) P.K. Chathan Master | – | Member of Legislative Assembly from Chelakkara |
| (iv) T.K. Krishnaswami Iyer | – | Called 'Untouchable Brahmin' |
| (A) (i) only | (B) | (ii) only |
| (C) (iii) only | (D) | (iv) only |

100. Match the following :

- | | |
|------------------------|---------------------------|
| (i) P.Kesavadev | (1) Ente Vazhiyambalangal |
| (ii) Ponkunnam Varkey | (2) Ethirppu |
| (iii) S.K. Pottekkatt | (3) Kazhinjakalam |
| (iv) K.P. Kesava Menon | (4) Ente Vazhithirivu |

- | | | | | |
|-----|-----|------|-------|------|
| | (i) | (ii) | (iii) | (iv) |
| (A) | (4) | (1) | (2) | (3) |
| (B) | (2) | (4) | (1) | (3) |
| (C) | (3) | (2) | (4) | (1) |
| (D) | (2) | (1) | (4) | (3) |

SPACE FOR ROUGH WORK

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