

103/2022

1. Which of the following is **not** a part of India's national debt ?
(A) National Savings Certificate (B) Dated Government Securities
(C) Life Insurance Policies (D) Provident Funds
2. Consider the following statements about India's national anthem.
(i) It was composed originally in Bengali.
(ii) It was first sung in 1906 at the Kolkata session of the Indian National Congress.
(iii) The complete song consists of six stanzas.

Which among the given statement(s) is/are true ?

- (A) Only (i) (B) (i) and (iii) (C) Only (ii) (D) (i), (ii) and (iii)

3. Which of the following is/are related to Tiger Census in India ?
(i) Extract Compare
(ii) M-STriPES
(iii) MAGE
(iv) Cytochrome - b - marker

Select the correct answers from the codes given below.

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

4. Which of the following is/are covered under the priority sector lending ?
(i) Agriculture (ii) Start ups
(iii) Export Credits (iv) Renewable Energy Projects

Select the correct answer from the codes given below :

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

5. With reference to Going Online as Leaders (GOAL), consider the following statements :
(i) GOAL is a joint initiative of Microsoft and the Ministry of Tribal Affairs.
(ii) It aims to provide online e-commerce platforms to tribal people to sell their products.

Which of the statements given above is/are correct ?

- (A) Only (i) (B) Only (ii)
(C) Both (i) and (ii) (D) None

6. *Sai, Orison, Tila, Beri* and *Sileru* are the names of :
(A) peaks in India (B) rivers in India (C) birds in India (D) folk dances in India

7. In the history of Travancore, which of the following is **not** an achievement during the reign of Swathi Thirunal ?
- (A) First Post Office in Travancore
 (B) Opening of Trivandrum Observatory
 (C) First Census of Travancore
 (D) Introduction of English Education

8. Which of the following are associated with the reign of Asoka ?
- (i) Rock cut elephant at Dhauri (ii) Badami Caves
 (iii) Lomas Rishi Caves (iv) Udayagiri Caves

Select the correct answer using the codes given below.

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

9. Which of the following is true about GST Council ?

- (A) A newly inserted Article 277A provides for the setting up of GST Council.
 (B) Any decision of the GST Council should be taken by 3/4th majority
 (C) Union Territories have no representation in the GST Council.
 (D) The Union Finance Secretary acts as the ex-officio secretary to the GST Council.

10. Arrange the following biogeographic zones of India from largest to smallest in terms of total geographical area.

- (A) North East Region – Semi Arid – Gangetic Plain – Himalayan zone – Western Ghats
 (B) Himalayan zone – Gangetic Plain – Semi Arid – Western Ghats – North East Region
 (C) Semi Arid – Gangetic Plain – Himalayan zone – North East Region – Western Ghats
 (D) Gangetic Plain – Himalayan zone – Semi Arid – North East Region – Western Ghats

11. The load current corresponding to maximum efficiency of DC generator is given by :

(A) $I = \sqrt{\frac{W_C}{R_a^2}}$ (B) $I = \frac{V}{R_a}$ (C) $I^2 = \sqrt{\frac{W_C}{R_a}}$ (D) $I = \sqrt{\frac{W_C}{R_a}}$

12. $A \cdot (\overline{A} + B)$ is equal to :

- (A) AB (B) A (C) \overline{AB} (D) B

13. The reciprocal of reluctance is :

- (A) Conductance (B) Permeance (C) Reactance (D) Permeability

14. The statement which is false regarding the ladder diagram is :
- (A) power bar on far left (B) one or more relay coils at the right
(C) neutral bar on the right (D) more than one coils are in series
15. The capacitance of a parallel plate capacitor of thickness d meters, plate area A m², medium consist partly air and partly parallel sided dielectric slab of thickness t , and relative permittivity ϵ_r is :
- (A) $\frac{\epsilon_0 \epsilon_r A}{d}$ farad (B) $\frac{\epsilon_0 A}{d}$ farad
(C) $\frac{\epsilon_0 A}{[d - (t - t/\epsilon_r)]}$ farad (D) $\frac{\epsilon_0 A}{[d^2 - (t - t/\epsilon_r)]}$ farad
16. The advantages of fuses are :
- (A) inverse time – current characteristics
(B) no maintenance
(C) cheapest type of protection
(D) all of the above
17. The register is an important building block of :
- (A) multipliers (B) microprocessors
(C) memories (D) all of the above
18. The four register groups of 8051 microcontrollers organized from addresses.
- (A) 00 to FF (B) 00 to 7F (C) 00 to 3F (D) 00 to 1F
19. The diffusion of holes and electrons take place in diodes because :
- (A) they move haphazardly due to thermal energy
(B) there is a difference in their concentration in the two regions
(C) both (A) and (B)
(D) none of the above
20. The component of overhead line whose function is to keep the line conductors at a safe distance from each other and from the pole is :
- (A) V-guards (B) cross-arm (C) phase plates (D) guard wire
21. In a three phase induction motor the torque developed is approximately proportional to :
- (A) $S^{1/2}$ (B) S^2 (C) S^{-1} (D) S

22. The method of breaking, in which the motor is disconnected from the supply and operated as a generator driven by the kinetic energy of the rotating parts of the motor and its driven machine is :
- (A) plugging (B) regenerative breaking
(C) dynamic breaking (D) counter current breaking
23. Negative feedback in an amplifier causes :
- (A) for decrease in voltage gain (B) for increase in current gain
(C) for increase in voltage gain (D) for decrease in bandwidth
24. Which of the semiconductor devices, out of the following is **not** a current triggered device ?
- (A) SCR (B) GTO (C) TRIAC (D) MOSFET
25. Faraday tube is a :
- (A) unit tube of electric flux (B) unit tube of magnetic flux
(C) unit tube of field intensity (D) None of these
26. In reaction turbine the kinetic energy of water is converted to potential energy by :
- (A) buckets (B) surge tank (C) draft tube (D) none of the above
27. Electrical characteristics of DC series motor is :
- (A) hyperbola (B) straight line (C) parabola (D) None of these
28. A D flip-flop can be constructed from an S R flip-flop by inserting :
- (A) an inverter between S and R and assigning the symbol D to the S input
(B) an inverter between S and R and assigning the symbol D to the R input
(C) a J-K flip-flop between S and R and assigning the symbol D to the S input
(D) none of the above
29. The dc motor used in electric traction is :
- (A) Cumulative compound (B) Shunt motor
(C) Series (D) Differential compound
30. In forward blocking mode of SCR the junction J_2 will have an avalanche breakdown at a voltage called :
- (A) reverse breakdown voltage (B) forward break over voltage
(C) cut in voltage (D) forward voltage

31. The magnetic potential at any point within a magnetic field :
- (A) is numerically equal to the force experienced by N pole of 1 Weber placed at that point.
 - (B) is the work done in shifting a N-pole of 1 Weber from infinity to that point against the force of the magnetic field.
 - (C) is numerically equal to the force experienced by S pole of 1 Weber placed at that point.
 - (D) None of the above.
32. The lighting scheme which is best suited to rooms with high ceilings where a high level of uniformly distributed illumination is required is :
- (A) direct lighting
 - (B) semi-direct lighting
 - (C) indirect lighting
 - (D) all of the above
33. The logic gate which can be used as a controlled inverter is :
- (A) NAND
 - (B) NOR
 - (C) Ex-OR
 - (D) AND
34. The ratio of the number of electrons arriving at collector to the number of emitted electrons is known as :
- (A) emitter injection ratio
 - (B) emitter efficiency
 - (C) base transportation factor
 - (D) peak in voltage
35. Identify the true statement regarding the operation amplifier.
- (A) it is a low gain transformer coupled amplifier
 - (B) it is a low gain ac amplifier
 - (C) it is a high gain dc amplifier
 - (D) it is a high gain RC coupled amplifier
36. Retardation test is applicable to :
- (A) DC series machine for determining stray losses
 - (B) DC shunt machine for determining stray losses
 - (C) DC shunt machine for determining copper losses
 - (D) DC series machine for determining copper losses
37. The change produced in the rotor torque due to a change of 5% in supply voltage of 3 phase induction motor will be :
- (A) approximately 20%
 - (B) approximately 15%
 - (C) approximately 7.5%
 - (D) approximately 10%

38. The leakage current in the transistor is due to :
- (A) minority carriers
 - (B) majority carriers
 - (C) both majority and minority carriers
 - (D) none of the above
39. The frequency range of supply for electric heating is :
- (A) 1 kHz to 10 kHz
 - (B) 10 MHz to 40 MHz
 - (C) 10 kHz to 40 kHz
 - (D) 1 MHz to 10 MHz
40. In a type C chopper the power flow may be :
- (A) source to load
 - (B) load to source
 - (C) A or B
 - (D) A and B
41. Identify the true statement of the following :
- (A) Current rating of fuse element is always more than its fusing current
 - (B) In transmission lines the ground wires run below the line conductors
 - (C) Loop –in-system is universally used for connections of various lamps and other appliances in parallel
 - (D) Sodium vapour lamp is only suitable for operation in dc
42. The specific resistance or resistivity of copper is :
- (A) 0.71 Ohm meter
 - (B) 1.07 Ohm meter
 - (C) 2.7 Ohm meter
 - (D) 1.72 Ohm meter
43. In a super heater of thermal power plants :
- (A) pressure rises and temperature remains the same
 - (B) temperature rises and pressure remains unchanged
 - (C) temperature rises and pressure drops
 - (D) pressure rises and temperature drops
44. If an alternating voltage of constant magnitude but of varying frequency is applied to an RLC series circuit at low frequency :
- (A) the impedance is large
 - (B) net circuit reactance is inductive
 - (C) the power factor is leading
 - (D) both (A) and (C)
45. The decimal equivalent of hexadecimal number AC_{16} is :
- (A) 172
 - (B) 127
 - (C) 177
 - (D) 173

46. Shaft torque of DC motor is :

(A) $\frac{HP}{2\pi N/60}$ N.m

(B) $\frac{\text{output in watts}}{2\pi N/60}$ N.m

(C) $\frac{HP \times 746}{2\pi N^2/60}$ N.m

(D) $\frac{\text{output in watts}}{2\pi N}$ N.m

47. Sodium vapour lamps are used for the illumination of :

(A) parks

(B) rail yards

(C) streets and highways

(D) all of the above

48. A DC line carries :

(A) more power than AC line.

(B) same power as in AC line.

(C) less power than in AC line.

(D) none of the above.

49. Cumulative compound motor is used in :

(A) electric locomotives

(B) centrifugal pumps

(C) for shears and punches

(D) None of the above

50. The rate of change of potential with distance in the direction of electric force is :

(A) electric flux density

(B) potential gradient

(C) break down voltage

(D) electric intensity

51. The amplifier becomes an oscillator when :

(A) $A\beta = -1$

(B) $A\beta = 1$

(C) $A\beta = 0$

(D) $A\beta < 1$

52. The number of commutator segments of DC generator is :

(A) equal to the number of turns in the armature winding

(B) equal to number of armature conductors

(C) equal to number of armature coils

(D) equal to number of poles

53. 1 kWh is equal to :

(A) 4186 J

(B) 36×10^3 J

(C) 8600 kcal

(D) 36×10^5 J

54. When a voltage $V_{3m} \sin 3\omega t$ is applied to a pure inductor L then inductive reactance is :

(A) $1.5 \omega L$

(B) $1.3 \omega L$

(C) $3 \omega L$

(D) $9 \omega L$

55. What is the height of the roof pole ?

(A) not exceeding 3 m

(B) not exceeding 3.5 m

(C) not exceeding 2.5 m

(D) not exceeding 5 m

56. Snubber circuit is used in thyristor for :
- di/dt protection
 - false turn on of a thyristor by large dv/dt
 - false turn -on of a thyristor by large di/dt
 - all of the above
57. The dynamic input resistance of common base configuration is :
- of the order of $1M \Omega$
 - 20Ω to 100Ω
 - of the order of $10M \Omega$
 - 200Ω to 500Ω
58. Q factor of a coil is :
- $\frac{R}{Z}$
 - $2\pi \frac{\text{maximum energy stored}}{\text{energy dissipated per cycle}}$
 - $4\pi \frac{\text{maximum energy stored}}{\text{energy dissipated per cycle}}$
 - $2\pi \frac{\text{energy dissipated per cycle}}{\text{maximum energy stored}}$
59. Peak inverse voltage of a centre - tap rectifier is :
- V_m
 - $2V_m$
 - $0.5V_m$
 - $4V_m$
60. The minimum size of earth continuity conductor is :
- 2.9 mm^2
 - 2.5 mm^2
 - 2 mm^2
 - 1.5 mm^2
61. The stator of modern alternators is wound for :
- 240° phase group
 - 90° phase group
 - 360° phase group
 - 60° phase group
62. Skin effect in transmission line is due to :
- supply voltage
 - supply frequency
 - self inductance of the conductor
 - both (B) and (C)
63. The limiting value of leakage current in an electrical installation is :
- not exceeding $1/500$ of maximum supply current
 - not exceeding $1/50000$ of maximum supply current
 - not exceeding $1/5000$ of maximum supply current
 - not exceeding $1/50$ of maximum supply current

64. The rate of rise of restriking voltage of circuit breaker depends on :
- (A) inductance and capacitance of the system
 (B) system voltage only
 (C) circuit power factor only
 (D) both (A) and (C)
65. All day efficiency of transformer is always :
- (A) higher than commercial efficiency
 (B) equal to commercial efficiency
 (C) less than commercial efficiency
 (D) none of the above
66. BCD code of 5632 is :
- (A) 0101 0110 0011 0010 (B) 0101 0100 1100 0010
 (C) 0010 0011 0001 0101 (D) 1010 0110 0011 0010
67. 2's compliment of the number 1110101 is :
- (A) 0101011 (B) 0001011 (C) 0001101 (D) 0101111
68. The type of wiring which is suitable for temporary wiring is :
- (A) Casing and capping (B) CTS or TRS
 (C) Cleat wiring (D) Conduit wiring
69. Languages encountered in PLCs :
- (A) ladder programming (B) C programming
 (C) statement list programming (D) both (A) and (C)
70. The transistor configurations in which the emitter-base junction is always forward biased and collector-base junction is always reverse biased is :
- (A) common emitter configuration (B) common collector configuration
 (C) common base configuration (D) all of the above
71. 16 bits registers of 8051 microcontroller :
- (A) program counter (B) data pointer
 (C) register A (D) both (A) and (B)
72. Maximum permissible value of earth resistance in large power station is :
- (A) 1.0 Ω (B) 0.5 Ω (C) 2 Ω (D) 0.75 Ω

73. A decoder converts an n - bit binary input code into :
- (A) $2n$ output lines (B) n^2 output lines
 (C) 2^n output lines (D) n^3 output lines
74. Single phase dc drives which offers two quadrant operation is :
- (A) half-wave converter drive (B) semi converter drive
 (C) full converter drive (D) dual converter drive
75. Transmission lines are transposed :
- (A) to reduce corona
 (B) to reduce skin effect
 (C) voltage drop in the lines can be minimized
 (D) balance line voltage
76. The direct lighting scheme is most efficient but is liable to cause :
- (A) monotony (B) glare (C) rising main (D) all of the above
77. Sum of products (SOP) is basically :
- (A) an AND operation of OR operated variable
 (B) an OR operation of AND operated variable
 (C) both (A) and (B)
 (D) none of the above
78. An induction motor is working in field – weakening mode with :
- (A) variable voltage and constant frequency
 (B) increased voltage and constant frequency
 (C) constant voltage and increased frequency
 (D) constant voltage and decreased frequency
79. The ratio of differential gain and common mode gain of an op-amp is :
- (A) Slew rate (B) Gain of op-amp (C) CMRR (D) CMMR
80. A 4- flip-flop counter can count as high as :
- (A) 16_{10} (B) 10_{10} (C) 20_{10} (D) 15_{10}
81. The test voltage of the Megger is :
- (A) 500 (B) 2500 (C) 750 (D) (A) or (B)

82. Most of ammeter coils of PMMC instruments are wound on non magnetic formers because :
- (A) that provide required electromagnetic damping
 (B) coil turns are effectively shorted by the ammeter shunt
 (C) coil turns are effectively shorted by the load
 (D) none of the above
83. Error limit of an instrument is :
- (A) 0.67σ (B) 3σ (C) $0.39/\sigma$ (D) $0.71/\sigma$
84. In an induction type energy meter the flux produced by the pressure coil current is :
- (A) lead the applied voltage by an angle 90°
 (B) lag the applied voltage by an angle Δ less than 90°
 (C) lag the applied voltage by an angle 90°
 (D) lead the applied voltage by an angle Δ less than 90°
85. According to Hindu mythology which God must be offered prayers before anyone else ?
- (A) Parasurama (B) Shiva (C) Vishnu (D) Ganesha
86. The damping used in dynamometer type watt meter is :
- (A) Eddy current (B) Electromagnetic
 (C) Air friction (D) Fluid friction
87. In a digital instruments sine wave is converted into rectangular pulse is by :
- (A) sample and hold circuit (B) schmitt trigger
 (C) differential amplifier (D) sawtooth generator
88. The Place famous for Padayani :
- (A) Guruvayoor (B) Varkala (C) Kodungallur (D) Kadamminatta
89. Who composed Mahabharatha ?
- (A) Valmiki (B) Kalidasa (C) Vedavyasa (D) Sankaracharya
90. Prominent deity in Rigveda is :
- (A) Agni (B) Varuna (C) Rudra (D) Indra
91. Who is the author of *Thanthrasamuchaya* ?
- (A) Sree Narayanaguru
 (B) Chattampi Swamikal
 (C) Chennas Narayanan Namboodiripad
 (D) Vagbhadanada Gurudeva

92. Odisha is famous for which Sun temple among the following ?
 (A) Suryanarayan Swami temple (B) Konark sun temple
 (C) Suryanar temple (D) Modhera sun temple
93. Typical secondary transducer element is :
 (A) burdon tube (B) spring (C) vanes (D) strain gauge
94. Which musical instrument is **not** a part of Panchavaadya ?
 (A) Veena (B) Thimila
 (C) Thoppi-Maddalam (D) Idayka
95. The most sacred structure in a temple complex is :
 (A) Gopura (B) Sree kovil (C) Thitappalli (D) Oottupura
96. Who is **not** an Avathara of Mahavishnu ?
 (A) Vamana
 (B) Bairava
 (C) Narasimha
 (D) Sree Krishna
97. Transducer used for the measurement of displacement is :
 (A) LVDT (B) shaft recorder
 (C) differential capacitor (D) strain gauge
98. The power of three -wire balanced system was measured by two wattmeter method. The reading of the one of the wattmeter was found to be negative deflection. What is the *pf* ?
 (A) 0.5 (B) Below 0.5 (C) 0.866 (D) 1
99. Sree Padmanabha Swami temple Thiruvananthapuram is the example of which style of temple architecture ?
 (A) Nagara (B) Vesara (C) Dravida (D) Champa
100. Lissajous pattern obtained on the screen of a CRO can be used to determine.
 (A) phase shift (B) amplitude distortion
 (C) frequency (D) voltage magnitude

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