

Question Booklet
Alpha Code

A

218/2014

Booklet Sr. No.

160322

Total Number of Questions: 100

Maximum Marks : 100

Time : 75 Minutes

INSTRUCTIONS TO CANDIDATES

1. The question paper will be given in the form of a Question Booklet. There will be four versions of question booklets with question booklet alpha code viz. A, B, C & D.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the question booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a question booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your question booklet is un-numbered, please get it replaced by new question booklet with same alpha code.
6. The question booklet will be sealed at the middle of the right margin. Candidate should not open the question booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the question booklet supplied to him contains all the 100 questions in serial order. The question booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank page of paper is attached to the question booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices (A), (B), (C) and (D) having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

218/2014-A



1. In an RLC series circuit the impedance at resonance is
 (A) Inductive (B) Resistive
 (C) Capacitive (D) No impedance
2. In a step up transformer, the frequency of secondary voltage is
 (A) Zero (B) Greater than that of primary
 (C) Equal to that of primary (D) Less than that of primary
3. When two resistor R_1 and R_2 connected in parallel the total resistance R_T will be
 (A) $R_T = R_1 + R_2$ (B) $R_T = \frac{R_1 + R_2}{R_1 \times R_2}$
 (C) $R_T = \frac{1}{R_1} + \frac{1}{R_2}$ (D) $R_T = \frac{R_1 \times R_2}{R_1 + R_2}$
4. The SI unit of flux density is
 (A) Maxwell (B) Tesla
 (C) Weber (D) Gauss
5. The impurity added to make P type semiconductor is
 (A) Arsenic (B) Antimony
 (C) Boron (D) Silicon
6. When positive probe of ohmmeter is connected to anode and negative probe to the cathode of a diode, the meter indicates
 (A) Low resistance (B) No resistance
 (C) High resistance (D) None of the above
7. The dc output voltage for a bridge rectifier without filter when $24 V_{rms}$ is applied as input is
 (A) 10.8 V (B) 24 V
 (C) 21.6 V (D) 7.64 V
8. In a voltage regulator using Zener diode, the Zener is connected as
 (A) Parallel with load, reverse biased (B) Parallel with load, forward biased
 (C) Series with load, forward biased (D) Series with load, reverse biased

9. When checking an NPN transistor using ohmmeter, the transistor junction is forward biased
(A) + probe at collector, - probe at base (B) - probe at emitter, + probe at collector
(C) - probe at base, + probe at collector (D) + probe at base, - probe at emitter
10. A two stage RC coupled amplifier have stage gains of 30 and 40. The overall gain is
(A) 70 (B) 1200
(C) 120 (D) 12000
11. The astable multivibrator
(A) have two stable states (B) have a stable state
(C) is free running (D) flip flop circuit
12. The time period of output waveform of an astable multivibrator is
(A) $T = 0.69 RC$ (B) $T = 1.38 R_1 C_1 + 1.38 R_2 C_2$
(C) $T = RC$ (D) $T = 1.38 RC$
13. The noise generated by random variations in the arrival of electrons or holes at the electrodes of an Amplifying device is
(A) Thermal agitation noise (B) Shot noise
(C) Transit time noise (D) Resistance noise
14. Secondary cell has the characteristic of
(A) Not rechargeable (B) Dry cell
(C) Rechargeability (D) Both (A) and (B)
15. In a bridge rectifier the PIV across a non-conducting diode equals
(A) twice the peak value of ac input
(B) four times the peak value of ac input
(C) half the peak value of ac input
(D) the peak value of ac input
16. The number of PN junctions in a JFET is
(A) 1 (B) 2
(C) 3 (D) no junctions

17. The SCR can be switched off by
 - (A) Low current drop out
 - (B) Applying forward break over voltage
 - (C) Applying valley voltage
 - (D) Applying negative trigger at its gate
18. The open by pass capacitor in a CE amplifier causes
 - (A) Increase in voltage gain
 - (B) Decrease in voltage gain
 - (C) Introduces positive feedback
 - (D) Gain remains unchanged
19. Three resistors each with a value of 0.069 M ohm are connected in parallel. The total resistance is
 - (A) 23 ohm
 - (B) 230 K ohm
 - (C) 0.23 M ohm
 - (D) 23 K ohm
20. The power factor is defined as
 - (A) Peak power times 0.707
 - (B) Cosine of the phase angle between true power and apparent power
 - (C) Ratio of true power to apparent power
 - (D) Sine of the phase angle difference between voltage and current
21. The reciprocal of reactance is
 - (A) Reluctance
 - (B) Susceptance
 - (C) Admittance
 - (D) Impedance
22. In oscillators the Barkhausen criterion for oscillation is given by the condition
 - (A) $A\beta = 1$
 - (B) $A\beta = 0$
 - (C) $A\beta > 1$
 - (D) $A\beta < 1$
23. Fold back current limiting has the following advantage over simple current limiting :
 - (A) Simple construction
 - (B) Less power dissipation of series transistor
 - (C) Short circuit current > maximum load current
 - (D) None of the above

24. NPN transistors are preferred to PNP transistors because of
(A) Easy use in +ve supply rail
(B) Higher switching speed
(C) A wide range of operating temperature
(D) the reasons mentioned in (A) and (B)
25. The LED which emits invisible light is
(A) Bicolour LED
(B) LASER LED
(C) Tricolour LED
(D) Infra red LED
26. The copper from copper clad boards is removed by using
(A) Thinner
(B) Etchant
(C) Eraser
(D) Remover
27. The voltage gain of an RC coupled amplifier is 100. What is the gain in dB ?
(A) 40
(B) 20
(C) 30
(D) 10
28. The IC number for quad 2 input NOR gate is
(A) 7400
(B) 7401
(C) 7402
(D) 7404
29. When JK flip flops are used to make frequency counters, the condition used is
(A) $J = K = 1$
(B) $J = 0, K = 1$
(C) $J = K = 0$
(D) $J = 1, K = 0$
30. The number of flip flops required to construct a mod 10 counter is
(A) 2
(B) 4
(C) 3
(D) 10
31. The simplification of Boolean expression $A + \bar{A}B$ is
(A) AB
(B) $\bar{A} + B$
(C) $\bar{A}B$
(D) $A + B$
32. The number of PN junctions in a DE MOSFET is
(A) 1
(B) 0
(C) 3
(D) 2

33. The opto coupler is most commonly called as
(A) Photo detector (B) Photo transistor
(C) Opto isolator (D) Darlington transistor
34. The function of RC snubber circuit in lamp dimmer is
(A) to slow down the rate of rise of voltage applied across the triac
(B) to provide smooth phase control
(C) to provide variable firing angle to triac
(D) to provide effective grounding
35. Semiconductor device BPW 34 is a
(A) photo diode (B) photo and varactor diode
(C) varactor diode (D) photo voltaic cell
36. For a 20" picture tube, the filament voltage is
(A) 3V dc (B) 5V dc
(C) 6.3V dc (D) 6.3V ac
37. In a TV Receiver, the linearity coil is connected in
(A) Parallel with horz deflection coil
(B) Series with horz deflection coil
(C) Series with horz driver transformer
(D) Parallel with LOT
38. Bifilar IF coils has the following advantage over other IF coils
(A) maximum energy transfer from primary and secondary winding.
(B) small in size.
(C) maximum coupling between primary and secondary winding.
(D) ferrite iron core is not used as former for winding.
39. The balun transformer consists of two small 470 pF capacitors inside it. The purpose of these capacitors is
(A) to block dc and permit ac
(B) facilitates static charging
(C) effective coupling of ac signal to tuner input
(D) to prevent damage due to lightning

40. The luminance signal is delayed by approximately
(A) 100 μ S (B) 60 μ S
(C) 120 μ S (D) 30 μ S
41. The function of using a squelch circuit in a TV receiver is
(A) to boost the higher frequencies.
(B) to improve the frequency response of amplifiers.
(C) mute audio output during the absence of video signal.
(D) to improve the S/N ratio.
42. The sensitivity of an oscilloscope depends on
(A) vertical amplifier (B) sweep oscillator
(C) horz amplifier (D) CRT
43. The impedance of Yagi – Uda antenna is
(A) 100 ohm (B) 300 ohm
(C) 200 ohm (D) 75 ohm
44. Which of the following gate has high output when its inputs are different ?
(A) NAND gate (B) EX NOR gate
(C) NOR gate (D) EX OR gate
45. In RS flip flop using NAND gates, the race condition occurs when its inputs are
(A) 0, 0 (B) 0, 1
(C) 1, 0 (D) 1, 1
46. The BCD equivalent of decimal 38 is
(A) 1000011 (B) 00111000
(C) 00111001 (D) 00100110
47. The voltage across the diode in a half wave rectifier when it is non-conducting is
(A) zero (B) is constant at 0.3 V
(C) 0.7 V (D) same as the input voltage
48. PN junctions are called bipolar devices because
(A) they contain both P and N layers
(B) conduction is due to both hole and electron currents
(C) they work with both +ve and -ve supplies
(D) all of the above

49. AM broadcast band is
- (A) 1605 KHz to 30 MHz (B) 10 to 30 KHz
(C) 535 KHz to 1605 KHz (D) 88 MHz to 108 MHz
50. In AM radio, the bandwidth of the IFTs used is
- (A) 455 KHz (B) 10.7 MHz
(C) 440 KHz (D) 20 KHz
51. In radio receivers, the AGC bias voltage controls the gain of
- (A) RF amplifier (B) IF amplifier
(C) AF amplifier (D) All of the above
52. The colour sub carrier frequency of PAL system is
- (A) 4.35 MHz (B) 4.49 MHz
(C) 4.36 MHz (D) 4.43 MHz
53. In TV the DC component of video signal is restored by using
- (A) Clamping circuit (B) RC circuit
(C) Clipping circuit (D) LC circuit
54. The bandwidth of luminance signal in the colour TV system adopted in India is
- (A) 2 MHz (B) 4 MHz
(C) 3 MHz (D) 3.5 MHz
55. The type of polarization used for TV transmission is
- (A) vertical (B) elliptical
(C) horizontal (D) circular

56. BF245B has a maximum drain source voltage of
- (A) 18 V (B) 24 V
(C) 30 V (D) 36 V
57. The unit decibel is used to measure
- (A) power (B) voltage
(C) power level (D) current
58. With feedback, the closed loop gain of an amplifier signifies
- (A) the gain when its output terminals are closed
(B) the gain when no feedback is applied
(C) when the feedback factor exceeds unity
(D) the gain when the feedback is applied
59. The gain bandwidth product of an amplifier is 4 MHz. Its closed loop gain is 40. The new Bandwidth is
- (A) 160 MHz (B) 100 KHz
(C) 10 MHz (D) 20 KHz
60. To produce sustained oscillations by an electronic oscillator
- (A) feedback factor should be unity
(B) feedback should be negative
(C) phase shift should be 0°
(D) both (A) and (C)
61. The purpose of using de-emphasis circuit in FM receiver is
- (A) making demodulation easy
(B) reducing high frequency noise
(C) increasing the amplitude of higher modulating frequencies
(D) reducing the amplitude of high frequencies in the audio signal

62. Which of the following is an indirect way of generating FM ?

- (A) Reactance FET modulator
- (B) Varactor diode modulator
- (C) Armstrong modulator
- (D) Reactance bipolar transistor modulator

63. Antenna top loading increases

- (A) bandwidth
- (B) effective height
- (C) beam width
- (D) input capacitance

64. One of the following is an application of RC circuit :

- (A) Delay circuit
- (B) Rectifier
- (C) Charger circuit
- (D) Oscillator

65. Dissipation factor of a capacitor can be expressed as

- (A) $\frac{1}{\text{Quality factor}}$
- (B) $\frac{\text{Reactance}}{\text{Resistance}}$
- (C) $\frac{1}{\text{Reactance } (X_c)}$
- (D) $\frac{\text{Reactance}}{\text{Quality factor}}$

66. One of the following is not used for etching :

- (A) Ferric chloride
- (B) Alkaline ammonia
- (C) Carbon tetra chloride
- (D) Cupric chloride

67. Which LED has the lowest forward voltage drop ?

- (A) Red
- (B) Green
- (C) Orange
- (D) Yellow

68. The reverse breakdown in zener diode occurs due to
- (A) hall effect (B) avalanche effect
(C) breakdown effect (D) induction effect
69. One of the following diode can store energy in their capacitance and then generate harmonics by releasing a pulse of current.
- (A) Varactor diode (B) Schottky diode
(C) PIN diode (D) Step recovery diode
70. Which stage provides most of the gain and sensitivity for a super heterodyne radio receiver ?
- (A) IF amplifier (B) AF amplifier
(C) RF amplifier (D) Mixer
71. Which of the following can demodulate SSB ?
- (A) Ratio detector (B) Phase discriminator
(C) Product demodulator (D) Both (A) and (B)
72. The third letter in transistor type number indicates
- (A) specific field of application (B) temperature
(C) voltage and power rating (D) material of the device
73. The overall current gain of darlington transistor is equal to
- (A) $\frac{\beta_1}{\beta_2}$ (B) $\frac{\beta_2}{\beta_1}$
(C) $\beta_1\beta_2$ (D) $\beta_1 + \beta_2$

74. The output voltage of 7909 IC is
(A) + 9 V (B) + 79 V
(C) - 79 V (D) - 9 V
75. A discharged battery should not be tested by using
(A) a battery hydrometer (B) a high rate discharge tester
(C) a voltmeter (D) all of the above
76. Which device converts one form of energy into another ?
(A) Transducer (B) Converter
(C) Transmitter (D) Inverter
77. The output waveform of a relaxation oscillator is
(A) Rectangular (B) Square
(C) Sawtooth (D) Above mentioned waves
78. At what frequency range, do Marconi antenna is used ?
(A) VHF (B) HF
(C) MF (D) UHF
79. Which of the following antenna can be used as a reference antenna for measuring the power gain of other antennas ?
(A) Half wave dipole (B) Yagi antenna
(C) Rhombic antenna (D) Parabolic antenna
80. A 500 watt carrier is modulated to a depth of 80%. What is the total power in the modulated wave ?
(A) 580 W (B) 410 W
(C) 660 W (D) 606.66 W

81. 'Jathikummi' was written by

- | | |
|------------------------|---------------------|
| (A) Chattampi Swamikal | (B) Pandit Karuppan |
| (C) Vagbhatanandan | (D) Vaikunda Swami |

82. The environmental activist associated with the protection of mangrove forests is

- | | |
|---------------------|------------------------|
| (A) John C. Jacob | (B) Sundarlal Bahuguna |
| (C) Kallen Pokkudan | (D) Vandana Siva |

83. Chief Election Commissioner of India is

- | | |
|-------------------|-----------------|
| (A) V.S. Sampath | (B) B.B. Tandon |
| (C) V.S. Ramadevi | (D) T.N. Seshan |

84. Metal known as "Quick-Silver" is

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|-------------|-------------|
| (A) Bromine | (B) Gallium |
| (C) Bismuth | (D) Mercury |

85. The slogan "Chuck the American Model into the American Sea" is related to

- | | |
|--------------------------|-------------------------------|
| (A) Nivarthana Agitation | (B) Punnapra-Vayalar Uprising |
| (C) Moplah Rebellion | (D) Kayyur Riot |

86. The novel that won 'Odakkuzhal Award' in 2013 is

- | | |
|----------------|----------------|
| (A) Marupiravi | (B) Avakasikal |
| (C) Aarachaar | (D) Rain Deer |

87. Kundara Proclamation was on

- | | |
|----------------------|----------------------|
| (A) January 23, 1809 | (B) January 1, 1809 |
| (C) January 11, 1809 | (D) January 30, 1809 |

88. The National Pledge of India was composed by
(A) Pydimarri Venkata Subba Rao (B) Rabindranath Tagore
(C) Bankim Chandra Chatterji (D) Pingali Venkayya
89. The term "Bishop" is related to
(A) Bridge (B) Cricket
(C) Football (D) Chess
90. 'Madiba' is the pet name of
(A) Gandhiji (B) Abraham Lincoln
(C) V.I. Lenin (D) Nelson Mandela
91. 'Agnisakshi' written by Lalithambika Antharjanam belongs to the category of
(A) Drama (B) Poetry
(C) Novel (D) Short Story
92. Salim Ali is related to
(A) Numismatics (B) Philately
(C) Graphology (D) Ornithology
93. Mars orbiter launched into Earth's orbit on 5th November 2013 by Indian Space Research Organisation is
(A) Mangalyaan (B) Jugnu
(C) HAMSAT (D) Chandrayaan
94. The first Legislative Council in an Indian State was
(A) Sri Chitra State Council
(B) Srimulam Popular Assembly
(C) Cochin Legislative Council
(D) Travancore Legislative Assembly

95. The recipients of 'Bharat Ratna Award' in 2013 are
- (A) Lata Mangeshkar and Bismilla Khan
(B) M.S. Subbulakshmi and Chidambaram
(C) C.N.R. Rao and Sachin Tendulkar
(D) Ravi Sankar and Amartya Sen
96. The Article in the Indian Constitution that gives special status to Jammu and Kashmir is
- (A) Article – 356 (B) Article – 370
(C) Article – 352 (D) Article – 360
97. The village in India known for the usage of Sanskrit for day-to-day communication is
- (A) Mattur in Karnataka (B) Udumbannur in Kerala
(C) Bahapur in Delhi (D) Anand in Gujarat
98. 'Sadhujanaparipalanayogam' is related to
- (A) Sreenarayana Guru (B) K. Kelappan
(C) Sahodaran Ayyappan (D) Ayyankali
99. The theatre performed in Kerala, recognised by UNESCO as a masterpiece of Oral and Intangible of Humanity is
- (A) Ottanthullal (B) Theyyam
(C) Koodiyattam (D) Padayani
100. 'Metro railman of India' is
- (A) E.M.S. Namboothiripad (B) J.R.D. Tata
(C) M.K. Sreedharan (D) E. Sreedharan

Space For Rough Work

