

### APTITUDE

1. A car travels first half distance between two places with a speed of 40 km/hr and the rest half distance with a speed of 60 km/hr. The average speed of the car is:  
 A. 37 km/hr                      B. 44 km/hr  
 C. 48 km/hr                      D. None of these

Ans. C

2. In how many different ways can the letters of the word 'RIDDLED' be arranged?  
 A. 1680                              B. 840  
 C. 2520                              D. 5040

Ans. B

**DIRECTIONS:** In the following question, a series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.

3. AGMSY, CIOUA, EKQWC, \_\_\_\_\_, IOUAG, KQWCI.  
 A. GNTYE                              B. GLRYE  
 C. GMSYE                              D. GMTXE

Ans. C

4. A sphere and a cube have equal surface areas. The ratio of the volume of the sphere to that of the cube is:  
 A.  $\sqrt{\pi} : \sqrt{6}$                               B.  $\sqrt{6} : \sqrt{\pi}$   
 C.  $\sqrt{2} : \sqrt{\pi}$                               D. None of these

Ans. B

**DIRECTIONS: (Question nos. 5 to 7)** There are 3 types of industries, paper, drug and toy industry. Six workers A, B, C, D, E and F work in these industries. Only two of them can work in one industry. No one can work in more than one industry. 'A' does not work in paper industry. 'B' and 'E' do not work in toy industry. 'A' and 'B' do not work in the same industry. 'D' does not work in drug industry. 'A' and 'D' do not work in toy industry. 'E' and 'F' are not in the same industry.

5. Which two workers work in the drug industry?  
 A. AE                                      B. EB  
 C. CF                                      D. None of these

Ans. A

6. Which two work in the paper industry?  
 A. AE                                      B. EB  
 C. BD                                      D. None of these

Ans. C

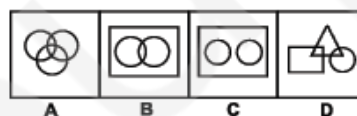
7. Paper, Drug and Toy are represented by which of the following respectively?  
 A. ACD                                      B. EFD  
 C. BAC                                      D. None of these

Ans. C

8. Which of the following occurred first:  
 A. Jallianwallah Massacre  
 B. Dandi March  
 C. Champaran Satyagraha  
 D. Khilafat Movement

Ans. C

9. Which of the following represents the statement that some of the psychologists are philosophers. Some philosophers are writers. But no psychologist is a writer.



- A. B                                      B. A  
 C. D                                      D. C

Ans. C

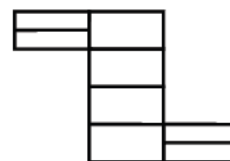
10. If  $(243)^{\frac{3}{5}} \times (729)^{\frac{-2}{3}} = 3^x$  then the value of x is.  
 A. -2                                      B. -1  
 C. 1                                          D. None of these

Ans. B

11. The velocity of a shell leaving the gun is 300 m/sec. Two shots are fired, first with elevation of barrel at 30° and second with elevation 60°. The range achieved by the first will be:  
 A. More than the second  
 B. Less than the second  
 C. Same as the second  
 D. Half the second

Ans. C

12. Count the number of rectangles in the following figure:



- A. 8                                          B. 17  
 C. 18                                      D. None of these

Ans. C

13. The circumference of a semicircle of area 1925 sq. cm is equal to the breadth of a rectangle. If the length of the rectangle is equal to the perimeter of a square of side 48 cm. What is the perimeter of the rectangle?  
 A. 734 cm                      B. 744 cm  
 C. 755 cm                      D. None of these

Ans. B

14. A cloth merchant sold half of his cloth at 40% profit, half of remaining at 40% loss and rest was sold at cost price. In total transaction his gain or loss will be?  
 A. 20% gain                      B. 25% gain  
 C. 10% gain                      D. 15% loss

Ans. C

15. Khaira disease of paddy is due to soil deficiency of:  
 A. Zinc                              B. Iron  
 C. Potassium                      D. Boron

Ans. A

16. "The State shall endeavor to provide early childhood care and education of all children until they complete the age of six years". This is a provision under:  
 A. Article 21A of the constitution of India relating to fundamental right enumerated in part III.  
 B. Article 51A relating to Fundamental duties enumerated in Part IV A of The Constitution of India  
 C. Article 45 relating to directive principles of state policy enumerated in part IV of the constitution of India  
 D. Article 38 of the directive principles of State policy to secure a social order for the promotion of welfare of the people

Ans. C

17. If INDIA is codified as XYZXE and GLAD is codified PMEZ then LANDING is codified as:  
 A. MEPZXYP                      B. PZMEXYZ  
 C. MEYZXYP                      D. MEXYZPX

Ans. C

**DIRECTIONS:** Anil is the son of Bina. Chitra, who is Bina's sister has a son Deepak and a daughter Ela. Fateh is the maternal uncle of Deepak.

18. How is Ela related to Fateh:  
 A. Sister                              B. Wife  
 C. Daughter                      D. Niece

Ans. D

19. Find the wrong number in the following series.  
 10, 14, 28, 32, 64, 68, 132.  
 A. 14                                  B. 32  
 C. 132                                  D. 68

Ans. C

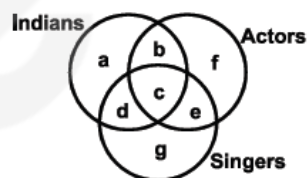
20. Which has become the first airport of the world to fully operate on solar power?  
 A. Jaipur International Airport  
 B. Sardar Vallabh Bhai Patel International Airport  
 C. Cochin International Airport Ltd.  
 D. Raja Bhoj International Airport

Ans. C

21. Which one of the following European countries borders Atlantic ocean?  
 A. Portugal                              B. Austria  
 C. Finland                              D. Romania

Ans. A

22. From the following diagram find out correct answer for the given question.



Indians who are actors but not singers:

- A. b                                      B. c  
 C. f                                      D. g

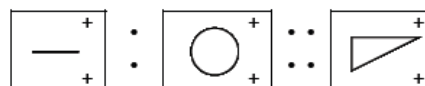
Ans. A

23. New Horizons became the first space probe to reach closest to Pluto recently. This is a mission by:  
 A. ISRO                                  B. ESA  
 C. NASA                                  D. FKA & RKA

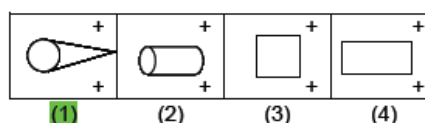
Ans. C

**DIRECTIONS:** Select the suitable alternative to satisfy the relationship in the following question.

24. Question figure

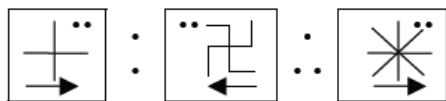


Answer figure

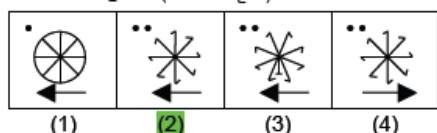


**DIRECTIONS:** Select the suitable alternative to satisfy the relationship in the following question.

25. Question figure



Answer figure



26. Aman and Babu can complete the work in 4 days. Aman alone starts working and leaves it after working for 3 days, completing only half of the work. In how many days, it can be completed if the remaining job is undertaken by Babu:

- A. 4 days                      B. 6 days  
C. 5 days                      D. None of these

Ans. B

27. In three vessels, the ratio of water and milk is 6:7, 5:9 and 8:7 respectively. If the mixtures of the three vessels are mixed then what is the ratio of water and milk?

- A. 3691:4499                  B. 2431:3781  
C. 4381:5469                  D. None of these

Ans. A

28. 'Indian Standard Meridian' passes through the states of:

- A. Uttar Pradesh, Madhya Pradesh, Chhatisgarh, Odisha, and Andhra Pradesh  
B. Uttar Pradesh, Bihar, Jharkhand, Odisha and West Bengal  
C. Uttar Pradesh, Rajasthan, Maharashtra, Gujarat and Madhya Pradesh  
D. Tamilnadu, Karnataka, Andhra Pradesh, Odisha and West Bengal

Ans. A

29. If interest payments are subtracted from gross fiscal deficit, the remainder will be:

- A. Revenue deficit  
B. Gross primary deficit  
C. Capital deficit  
D. Budgetary deficit

Ans. B

30. Who was the famous poet who was deeply affected by Tagore's Gitanjali?

- A. Eliot                          B. Auden

- C. Yeats                          D. Pound

Ans. C

31. A person mixes three varieties of wheat costing Rs. 20/- kg, Rs. 24/- kg and Rs. 30/- kg in the ratio of 1:5:2 and sells the mixture at a profit of 20%. Find the selling price of the mixture when it is sold at 33% profit:

- A. Rs. 30/- kg                  B. Rs. 33.25/- kg  
C. Rs. 39.9/- kg                D. None of these

Ans. B

32. Match the trophies associated with the respective games:

TROPHIES	GAMES
A. Agha Khan Cup	1. Cricket
B. Duleep Trophy	2. Football
C. Wellington Trophy	3. Hockey
D. Ezra Cup	4. Polo
E. Subroto Cup	5. Rowing
A. A4, B5, C3, D1, E2	
B. A3, B1, C4, D5, E2	
C. A2, B3, C4, D5, E1	
D. A3, B1, C5, D4, E2	

Ans. D

33. A triangle has two of its angles in the ratio of 1:2. If the measure of one of its angles is 30 degrees. What is the measure of the largest angle of the triangle in degree?

- A. 100  
B. 90  
C. 135  
D. Can not be determined

Ans. D

34. The alloy containing copper, tin and zinc in the ratio of 87:10:3 is called:

- A. Bronze                          B. Brass  
C. Solder                          D. Gun metal

Ans. D

35. Which portion of the heart receives oxygenated blood:

- A. Left auricle                  B. Right auricle  
C. Left ventricle                D. Right ventricle

Ans. A

36. A form of Hindustani music known as 'Khayal' evolved during the 13th & 14th centuries. The proponent of the style is known as:

- A. Ustad Bismillah Khan  
B. Ustad Amir Khan  
C. Amir Khusro  
D. Thyagaraja

Ans. C

37. The first Indian to receive Nobel Prize:

- A. Dr. C.V. Raman
- B. Rabindra Nath Tagore
- C. Mother Teresa
- D. Dr. Hargobind Khorana

Ans. B

38. When we consider 15° meridian on a world map or globe and count them in an eastward direction starting with Greenwich meridian (0°), we find that the time of this meridian is:

- A. Same as Greenwich
- B. 1 hour fast
- C. 1 hour slow
- D. 12 hour fast

Ans. B

39. Out of a total of 85 children playing Badminton or Table Tennis or both. Total number of girls in the group is 70% of the total number of boys in the group. The number of boys playing only Badminton is 50% of the number of boys and total number of boys playing Badminton is 60% of the total number of boys. Number of children only playing Table Tennis is 40% of the total number of children and a total of 12 children play Badminton and Table Tennis both. What is the number of girls playing only Badminton?

- A. 16
- B. 14
- C. 17
- D. None of these

Ans. B

40. How many squares can be formed by joining the center of the circles by horizontal and vertical lines:



- A. 6
- B. 8
- C. 10
- D. None of these

Ans. B

41. A cistern has two pipes attached to it, one to supply and one to draw off. If both the pipes are opened together, the cistern is filled in 9 hours but if the waste pipe is opened one hour after the supply pipe, the cistern is filled in 7 hours. The time that will be taken by the supply pipe to fill the empty cistern is:

- A. 2 hrs. 47 minutes
- B. 3 hrs. 30 minutes
- C. 3 hrs. 32 minutes

D. 3 hrs.

Ans. D

42. The first woman in NASA history to command space flight:

- A. Kalpana Chawla
- B. Sally Ride
- C. Eilean Collins
- D. None of these

Ans. C

43. In an examination, pass marks are 36% of maximum marks. If an examinee gets 17 marks and fails by 10 marks in this examination, what are the maximum marks?

- A. 50
- B. 75
- C. 85
- D. 100

Ans. B

44. If  $x = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$  and  $y = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ , then find the value of

- A. 97
- B. 98
- C. 99
- D. None of these

Ans. C

45. Rhine valley in France is known for mineral deposits of:

- A. Bauxite
- B. Copper
- C. Nickel
- D. Zinc

Ans. A

## TECHNICAL (APTITUDE)

46. An FM signal with modulation index  $m_f$  is passed through a frequency tripler. The modulation index of the output signal will be

- A.  $m_f$
- B.  $3m_f$
- C.  $9m_f$
- D.  $27m_f$

Ans. B

47. What is the correct sequence of the following step in the fabrication of a monolithic, bipolar junction transistor?

1. Emitter diffusion
2. Base diffusion
3. Buried layer formation
4. Epi-layer formation

Select the correct answer using the codes given below

- A. 3, 4, 1, 2
- B. 4, 3, 1, 2
- C. 3, 4, 2, 1
- D. 4, 3, 2, 1

Ans. D

48. Two sinusoidal signals having the same amplitude and frequency are applied to the X and Y inputs of a CRO. The observed Lissajous figure is straight line. The phase shift between the two signals would be
- Zero
  - 90 degrees
  - Either zero or 180 degrees
  - Either 90 degrees or 270 degrees

Ans. C

49. In a BJT circuit a pnp transistor is replaced by npn transistor. To analyse the new circuit
- All calculations done earlier have to be repeated
  - Replace all calculated voltages by reverse values
  - Replace all calculated currents by reverse values
  - Replace all calculated voltages and currents by reverse values

Ans. D

50. In 8085 microprocessor, the value of the most significant bit of the result following the execution of any arithmetic of Boolean instruction is stored in the
- Carry status flag
  - Auxiliary carry status flag
  - Sign status flag
  - Zero status flag

Ans. C

51. The analog signal  $m(t)$  is given below  $m(t) = 4 \cos 100\pi t + 8 \sin 200\pi t + \cos 300\pi t$ , the Nyquist sampling rate will be:
- 1/100
  - 1/200
  - 1/300
  - 1/600

Ans. C

52. Find the noise factor for an antenna at 27°C with equivalent noise temperature 30°K:
- 20
  - 100
  - 300
  - 1.1

Ans. D

53. Inverse Laplace transform of  $\frac{2s+5}{(s+3)(s+2)}$  is :
- $2 \exp(-2.5t) \cosh(0.5t)$
  - $\exp(-2t) + \exp(-3t)$
  - $2 \exp(-2.5t) \sinh(0.5t)$
  - $2 \exp(-2.5t) \cos 0.5t$

Ans. B

54. The analog signal given below is sampled by 600 samples per second for  $m(t) = 3 \sin 500\pi t + 2 \sin 700\pi t$  then folding frequency is:

- 500 Hz
- 700 Hz
- 300 Hz
- 1400 Hz

Ans. C

55. Which one most appropriate dynamic system?

- $y(n) + y(n-1) + y(n+1)$
- $y(n) + y(n-1)$
- $y(n) = x(n)$
- $y(n) + y(n-1) + y(n+3) = 0$

Ans. A

56. In which of these is reverse recovery time nearly zero?

- Zener diode
- Tunnel diode
- Schottky diode
- PIN diode

Ans. C

57. Frequency shift keying is used mostly in:

- Telegraphy
- Telephony
- Satellite communication
- Radio transmission

Ans. A

58. A parallel polarized wave is incident from air into paraffin having relative permittivity 3, the value of its Brewster angle is:

- 0°
- 30°
- 45°
- 60°

Ans. D

59. The phase angle corresponding to  $\lambda/4$  in a standing-wave pattern is:

- 30°
- 90°
- 135°
- 180°

Ans. B

60. A 10 km long line has a characteristic impedance of 400 ohms. If line length is 100 km, the characteristic impedance is:

- 4000 Ω
- 400 Ω
- 40 Ω
- 4 Ω

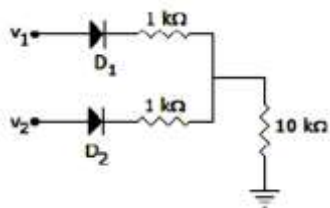
Ans. B

61. The output of an exclusive-NOR gate is 1. Which input combination is correct?

- A = 1, B = 0
- A = 0, B = 1
- A = 0, B = 0
- None of these

Ans. C

62. In figure  $v_1 = 8\text{ V}$  and  $v_2 = 4\text{ V}$ . Which diode will conduct?



- A. D2 only
- B. D1 only
- C. Both D1 and D2
- D. Neither D1 nor D2

Ans. B

63. Determine the output frequency for a frequency division circuit that contains 12 flip-flops with an input clock frequency of 20.48 MHz:

- A. 10.24 kHz
- B. 5 kHz
- C. 30.24 kHz
- D. 15 kHz

Ans. B

64. Initially the number decimal 8 is stored. If instruction RAL is executed twice, the final number stored will be:

- A. Decimals 8
- B. Decimal 16
- C. Decimal 32
- D. Decimal 2

Ans. C

65. The output of an AND gate with three inputs, A, B, and C, is HIGH when \_\_\_\_\_:

- A.  $A = 1, B = 1, C = 0$
- B.  $A = 0, B = 0, C = 0$
- C.  $A = 1, B = 1, C = 1$
- D.  $A = 1, B = 0, C = 1$

Ans. C

66. The gain of an FET amplifier can be changed by changing:

- A.  $r_m$
- B.  $g_m$
- C.  $R_d$
- D. None of these

Ans. B

67. In the case of a 70-MHz IF carrier for a transponder bandwidth of 36 MHz, energy must lie between MHz:

- A. 34 and 106
- B. 52 and 88
- C. 106 and 142
- D. 34 and 142

Ans. B

68. In a full wave rectifier circuit using centre tapped transformer, the peak voltage across half of the secondary winding is 30 V. Then PIV is:

- A. 30 V
- B. 60 V

- C. 15 V
- D. 10 V

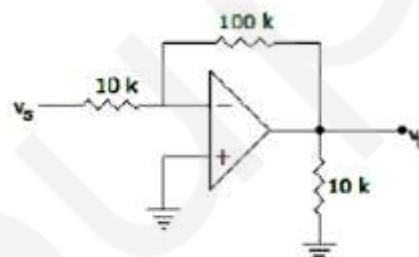
Ans. B

69. The Lissajous pattern observed on screen of CRO is a straight line inclined at  $45^\circ$  to x axis. If X-plate input is  $2 \sin \omega t$ , the Y-plate input is

- A.  $2 \sin \omega t$
- B.  $2 \sin (\omega t + 45^\circ)$
- C.  $2 \sin (\omega t - 45^\circ)$
- D.  $22 \sin \omega t + 45^\circ$

Ans. A

70. The input impedance of op-amp circuit of figure is:



- A. 120 k ohm
- B. 110 k ohm
- C. Infinity
- D. 10 k ohm

Ans. D

71. In a CRO which of the following is not a part of electron gun:

- A. Cathode
- B. Grid
- C. Accelerating anode
- D. X-Y plates

Ans. D

72. A  $1\ \mu\text{F}$  capacitor is connected to 12 V battery. The energy stored in the capacitor is:

- A.  $12 \times 10^{-6}\text{ J}$
- B.  $24 \times 10^{-6}\text{ J}$
- C.  $48 \times 10^{-6}\text{ J}$
- D.  $72 \times 10^{-6}\text{ J}$

Ans. D

73. For a transmission line open circuit and short circuit impedances are  $20\ \Omega$  and  $5\ \Omega$ . Then characteristic impedance is:

- A.  $100\ \Omega$
- B.  $50\ \Omega$
- C.  $25\ \Omega$
- D.  $10\ \Omega$

Ans. D

74. Find  $i(t)$  if  $I(s) = \frac{s+1}{(s+4)(s+3)}$ :

- A.  $3e^{-4t} - e^{-5t}$
- B.  $3e^{-4t} - 2e^{-3t}$
- C.  $3e^{-4t} - e^{-2t}$
- D. None of these

Ans. B



75. A capacitor used for power factor correction in single phase circuit decreases:
- A. Power factor
  - B. Line current
  - C. Both line current and p.f.
  - D. The line current and increases p.f.

Ans. D

76. The negative sign in the expression  $e = -N(d\phi)/dt$  is due to:
- A. The Fleming's Rule
  - B. Thumb's Rule
  - C. Faraday's Law
  - D. Lenz's Law

Ans. D

77. Form factor is the ratio of:
- A. Maximum value to r.m.s. value
  - B. Maximum value to average value
  - C. r.m.s value to average value
  - D. r.m.s. value to instantaneous value

Ans. C

78. The number of valence electrons in pentavalent impurity is:
- A. 5
  - B. 4
  - C. 3
  - D. 1

Ans. A

79. Material which lack permanent magnetic dipoles are known as:
- A. Paramagnetic
  - B. Diamagnetic
  - C. Ferromagnetic
  - D. Ferrimagnetic

Ans. B

80. The primary function of the bias circuit is to:
- A. Hold the circuit stable at VCC
  - B. Hold the circuit stable at  $v_{in}$
  - C. Ensure proper gain is achieved
  - D. Hold the circuit stable at the designed Q-point

Ans. D

81. The transconductance of a JFET is computed at constant VDS by:
- A. Ratio of change in  $I_{d0}$  to change of  $V_{gs}$
  - B. Ratio of change in  $V_{gs}$  to change of  $I_d$
  - C. Product of change in  $V_{gs}$  to change of  $I_d$
  - D. Ratio of change in  $V_{ds}$  to change of  $I_d$

Ans. A

82. To find current in a resistance connected in a network, Thevenin's theorem is used  $V_{TH} = 20\text{ V}$  and  $R_{TH} = 5\ \Omega$ .

The current through the resistance:

- A. is 4 A
- B. is 4 A or less
- C. is less than 4 A
- D. May be 4 A or less or more than 4 A

Ans. C

83. Superposition theorem is not applicable to network containing:
- A. Non linear element
  - B. Dependent voltage source
  - C. Dependent current source
  - D. Transformer.

Ans. A

84. In a microwave test bench, why is the microwave signal amplitude modulated at 1 kHz?

- A. To increase the sensitivity of measurement
- B. To transmit the signal to a far-off place
- C. To study amplitude modulation
- D. Because crystal detector fails at microwave frequencies

Ans. D

85. The directive gain of an antenna:

- A. is less than or equal to 1
- B. is greater than or equal to 1
- C. lies between 0 and directivity of antenna
- D. is greater than directivity of antenna

Ans. C

86. An amplifier without feedback has a voltage gain of 50, input resistance  $1\text{ k}\Omega$  and output resistance of  $2.5\text{ k}\Omega$ . The input resistance of the current-shunt negative feedback amplifier using the above amplifier with a feedback factor of 0.2 would be:

- A.  $1/11\text{ k}\Omega$
- B.  $1/5\text{ k}\Omega$
- C.  $5\text{ k}\Omega$
- D.  $11\text{ k}\Omega$

Ans. A

87. In amplitude modulation AM, if modulation index is more than 100% then:

- A. Power of the wave increases.
- B. Efficiency of transmission increases.
- C. The wave gets distorted.
- D. Bandwidth increases

Ans. C

88. The use of non-uniform quantization leads to:
- Reduction in transmission bandwidth.
  - Increase in maximum SNR.
  - Increase in SNR for signal levels.
  - Simplification of quantization process.

Ans. C

89. A PD controller is used to compensate a system. Compared to the uncompensated system, the compensated system has:
- A higher type number.
  - Reduced damping.
  - Higher noise amplification.
  - Larger transient overshoot.

Ans. C

90. Which of the following is an inherent property of an optical signal and cannot be eliminated even in principle?
- Thermal noise
  - Shot noise
  - Environmental noise
  - Background Noise

Ans. B

91. The disadvantage of CDMA system is:
- Higher MAI with more user count.
  - That it needs least power consumption.
  - That it needs coherent signal.
  - That it is not suitable with PSK systems

Ans. A

92. The Ku frequency band used in satellite communication (for uplink and downlink) is:
- 14 GHz and 11 GHz
  - 30 GHz and 20 GHz
  - 70 GHz and 50 GHz
  - 60 GHz and 45 GHz

Ans. A

93. Following transducer is an active transducer:
- Carbon Microphone
  - Piezoelectric Microphone
  - LVDT
  - Strain Gauge

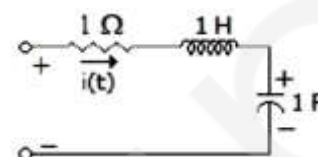
Ans. B

94. A NOR gate is equivalent to a bubbled AND gate. This statement is an outcome of:
- De Morgan's Law
  - Involution Law

- Law of Absorption
- Idempotent Law

Ans. A

95. The circuit shown in the figure has initial current  $i_L(0) = 1A$  through the inductor and an initial voltage  $v_C(0) = 1V$  across the capacitor. For input  $V(t) = U(t)$  the Laplace transform of the current  $i(t)$  for  $t \geq 0$  is:



- $\frac{s}{s^2 + s + 1}$
- $\frac{s + 2}{s^2 + s + 1}$
- $\frac{s - 2}{s^2 + s + 1}$
- $\frac{s - 2}{s^2 + s + 2}$

Ans. B

96. Which of the following noise must be considered at high frequencies (microwave frequencies)?
- Shot noise
  - Random noise
  - Impulse noise
  - Transit time noise

Ans. D

97. In a broadcast communication receiver, most of the receiver selectivity is achieved in:
- RF section
  - IF section
  - Mixer
  - Local oscillator

Ans. A

98. Slew rate is defined by:
- $di/dt(\max)$
  - $dv/dt(\max)$
  - $di/dt(\min)$
  - $dv/dt(\min)$

Ans. B

99. The ideal operational amplifier does not have:
- Infinite input resistance
  - Infinite output resistance
  - Infinite voltage gain
  - Infinite bandwidth

Ans. B

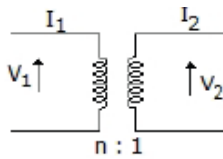
100. The following property of semiconductors cannot be determined from Hall effect:
- Semiconductor is n-type or p-type
  - The carrier concentration
  - The mobility of semiconductor
  - The atomic concentration of semiconductor

Ans. D



101. The ABCD parameters of ideal n:1 transformer shown in the figure are

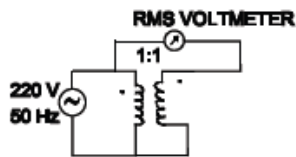
$$\begin{bmatrix} n & 0 \\ 0 & X \end{bmatrix}. \text{ The value of X will be:}$$



- A. n
- B. 1/n
- C. n<sup>2</sup>
- D. 1/n<sup>2</sup>

Ans. B

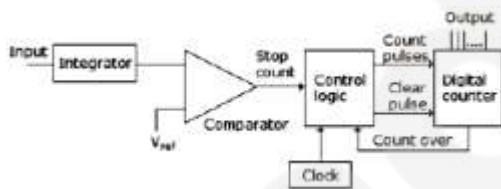
102. In the circuit shown below, the voltmeter will read:



- A. Zero
- B. 110 V
- C. 220 V
- D. 440 V

Ans. A

103. This figure is a block diagram of \_\_\_\_\_:



- A. ADC
- B. DAC
- C. Comparator
- D. 555 timer

Ans. A

104. Theoretical bandwidth requirement for FM system is:

- A. Same as that of the modulating signal bandwidth
- B. Twice of modulating signal Bandwidth
- C. Thrice as of modulating signal Bandwidth
- D. Infinite

Ans. D

105. Waveguides are used mainly for microwave signals because:

- A. They depend on straight-line propagation which applies to microwaves only
- B. Losses would be too heavy at lower frequencies
- C. There are no generators powerful enough to excite them at lower frequencies
- D. They would be too bulky at lower frequencies

D. They would be too bulky at lower frequencies

Ans. D

106. Indicate which one of the following is NOT an advantage of FM over AM?

- A. Better noise immunity is provided
- B. Lower bandwidth is required
- C. The transmitted power is more useful
- D. Less modulating power is required

Ans. B

107. Which of the following statement is false? Modulation is used to:

- A. Reduce the bandwidth used
- B. Separate differing transmissions
- C. Ensure that intelligence may be transmitted over long distances
- D. Allow the use of practicable antennas

Ans. A

108. In an n-type semiconductor, as the donor concentration ND increases, the Fermi level EF:

- A. Remains unaltered
- B. Moves towards the conduction band
- C. Move towards the center of forbidden energy gap
- D. May or may not move depending on temperature

Ans. B

109. The term "white noise" refers to the following:

- A. A random signal with flat power spectral density
- B. A random signal generated by beat signal
- C. A random signal with long range correlation
- D. All of the above are true

Ans. A

110. Which of the following relation is true for two digital signals A and B?

- A.  $\overline{A+B} = \overline{A} \cdot \overline{B}$
- B.  $\overline{A+B} = A \cdot B$
- C.  $\overline{A+B} = \overline{A} \cdot \overline{B} + A \cdot B$
- D.  $\overline{A+B} = \overline{A} \cdot B$

Ans. A

111. The output waveform of a 555 Timer is:

- A. Sinusoidal
- B. Triangular
- C. Rectangular
- D. Elliptical

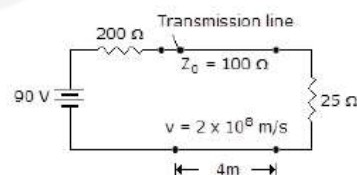
Ans. C

112. The phase correcting circuit is:  
 A. All-pass filter  
 B. Low-pass filter  
 C. High-pass filter  
 D. Band-pass filter  
 Ans. A
113. The light emitted diodes consist of:  
 A. Si                                      B. GaAs  
 C. Ge                                        D. Diamond  
 Ans. B
114. When the initial slope of input sine wave is greater than the slew rate of an OPAMP, the output:  
 A. Has no offset  
 B. Approaches to triangular waveshape  
 C. Is pure sinusoidal  
 D. Is square wave  
 Ans. B
115. A circuit is said to be free from phase distortion if its phase response shows:  
 A. Quadrature variation with frequency  
 B. Independent of frequency  
 C. Linear variation with frequency  
 D. Proportional to frequency  
 Ans. D
116. In a full wave rectifier with input frequency of 50 Hz, the frequency of the output is:  
 A. 50 Hz                                    B. 100 Hz  
 C. 150 Hz                                   D. 200 Hz  
 Ans. B
117. In the common-emitter transistor circuit, if the current gain is 100 and the

collector current is 10 mA, the base current is:  
 A. 10  $\mu$ A                                    B. 100  $\mu$ A  
 C. 1 A                                         D. 10 A

- Ans. B
118. The basic Hartley oscillator uses:  
 A. One inductor and two capacitors  
 B. A centre tapped inductor and a capacitor  
 C. Two capacitors  
 D. Tickler coil  
 Ans. B
119. The correct order of electromagnetic spectrum with decreasing frequency is:  
 A. Microwaves, Radiowaves, Infrared rays, Ultraviolet rays, X-rays  
 B. Radiowaves, Infrared rays, Ultraviolet rays, Microwaves, X-rays  
 C. X-rays, Infrared rays, Microwaves, Radiowaves, Ultraviolet rays  
 D. X-rays, Ultraviolet rays, Infrared rays, Microwaves, Radiowaves

- Ans. D
120. In the given figure reflection coefficient at load is:



- A. 0.6                                         B. - 0.6  
 C. 0.4                                         D. None of these  
 Ans. B

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