

CITLET-2014

SERIAL NO:

TEST BOOKLET**DURATION: 03.00 HRS****MAXIMUM MARKS: 60+40 = 100****Read the following instructions carefully:**

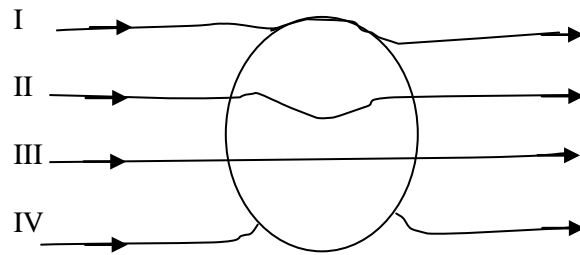
1. This Test Booklet contains **two parts: Part-I and Part-II. Part-I is common paper consisting of 60 questions: Physics (Q.1-10), Chemistry (Q.11-20), Mathematics (Q. 21-40), Graphics (Q. 41-50), Computer & General Awareness (Q. 51-55), English (Q. 56-60). Part-II consists of 40 questions of each optional papers in Electronics and Communication Engineering, Computer Science and Engineering, Instrumentation Engineering, Food Processing Technology, Civil Engineering (Construction Technology) and Information Technology.** All Questions carry equal marks of one (1) mark each.
2. Part-I is compulsory for all. Part-II consists of 6 optional papers. Each question has only one option as correct answer (A, B, C or D).
3. Answer the questions by darkening the bubble corresponding to appropriate answer (**A, B, C or D**) on a separate **Optical Response Sheet (ORS)**
4. There is no negative marking for the wrong answers. However, darkening must be done properly as given in the instructions in the answer sheet. More than one mark shall be treated as wrong answer.
5. Mobile phone, calculators or any other electronic gadgets are prohibited in the Examination Hall.
6. All rough works should be done in the space provided in the Test Booklet.
7. Candidates cannot leave the Examination Hall within the first hour from its commencement.
8. Candidates are not allowed to take this Test Booklet out of the Examination Hall during and after the Examination.
9. This Test Booklet contains **35** printed pages including cover page. Please check and report to the invigilator in case any page is missing, printing errors or other discrepancies are found.
10. Write your Roll No. and Name in the box provided below.

Roll No	
Name	

PART-I (COMMON PAPER)

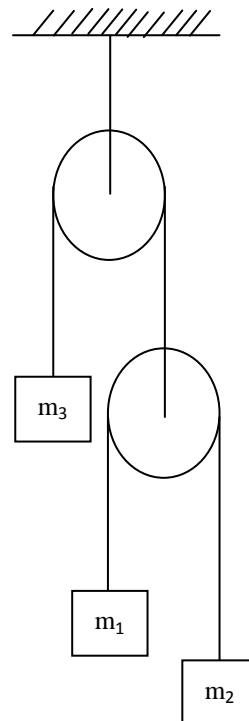
[Physics (Q.1-10), Chemistry (Q.11-20), Mathematics (Q. 21-40), Graphics (Q. 41-50), Computer & General Awareness (Q. 51-55), English (Q. 56-60)]

- A sphere of mass 500g is thrown upward with the initial velocity 100 m/s. Its potential energy when its velocity attains 20m/s will be
 [A] 4200 J [B] 2040 J [C] 2400 J [D] 4002 J
- A solid metallic sphere is placed in a uniform electric field. Which of the curves shown in the figure represent the lines of force correctly?



- [A] I [B] I & II [C] III only [D] IV only
- In the figure, pulleys are smooth and strings are mass-less, $m_1 = 1\text{kg}$ and $m_2 = \frac{1}{3}\text{kg}$.
 If m_3 is at rest, mass m_3 should be

- [A] 1 kg
 [B] $\frac{2}{3}\text{kg}$
 [C] $\frac{1}{4}\text{kg}$
 [D] 2 kg

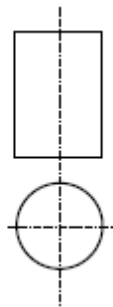


4. Two thin converging lenses of powers 5 and 4 diopters are placed co-axially 10 cm apart. The focal length of the combination is
 [A] 41.3 cm [B] 14.3 cm [C] 34.3 cm [D] None of these
5. A Young's double slit experiment uses a monochromatic source. The shape of the interference fringes formed on screen will be
 [A] Straight line [B] Parabola [C] Hyperbola [D] Circle
6. A Carnot's engine is operating between 100°C and 50°C . Its efficiency will be
 [A] 15.2% [B] 50% [C] 100% [D] 13.4%
7. A hydraulic press has an input piston 10mm. in diameter and an output piston 50mm. in diameter. An input force of 80N gives an output force of
 [A] 400N [B] 3.2 N [C] 16N [D] 2000N
8. A body of mass m moving with velocity v collides head on with another body of mass $2m$ which is initially at rest. The ratio of K.E of colliding body before and after collision will be
 [A] 1:1 [B] 2:1 [C] 4:1 [D] 9:1
9. An electric bulb is designed to draw P_0 power at V_0 voltage. If the voltage is V , it draws P power, then
 [A] $P = \left(\frac{V_0}{V}\right) P_0$ [B] $P = \left(\frac{V}{V_0}\right) P_0$ [C] $P = \left(\frac{V}{V_0}\right)^2 P_0$ [D] $P = \left(\frac{V_0}{V}\right)^2 P_0$
10. A dipole of moment \vec{P} is placed in a uniform electric field \vec{E} . The force on the dipole is \vec{F} and the torque is $\vec{\tau}$. Then
 [A] $\vec{\tau} = \vec{P} \times \vec{E}$ [B] $\vec{F} = |\vec{P}|\vec{E}$ [C] $|\vec{\tau}| = \vec{P} \cdot \vec{E}$ [D] None of these
11. The Vander-Waals constants a and b for hydrogen are $0.246 \text{ dm}^3 \text{ atm.mol}^{-2}$ and $2.67 \times 10^{-2} \text{ dm}^3 \text{ mol}^{-1}$ respectively. The inversion temperature of hydrogen is
 [A] 224.72°C [B] -48.28°C [C] 48.28°C [D] -224.72 K
12. At 18°C the nobilities of $\text{NH}_4^{(+)}$ and ClO_4^{-} ions are 6.6×10^{-4} and $5.7 \times 10^{-4} \text{ cm}^2 \text{ volt}^{-1} \text{ sec}^{-1}$ at infinite dilution. The equivalent conductance of ammonium chlorate solution is
 [A] $118.67 \text{ ohm cm}^{-1}$ [B] 118.67 mho cm^2
 [C] $1.1867 \text{ ohm cm}^{-1}$ [D] none of these
13. By phthalein test β -Naphthol can be identified with
 [A] Green fluorescence [B] Green colour
 [C] Blue colour [D] none of these
14. To 1 ml of Lassaigne's filtrate when 1 drop of dilute NaOH is added followed by 4-5 drops of freshly prepared sodium nitroprusside solution, it gives purple colour. It indicates presence of
 [A] Sulphur [B] Nitrogen [C] Chloride [D] None of these
15. The atomic number of Mg is 12 and its mass number is 24. The number of neutrons and electrons are in Mg^{2+} :
 [A] 12, 12 [B] 12, 10 [C] 10, 12 [D] None of these

16. The solubility of CaF_2 in water at 291K is $2.05 \times 10^{-4} \text{ mol L}^{-1}$. The solubility product is
 [A] $3.4 \times 10^{-11} \text{ mol}^3 \text{ L}^{-3}$ [B] $3.4 \times 10^{-11} \text{ mol}^{-1} \text{ L}^3$
 [C] $2.05 \times 10^{-4} \text{ mol L}^{-1}$ [D] None of these
17. Walden inversion is observed in
 [A] uni-molecular nucleophilic substitution
 [B] Bimolecular nucleophilic substitution
 [C] Addition reactions
 [D] None of these
18. Xanthate test is well known for the identification of
 [A] Alcoholic – OH group [B] Phenolic – OH group
 [C] Ester group [D] carboxylic group
19. Feldspar is the ore of
 [A] Na [B] Fe [C] Zn [D] Mn
20. A gaseous mixture of O_2 and X containing 20% (mole present) of X, diffuses through a small hole in 234 seconds while equal volume of pure O_2 takes 224 seconds to diffuse the same hole under similar conditions. The molecular mass of X is
 [A] 46.6 g.mol^{-1} [B] 46.6 kg.mol^{-1} [C] 4.66 g.mol^{-1} [D] 64.6 g.mol^{-1}
21. No of solutions of $\cos x = |1 + \sin x|$, $0 \leq x \leq 3\pi$ is
 [A] 5 [B] 3 [C] 1 [D] 4
22. The domain of $f(x) = \sin^{-1} \left[\log_2 \left(\frac{x^2}{2} \right) \right]$ is
 [A] $-1 \leq x \leq 1$ [B] $-1 \leq x \leq 4$ [C] $1 \leq x \leq 2$ [D] $1 \leq x \leq 4$
23. If c be a positive integer, then the equation $\tan^{-1} \alpha + \tan^{-1} \beta = \tan^{-1} c$ has
 [A] 1 +ve integral solution [B] 2 +ve integral solution
 [C] No +ve integral solution [D] Infinite solution
24. If the system $AX = B$ is consistent then for unique solution, A must be a _____ matrix.
 [A] Singular [B] Non-singular [C] Null [D] Square
25. Value of the determinant $\begin{vmatrix} x! & (x+1)! & (x+2)! \\ (x+1)! & (x+2)! & (x+3)! \\ (x+2)! & (x+3)! & (x+4)! \end{vmatrix}$ is
 [A] 1 [B] 0
 [C] $2(x!)^3(x+1)^2(x+2)$ [D] $(x!)^3(x+1)^2(x+2)$
26. If $X = \begin{pmatrix} 1 & 0 & 0 & d \\ 0 & 1 & 0 & c \\ 0 & 0 & 1 & b \\ 0 & 0 & 0 & a \end{pmatrix}$, for what values of a, b, c and d is $X = X^{-1}$?
 [A] If a = -1 and b = 0
 [B] Never
 [C] If a = 1 or a = -1
 [D] If a = 1 with b = c = d = 0; or if a = -1 with b, c and d arbitrary

27. If X and Y are two $n \times n$ matrices, which of the following statements is generally invalid?
 [A] $|X^{-1}YX^2| = |X||Y|$ [B] $|\alpha X| = \alpha|X|$, for any +ve number α .
 [C] If XY has an inverse, so has Y [D] If X^4 has an inverse, so has X.
28. If $X = \begin{pmatrix} 3 & 2 \\ 1 & 1 \end{pmatrix}$ and $XY = \begin{pmatrix} 1 & 3 & 2 \\ 1 & 1 & 1 \end{pmatrix}$ then
 [A] $Y = \begin{pmatrix} -\frac{1}{12} & -\frac{7}{12} \\ \frac{2}{3} & \frac{5}{3} \end{pmatrix}$ [B] $Y = \begin{pmatrix} 32 & 59 \\ 52 & 97 \end{pmatrix}$
 [C] $Y = \begin{pmatrix} -1 & 1 & 0 \\ 2 & 0 & 1 \end{pmatrix}$ [D] Y is not determined
29. The co-efficient of x^m and x^n , $m, n \in N$ in the expansion of $(1+x)^{m+n}$ are
 [A] Reciprocal of each other [B] Equal
 [C] Equal with opposite sign [D] 4 and 5 respectively.
30. If the seventh terms from the beginning and the end in the expansion of $\left(\sqrt[3]{2} + \frac{1}{\sqrt[3]{3}}\right)^n$ are equal, then value of n is
 [A] 0 [B] 6 [C] 7 [D] 12
31. The differential equation(s) to the curve such that the distance between the origin and the tangent at an arbitrary point is equal to the distance between the origin and the normal at the same point is (are)
 [A] Homogeneous [B] Linear
 [C] Non-linear [D] Non-homogeneous
32. The population of bacteria undergoes exponential growth. If at noon there are 100000 bacteria and there are 200000 by 3 PM, then the number of bacteria reach 800000 at
 [A] 4 PM [B] 6 PM [C] 8 PM [D] 9 PM
33. If the displacement, velocity and acceleration of a particle at time t be 'x', 'v' and 'a' respectively, then which one is true?
 [A] $a = -v^3 \frac{d^2t}{dx^2}$ [B] $a = -v^2 \frac{dt}{dx}$ [C] $a = v^3 \frac{d^2t}{dx^2}$ [D] $a = v^2 \frac{d^2t}{dx^2}$
34. If $f(x) = \frac{1 - \cos(1 - \cos x)}{x^4}$ is continuous everywhere, then value of $f(0)$ is
 [A] $1/8$ [B] $1/6$ [C] $1/4$ [D] $1/2$
35. Let $\frac{d}{dx}\{F(x)\} = \frac{e^{\sin x}}{x}$, $x > 0$. If $\int_1^4 \frac{3}{x} e^{\sin x^3} dx = F(m) - F(1)$, then one of the possible values of m is
 [A] 60 [B] 0 [C] 64 [D] 3
36. The probability that X speaks truth is $4/5$, while the probability for Y is $3/4$. The probability that they contradict each other when asked to speak on a fact is
 [A] $9/20$ [B] $31/20$ [C] $7/20$ [D] $1/20$

37. PQR is a right angled triangle having right angle at P. The resultant of the forces acting along \overline{PQ} and \overline{PR} with magnitudes $\frac{1}{PQ}$ and $\frac{1}{PR}$ respectively, is the force along \overline{PS} , where S is the foot of the perpendicular from P to \overline{QR} . The magnitude of the resultant is
 [A] $\frac{PQ^2+PR^2}{(PQ)^2(PR)^2}$ [B] $\frac{1}{PS}$ [C] $\frac{1}{PQ} + \frac{1}{PR}$ [D] $\frac{PQ.PR}{PQ+PR}$
38. For the differential equation $\frac{dy}{dx} + 2y \tan x = \sin x$, $y = 0$ for $x = \frac{\pi}{3}$, maximum value of y is
 [A] $\frac{1}{6}$ [B] $\frac{1}{8}$
 [C] Equal to the minimum value [D] less than the minimum value
39. The line parallel to X-axis and passing through the intersection of the lines $ax + 2by + 5b = 0$ and $bx - 2ay - 5a = 0$, where $(a, b) \neq (0, 0)$ is
 [A] below the X-axis at a distance of $\frac{2}{5}$ from it.
 [B] below the X-axis at a distance of $\frac{5}{2}$ from it.
 [C] above the X-axis at a distance of $\frac{2}{5}$ from it.
 [D] above the X-axis at a distance of $\frac{5}{2}$ from it.
40. If (α, α^2) falls inside the angle made by the lines $y = \frac{x}{2}, x > 0$ and $y = 3x, x > 0$ then α belongs to
 [A] $(\frac{1}{2}, 3)$ [B] $[\frac{1}{2}, 3]$ [C] $(-3, -\frac{1}{2})$ [D] $(0, \frac{1}{2})$
41. In isometric projection the three edges of an object are inclined to each other at
 [A] 60° [B] 120° [C] 100° [D] 90°
42. A square lamina in isometric projection appears as
 [A] Rhombus [B] Rectangle [C] Trapezium [D] Parallelogram
43. With respect to the elevation and plan given below, name the solid



- [A] Cone [B] hexagonal prism
 [C] cylinder [D] hexagonal pyramid

44. Which one among the following represents a permanent fastener?
 [A] Nut [B] Rivet [C] Screw [D] Bolt
45. Top view is projected on the
 [A] Vertical Plane [B] Corner Plane [C] Side Plane [D] Horizontal Plane
46. The included angle of a hexagon is
 [A] 30° [B] 60° [C] 120° [D] 150°
47. If an object lies in third quadrant, its position with respect to reference planes will be
 [A] in front of V.P, above H.P [B] behind V.P., above H.P.
 [C] behind V.P., below H.P. [D] in front of V.P., below H.P.
48. Comparative scale is a pair of scale having a common
 [A] units [B] representative fraction
 [C] length of scale [D] least count
49. For the object shown in fig.1, select the correct front view

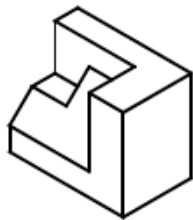
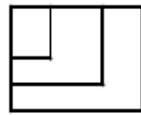
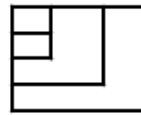


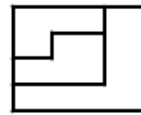
Fig. 1



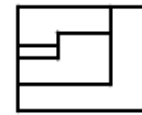
[A]



[B]



[C]



[D]

50. When the drawing is drawn of the same size as that of the object, the scale used is:
 [A] Diagonal scale [B] Full size scale
 [C] Vernier scale [D] None of these
51. One Byte is equivalent to how many bits?
 [A] 2 bits [B] 4 bits [C] 8 bits [D] 16 bits
52. MAN in networking stands for
 [A] Main Area Network [B] Metropolitan Area Network
 [C] Short form of Humane [D] None
53. Which one is not an output device?
 [A] Joystick [B] CRT [C] Printer [D] HD TV
54. Which of the following is the largest unit of storage?
 [A] GB [B] TB [C] MB [D] KB
55. Word processing, spreadsheet, and photo-editing are examples of
 [A] Application software [B] System software
 [C] Operating system software [D] Platform software

56. Accolade (*Choose the correct meaning of the word*)
[A] Road blockage [B] Inform [C] Become friends [D] Praise
57. I'm right,-----? (*Chose the correct question tag*)
[A] am I [B] aren't I [C] am I not [D] weren't I
58. The party was fun. There were ---- people I knew there. (*Choose the correct option*)
[A] a little [B] little [C] few [D] a few
59. Some people *fast* on Thursdays. (*What part of speech is the word in italics?*)
[A] verb [B] adjective [C] abstract noun [D] preposition
60. This coat was designed by ___ famous New York artist. (*Choose the correct option*)
[A] A [B] An [C] The [D] None

PART-II (BRANCH PAPERS)

[ECE (Q.61-100), CSE (Q.101-140), IE (Q. 141-180), FPT (Q. 181-220), CE (Q. 221-260), IT (Q. 260-300)]

OPTION – I (ELECTRONICS AND COMMUNICATION ENGINEERING)

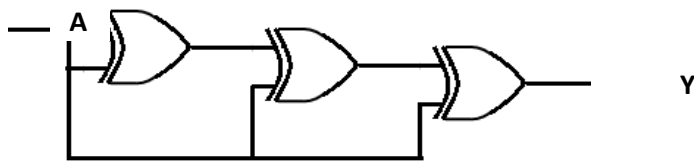
61. A CRO uses
 [A] Electromagnetic focusing [B] electrostatic focusing
 [C] Both focusing techniques [D] no focusing technique
62. In paramagnetic materials:
 [A] permanent magnetic dipoles exist but the interaction between neighbouring dipoles is negligible
 [B] permanent magnetic dipole do not exist
 [C] permanent magnetic dipoles exist and the interaction between neighbouring dipoles is very strong
 [D] permanent magnetic dipole moment may or may not exist
63. Ferroelectric materials are those which
 [A] Cannot be polarized [B] have a permanent polarization
 [C] have ϵ equal to zero [D] have $\mu = 0$
64. A computer's memory is composed of 8K words of 32 bits each, and a byte is 8 bits. How many bytes does this memory contain?
 [A] 8K [B] 32K [C] 16K [D] 4K
65. What is the difference between a mnemonic code and machine code?
 [A] There is no difference.
 [B] Machine codes are in shorthand English, mnemonic codes are in binary.
 [C] Machine codes are in binary, mnemonic codes are in shorthand English.
 [D] None
66. An excitation Table is shown below.

Q	IN	Q(t+1)
0	0	0
0	1	1
1	0	0
1	1	1

This excitation resembles:

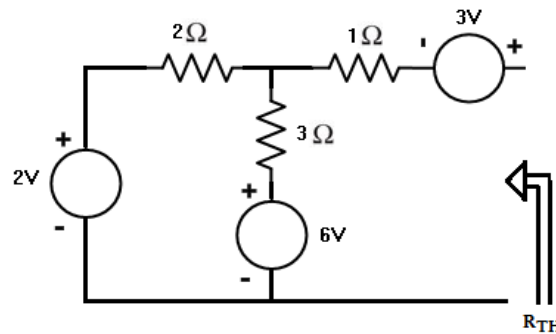
- [A] D Flip-Flop [B] JK Flip Flop [C] SR Flip Flop [D] T Flip Flop

67. The output Y of the digital circuit shown below is :

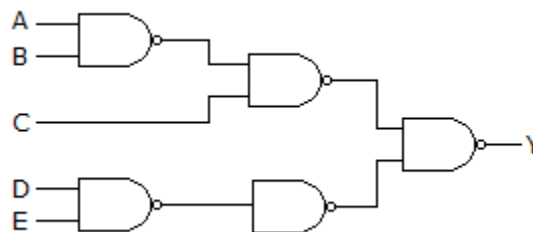


- [A] 1 [B] X [C] \bar{X} [D] 0

68. In 8085, example for non mask-able interrupts are :
 [A] TRAP [B] RST 6.5 [C] INTR [D] RST 5.5
69. Which one of the following can be used as parallel to series converter?
 [A] Decoder [B] Multiplexer. [C] Digital counter [D] De-multiplexer.
70. As a result of introduction of negative feedback which of the following will not decrease?
 [A] Band width [B] Overall gain [C] Distortion [D] Instability.
71. An AM demodulator can be implemented with a linear multiplier followed by a ___ filter.
 [A] Low pass [B] High pass [C] Band pass [D] Band stop
72. A 3KHz voice signal is converted to digital bits. To reconstruct the original signal from digital bits , the minimum sampling frequency required is :
 [A] 3KHz [B] 6KHz [C] 1.5KHz [D] More than 6KHz
73. The Thevenin equivalent resistance R_{TH} for the given network is equal to

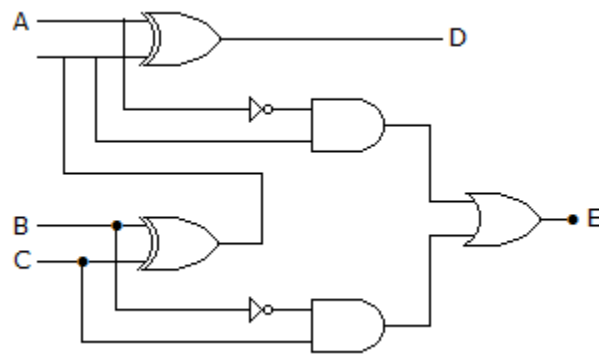


- [A] 2.2Ω [B] 3.2Ω [C] 4Ω [D] 5Ω
74. A 2-port network using z-parameter representation is said to be reciprocal if
 [A] $Z_{11} = Z_{22}$ [B] $Z_{12} = Z_{21}$
 [C] $Z_{11} = -Z_{21}$ [D] $Z_{11}Z_{22} - Z_{12}Z_{21} = 1$
75. Early-Effect in Bipolar Transistors describes :
 [A] Increase in Collector current due to increase in Base to Emitter Voltage.
 [B] Increase in Base current due to increase in Base to Emitter Voltage.
 [C] Increase in Collector current due to increase in Collector to Emitter voltage
 [D] None of these.
76. What are the three steps in generating PCM in the correct sequence:
 [A] Sampling, quantizing and encoding
 [B] Encoding, sampling and quantizing
 [C] Sampling, encoding and quantizing
 [D] Quantizing, sampling and encoding
77. The circuit of the given figure realizes the function



- [A] $Y = (A + B)C + DE$ [B] $Y = A + B + C + D + E$
 [C] $AB + C + DE$ [D] $AB + C(D + E)$

78. The circuit of the given figure is



- [A] full adder [B] full subtractor [C] shift register [D] decade counter

79. **Assertion (A):** A multiplexer can be used for data routing

Reason (R): A multiplexer has one input and many outputs.

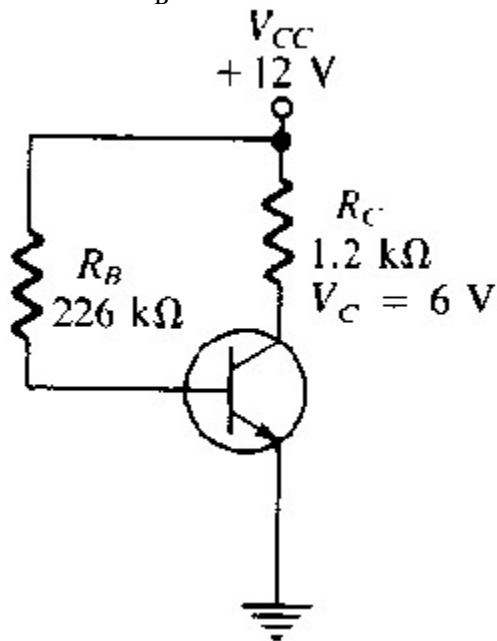
[A] Both A and R are correct and R is correct explanation of A

[B] Both A and R are correct but R is not correct explanation of A

[C] A is true, R is false

[D] A is false, R is true

80. Refer to this figure. The value of I_B is



- [A] $53\mu A$ [B] $50\mu A$ [C] 50 mA [D] 53 mA

81. A common-emitter amplifier has _____ voltage gain, _____ current gain, _____ power gain, and _____ input impedance.

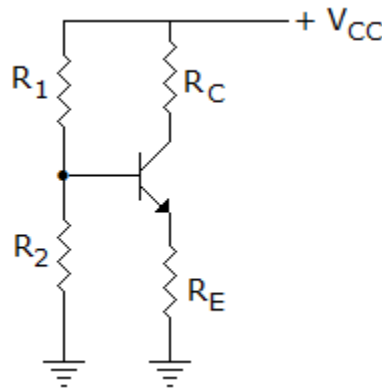
[A] high, low, high, low

[B] high, high, high, low

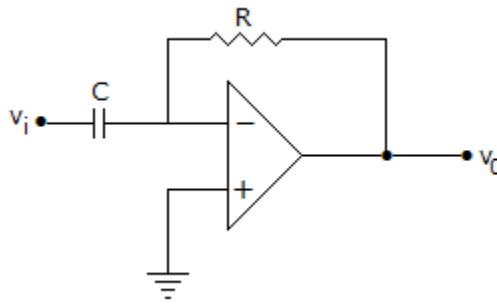
[C] high, high, high, high

[D] low, low, low, high

82. In figure the saturation collector current is

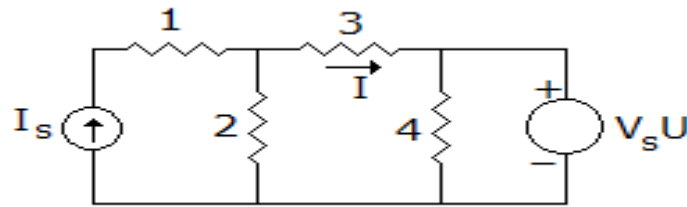


- [A] $\frac{V_{CC}}{R_C}$ [B] $\frac{V_{CC}}{R_E}$ [C] $\frac{V_{CC}}{R_C + R_E}$ [D] none of the above
83. Assume that op-amp in figure is ideal. If input V_i is triangular, the output V_o will be

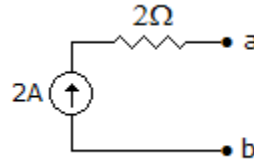


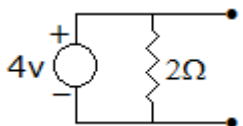
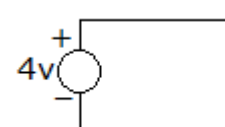
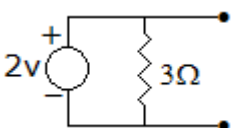
- [A] square wave [B] sine wave [C] triangular wave [D] parabolic wave
84. Consider the following statement
If an electric field is applied to an n type semiconductor bar, the electrons and holes move in opposite directions due to their opposite charges. The net current is
1. both due to electrons and holes with electrons as majority carriers
 2. sum of hole and electron currents
 3. difference between electron and hole currents
- Which of above statements are correct?
- [A] 1 only [B] 1 and 2 [C] 2 only [D] 3 only
85. In carbon resistor colour code, the third band is red. It indicates
- [A] two zeros [B] three zeros [C] multiplier is 0.01 [D] multiplier is 0.1
86. Some ceramic materials become superconducting
- [A] below liquid helium temperature
[B] between liquid helium and liquid nitrogen temperature
[C] above liquid nitrogen but below room temperature
[D] at room temperature

87. Given $I_s = 20 \text{ A}$, $V_s = 20 \text{ V}$, the current I in the 3Ω resistance is given by

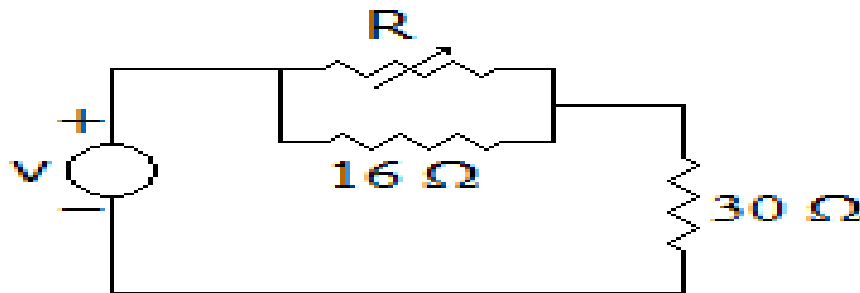


- [A] 4 A [B] 8 A [C] 2 A [D] 16 A
88. Figure shows a dc circuit. The Thevenin's equivalent circuit at terminals $a - b$ is

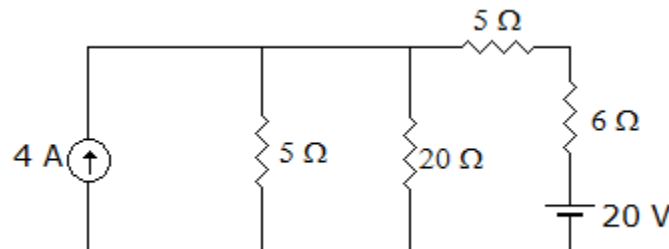


- [A]  [B] 
- [C]  [D] not feasible

89. If figure, power dissipated in 30Ω resistance will be maximum when value of $R =$

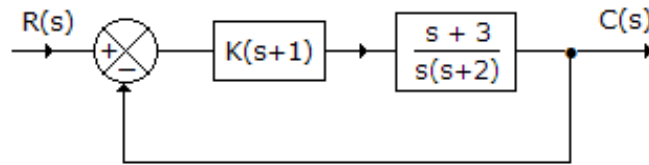


- [A] 30Ω [B] 16Ω [C] 9Ω [D] zero
90. The current source in figure, can be replaced by

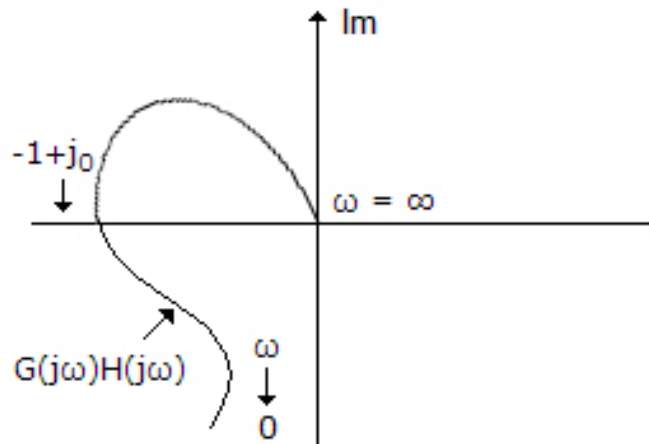


- [A] a voltage source of 20 V in series with 5 ohm resistance
 [B] a voltage source of 16 V in series with 4 ohm resistance
 [C] a voltage source of 20 V in series with 4 Ω resistance
 [D] a voltage source of 16 V in series with 5 Ω resistance

91. For the system in the given figure the characteristic equation is



- [A] $1 + \frac{K(s+1)(s+3)}{s(s+2)} = 0$ [B] $1 + \frac{K(s-1)(s-3)}{s(s-2)} = 0$
 [C] $K(s+1)(s+3) = 0$ [D] $s(s+2) = 0$
92. The system in the given figure, has



- [A] good gain and phase margin
 [B] poor gain and phase margin
 [C] good gain margin but poor phase margin
 [D] poor gain margin but good phase margin
93. Which of the following types of noise assumes greater importance at high frequencies?
 [A] Transit time noise [B] Shot noise
 [C] Impulse noise [D] Random noise
94. Linear diode detector utilizes
 [A] linear portion of static characteristics of diode
 [B] linear portion of dynamic characteristic of diode
 [C] square law portion of dynamic characteristics of diode
 [D] rectification property of diode
95. The Nyquist sampling interval, for the signal $\sin c(700t) + \sin c(5000t)$ is
 [A] $\frac{1}{350}$ sec [B] $\frac{\pi}{350}$ sec [C] $\frac{1}{700}$ sec [D] $\frac{\pi}{175}$ sec
96. An LVDT is used to measure displacement. The LVDT feeds a Voltmeter of 0-5 V range through a 250 gain amplifier. For a displacement 0.5 mm the output of LVDT is 2 mV. The sensitivity of instrument is
 [A] 0.1 V/mm [B] 0.5 V/mm [C] 1 V/mm [D] 5 V/mm
97. Which of the following is not correct in respect of electrostatic instrument?
 [A] It is essentially a voltmeter [B] It is suitable for only high voltages
 [C] It has a uniform scale [D] It can be used for both ac and dc

98. Which of the following is not a valid variable name in C?
 [A] 1 a [B] a 1 2 [C] a b 123 [D] a b c 123
99. The expression $A^2 + B^2 - 3 AB$ when written in Pascal should be written as
 [A] A * A + B * B - 3 A * B [B] A * A + B * B - 3.0 A * B
 [C] A * A + B * B - 3.0 * A * B [D] A * A + B * A - 3 * A * B
100. In 8085, which instructions are useful for writing and using subroutines?
 [A] CALL [B] RET [C] CALL and RET [D] None of above

OPTION-II (COMPUTER SCIENCE & ENGINEERING)

101. What is a shell?
 [A] It is a hardware component [B] It is a command interpreter
 [C] It is a part in compiler [D] It is a tool in CPU scheduling
102. Which is not the state of the process?
 [A] Blocked [B] Running [C] Ready [D] Privileged
103. Which of the following layer of OSI model also called end-to-end layer?
 [A] Presentation layer [B] Network layer
 [C] Session layer [D] Transport layer
104. How many layers are in the TCP/IP model?
 [A] 4 layers [B] 5 layers [C] 6 layers [D] 7 layers
105. Router operates in which layer of OSI Reference Model?
 [A] Layer 1 (Physical Layer) [B] Layer 3 (Network Layer)
 [C] Layer 4 (Transport Layer) [D] Layer 7 (Application Layer)
106. The last address of IP address represents
 [A] Unicast address [B] Network address
 [C] Broadcast address [D] None of above
107. In a bus topology, the nodes do nothing to move the data along the network, making it a(n) _____ topology.
 [A] client/server [B] active [C] passive [D] terminated
108. State true or false
 i. A candidate key is a minimal super key.
 ii. A candidate key can also refer to as surrogate key.
 [A] i-true, ii-false [B] i-false, ii-true
 [C] i-true, ii-true [D] i-false, ii-false
109. Which of the following statement is used to delete a table.
 [A] DROP TABLE [B] DELETE TABLE
 [C] DEL TABLE [D] REMOVE TABLE
110. Which of the following sorting algorithm is of divide-and-conquer type?
 [A] Bubble sort [B] Insertion sort [C] Quick sort [D] All of above

111. Linked list are not suitable data structure of which one of the following problems?
 [A] Insertion sort [B] Binary search
 [C] Radix sort [D] Polynomial manipulation
112. Which of the following data structure can't store the non-homogeneous data elements?
 [A] Arrays [B] Records [C] Pointers [D] None
113. When new data are to be inserted into a data structure, but there is no available space; this situation is usually called
 [A] underflow [B] overflow [C] housefull [D] saturated
114. What is the size of an int data type?
 [A] 4 Bytes [B] 8 Bytes
 [C] Depends on the system/compiler [D] Cannot be determined
115. What is the output of this C code?

```

1.  #include <stdio.h>
2.  int main()
3.  {
4.    char chr;
5.    chr = 128;
6.    printf("%d\n", chr);
7.    return 0;
8.  }
```

 [A] 128 [B] -128
 [C] Depends on the compiler [D] None of the mentioned
116. What is the output of this C code?

```

1.  #include <stdio.h>
2.  int main()
3.  {
4.    int a = 1, b = 1, c;
5.    c = a++ + b;
6.    printf("%d, %d", a, [B]);
7.  }
```

 [A] a = 1, b = 1 [B] a = 2, b = 1 [C] a = 1, b = 2 [D] a = 2, b = 2
117. %f access specifier is used for
 [A] Strings [B] Integral types
 [C] Floating type [D] All of the mentioned
118. Which is the incorrect statement:
 [A] Variable name can contain underscore.
 [B] Variable name may start from digit.
 [C] Variable name may not have white space character.
 [D] Keyword cannot be a variable name.
119. MOS stands for:
 [A] None of these [B] Memory oxide semiconductor
 [C] Metal oxide semiconductor [D] Metal oxide select

120. A group of 4 binary bits is called:
 [A] Nibble [B] Byte [C] Decimal [D] Digit
121. What will be the output of the following program?

```
#include<stdio.h>

void main()

{

    int a=10;

    printf(“%c”,[A]);

}
```

- [A] 10 [B]error
 [C]ASCII value of a [D]ASCII value of 10
122. What will be the output of the following program?

```
#include<stdio.h>

void main()

{

    int a, sum = 0;

    for (a=0; a<5; a++);

        sum = sum + a;

    printf(“%d”,sum);

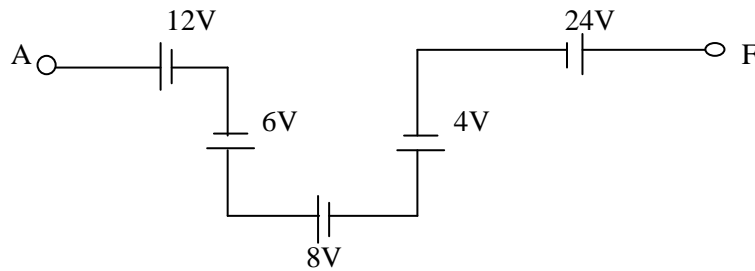
}
```

- [A] 15 [B] 5 [C] 4 [D] error
123. Necessary conditions for deadlock are
 [A] Mutual Exclusion [B]hold and wait, circular wait
 [C] No pre-emption [D] all of a, b and c
124. Which CPU scheduling algorithm suffers from the problem starvation?
 [A] FCFS [B] RR [C] SJF [D] None of those
125. A process is moved from running state to wait state when
 [A] Interrupt occurs [B]I/O operations arrives
 [C]admitted [D]finished
126. A system program that sets up an executable program in the main memory ready for execution is
 [A] assembler [B] loader [C] compiler [D] linker

127. Moving processes from main memory to disk and disk to main memory is called as
[A] scheduling [B] caching [C] spooling [D] swapping
128. The worst case complexity of a Binary search tree is
[A] $O(n)$ [B] $O(\log_2 n)$ [C] $O(n^2)$ [D] $O(n \log_2 n)$
129. Which data structure is used to convert an infix expression to postfix expression?
[A] stack [B] queue [C] tree [D] graph
130. The network 198.78.41.0 is a
[A] class A network [B] class B network
[C] class C network [D] class D network
131. The address *ftp.cit.edu* more than likely is
[A] located in CIT [B] an educational organization
[C] an FTP server [D] mail address of CIT
132. As the data packets moves from lower to upper layers, headers are
[A] added [B] subtracted [C] modified [D] rearranged
133. The data unit in the TCP/IP network layer is called as
[A] message [B] datagram [C] segment [D] frame
134. The term cardinality of two entities A and B stands for
[A] number of instances of entity B that can be associated with entity A
[B] number of instances present in entity A
[C] number of instances present in entity B
[D] total number of instances present in both A and B
135. How many maximum possible inputs are present in a 5 input OR gate?
[A] 5 [B] 32 [C] 10 [D] 6
136. A combinational logic circuit which is used to send single source incoming data to two or more separate destination is called as
[A] multiplexer [B] demultiplexer [C] encoder [D] decoder
137. The reduced form of the Boolean expression $(A+B)(A+C)$ is
[A] $AB+AC$ [B] $A+B+C$ [C] $AC+B$ [D] $A+BC$
138. Construction of parse tree is the task of which phase in compiler design?
[A] Lexical analysis [B] syntax analysis
[C] code generation [D] code optimization
139. Which system software is used to convert an .obj file to .exe file?
[A] Assembler [B] compiler [C] linker [D] interpreter
140. Which interrupt is termed as non maskable interrupt in 8085 micro processor?
[A] INTR [B] RST 7.5 [C] RST 6.5 [D] TRAP

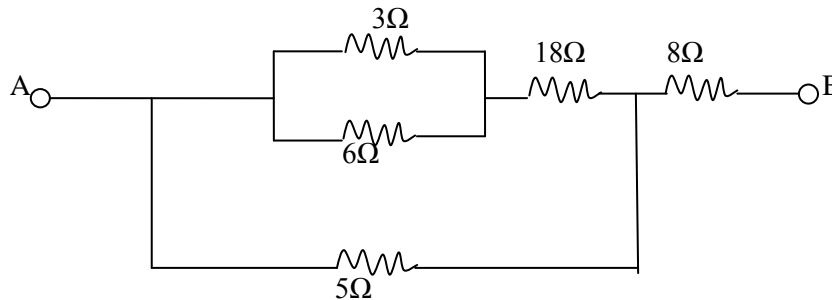
OPTION-III (INSTRUMENTATION ENGINEERING)

141. Calculate the value V_{AF}



- [A] 4V [B] 7V [C] 3V [D] 6V

142. Calculate the effective resistance of the following combination of resistances between point A and B.



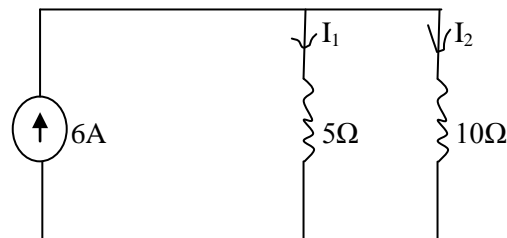
- [A] 12Ω [B] 10Ω [C] 14Ω [D] 20Ω

143. The following lines are the statements of which theorem.

“ In a network of linear resistances containing more than one source of e.m.f, the current which flows at any point is the sum of all the currents which would flow at that point if each source of e.m.f are considered separately and all the other sources for the time being is replaced by resistances equal to the internal resistances”

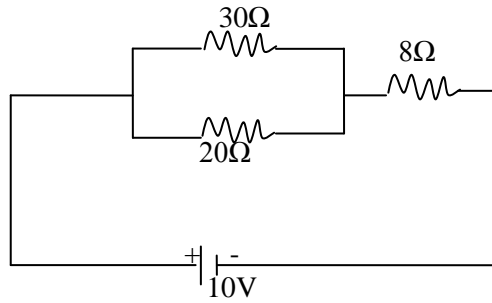
- [A] Norton's Theorem [B] Superposition Theorem
[C] Maximum Power Transfer Theorem [D] Thevenin's Theorem.

144. Find the current I_1 in the following figure:



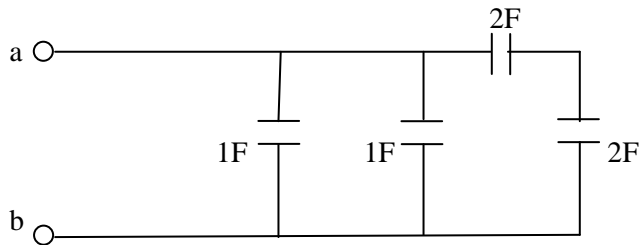
- [A] 2A [B] 3A [C] 4A [D] 5A

145. Power consumed in the given circuit is



- [A] 100 Watt [B] 5 Watt [C] 20 Watt [D] 40 Watt

146. Equivalent capacitance at terminal a and b is

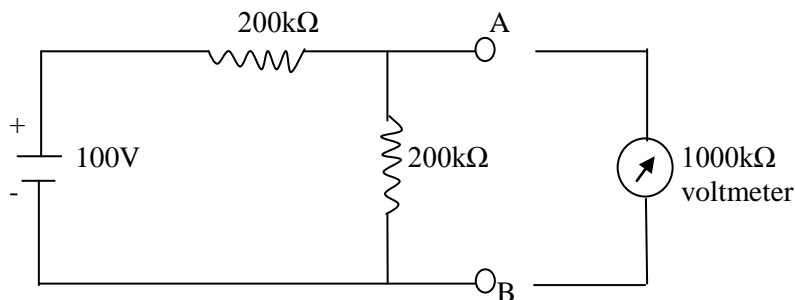


- [A] 3F [B] 2F [C] 7F [D] 5F

147. A circuit whose properties or characteristics are the same in either direction is called a

- [A] Linear circuit [B] Non-linear circuit
[C] Unilateral circuit [D] Bilateral circuit

148. A voltmeter is connected across the terminals A and B of the circuit shown in the figure below. Find the reading of the voltmeter.



- [A] 60 V [B] 75 V [C] 100 V [D] 45 V

149. Frequency can be measured by using

- [A] Maxwell's Bridge [B] Schering Bridge
[C] Heaviside Campbell Bridge [D] Ulien's Bridge

150. The gauge factor is defined as

- [A] $\frac{\Delta L/L}{\Delta R/R}$ [B] $\frac{\Delta R/R}{\Delta L/L}$ [C] $\frac{\Delta R/R}{\Delta D/D}$ [D] $\frac{\Delta R/R}{\Delta \rho/\rho}$

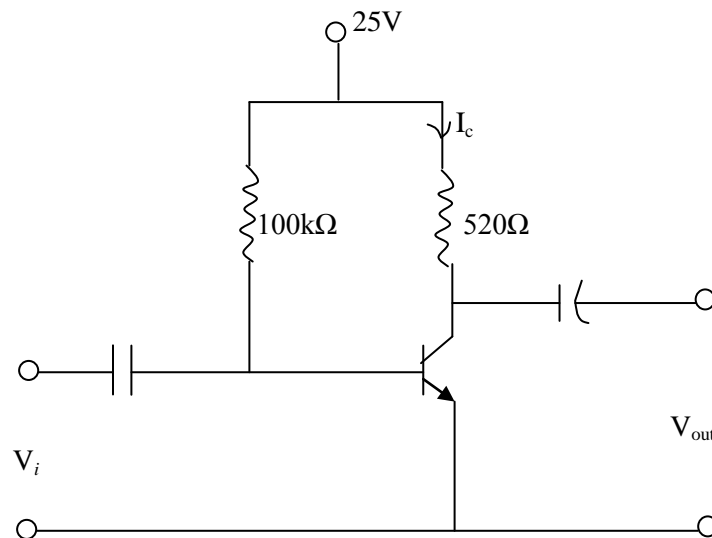
151. A thermister exhibits

- [A] only a negative change of resistance with increase in temperature
 [B] only a positive change of resistance with increase in temperature
 [C] can exhibit either a negative or positive change of resistance with increase of temperature depending upon the type of material used.
 [D] None of the above.

152. Quartz and Rochelle salt belong to

- [A] natural group of piezo-electric materials
 [B] synthetic group of piezo-electric materials
 [C] can belong to natural or synthetic group of piezo-electric materials provided properly polarized.
 [D] all of the above

153. Find I_c for the following circuit with $\beta = 100$ for the BJT.



- [A] 24.3mA [B] 22.1mA [C] 12.7mA [D] 32.5mA

154. Name the coupling schemes used in cascaded amplifiers.

- [A] R-C Coupling [B] Transformer Coupling
 [C] Impedance Coupling [D] All of the above

155. A power transistor is operating in class A operation has zero signal power dissipation of 12 W and a.c. power output is 4W. Determine collector efficiency and power rating of the transistor.

- [A] 50%, 12 Watt [B] 33.3%, 12 Watt
 [C] 50%, 4 Watt [D] 33.3%, 4 Watt

156. Negative feedback results in
 [A] Reduced Input impedance [B] Reduced Output impedance
 [C] Decrease in bandwidth [D] All of the above
157. Name the oscillator in which two series capacitors C1 and C2 form the potential divide network used for providing the feedback voltage.
 [A] Hartley Oscillator [B] Franklin Oscillator
 [C] Colpitt's Oscillator [D] Ulein Bridge Oscillator
158. In Ulein Bridge oscillator the frequency of oscillation is

[A] $f = \frac{1}{2\pi} \sqrt{\frac{1}{LC_1} + \frac{1}{LC_2}}$ [B] $f = \frac{1}{2\pi\sqrt{C(L_1 + L_2 + 2M)}}$
 [C] $f = \frac{1}{2\pi\sqrt{R_1R_2C_2C_1}}$ [D] $f = \frac{1}{2\pi RC\sqrt{6}}$

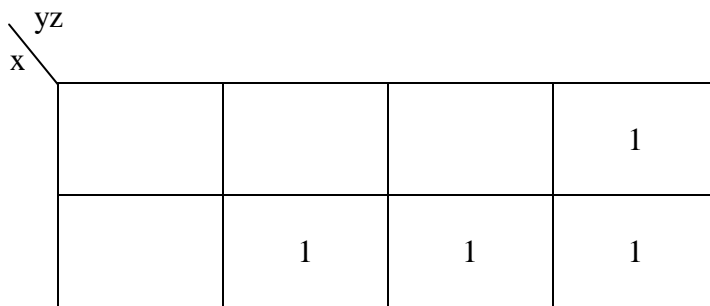
159. Which of following is not the characteristic of an ideal opamp?
 [A] Infinite input impedance [B] Infinite output impedance
 [C] Infinite CMRR [D] Infinite open loop gain
160. Convert the following

$$(4021)_{10} = (-----)_2$$

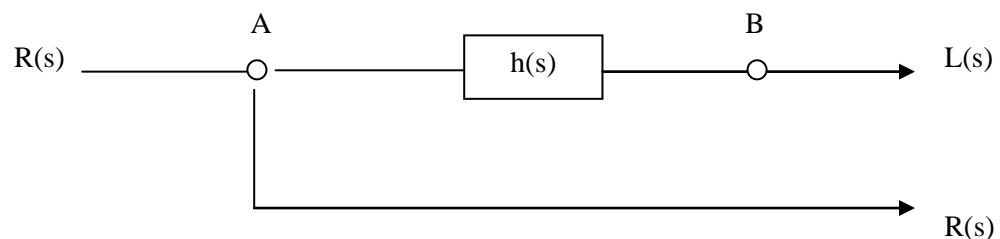
- [A] 111110110101 [B] 111100110110
 [C] 111110010100 [D] 111010111010
161. The following expression represents which gate

$$Z = \overline{A}\overline{B} + A\overline{B}$$

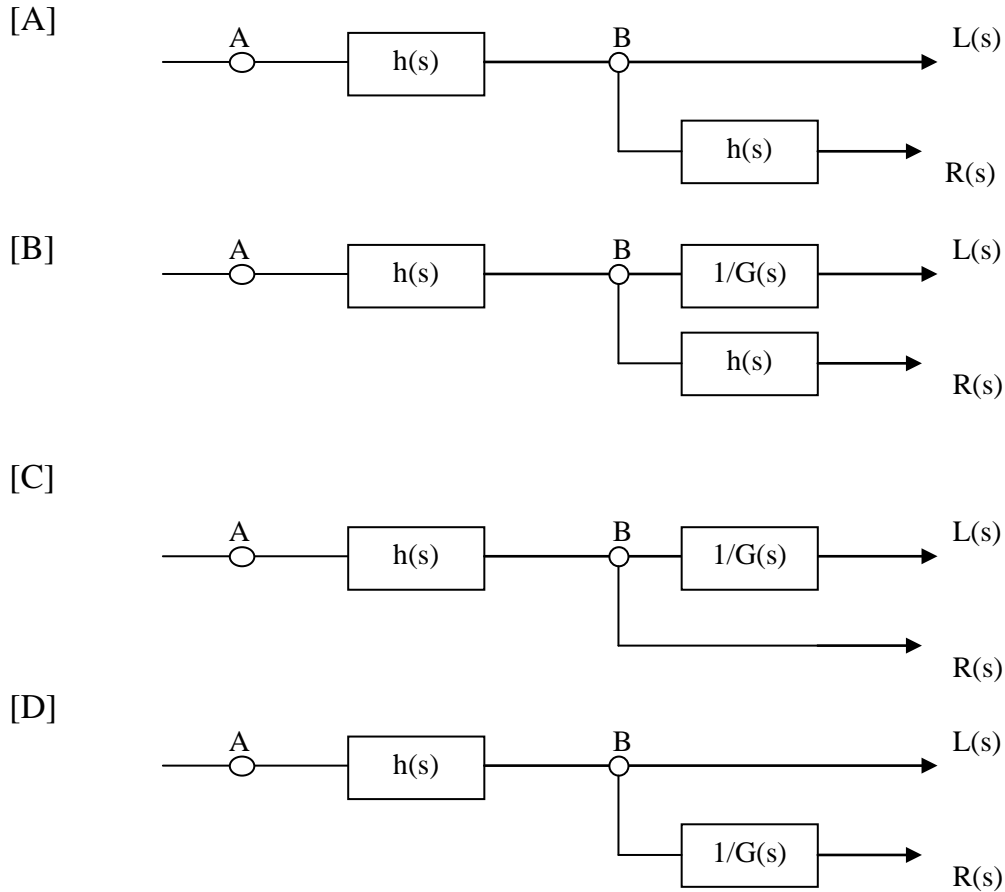
- [A] OR [B] AND [C] NAND [D] X-OR
162. The K-map in the figure below is simplified to expression



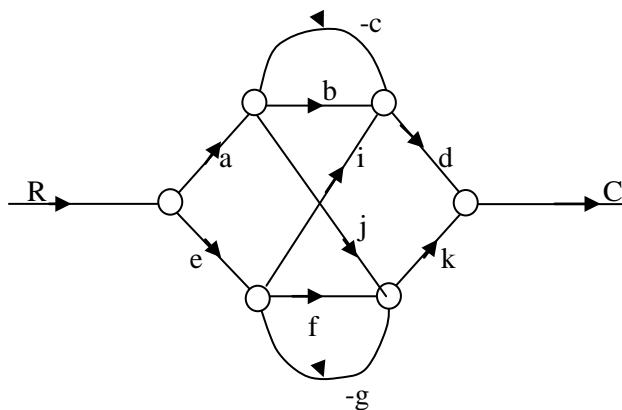
- [A] $f = xz + \overline{x}y\overline{z}$ [B] $f = xz + y\overline{z}$ [C] $f = xy + xz$ [D] $f = xz + xy$
163. When a take off point from a position A is shifted to position B after the block as shown in the figure



Then the resultant block is



164. The number of flip flops required to build a counter with modulus 6 is
 [A] 2 [B] 3 [C] 4 [D] 6
165. The signal flow graph as shown in the figure, has how many forward paths.

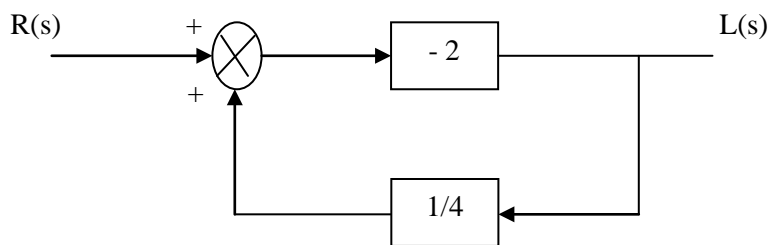


- [A] 3 [B] 4 [C] 5 [D] 6
166. The setting time of the output response within 2% tolerance error band is calculated as
 (Where ξ = Damping Ratio, and ω_n = Undamped natural frequency)
 [A] $2/\xi\omega_n$ [B] $4/\xi\omega_n$ [C] $3/\xi\omega_n$ [D] $1/\xi\omega_n$

167. A system is said to be stable if
 [A] If the output of the system is unbounded for any bounded input.
 [B] If the output of the system is bounded for any bounded input.
 [C] If the output of the system is bounded for any unbounded input.
 [D] If the output of the system is unbounded for any unbounded input
168. The characteristic equation of a system is given below

$$s^6 + s^5 - 2s^4 - 3s^3 - 7s^2 - 4s - 4 = 0$$

 The number of roots in the right hand side of S-plane is
 [A] One [B] Two [C] Three [D] Zero
169. What is the width of the address bus of 8085 microprocessor?
 [A] 8 bit [B] 16 bit [C] 32 bit [D] 64 bit
170. The value of k for which the system $s^3 + 3s^2 + 3s + 1 + k = 0$ becomes stable is
 [A] $k > 8$ [B] $k = 8$ [C] $k = 7$ [D] None of these
171. The laplace transform of a unit impulse is
 [A] s [B] 1/s [C] $1/s^2$ [D] unity
172. $\frac{(s+2)(s+1)}{s^2(s+3)(s+4)}$ is a
 [A] Type 0 system [B] Type 1 system [C] Type 2 system [D] Type 4 system
173. For the differential equation $2 \frac{d^2y}{dx^2} + 4 \frac{dy}{dx} + 8y = 8x$, the damping ratio is
 [A] 1 [B] 2 [C] 0.5 [D] 0.7
174. The transfer function of a first order control system is of the type
 [A] $\frac{1}{TS^2+1}$ [B] $\frac{1}{TS+1}$ [C] TS [D] $\frac{1}{TS}$
175. The closed loop gain of the system shown below is



- [A] $-4/3$ [B] -4 [C] 4 [D] $4/3$
176. RAR, RAL instructions are examples of
 [A] Logical operations [B] Branching Operations
 [C] Arithmetic Operations [D] Data Transfer Operations
177. To interface a memory chip of 4K with 8085 microprocessor, how many address lines are required?
 [A] 10 [B] 11 [C] 12 [D] 13

178. Identify the data in register C after execution of the following program.

```
MVI C, 00H
MVI A, 00H
MOV B, A
MVI A, 15H
MVI B, 11H
XRA B
MOV A, C
HLT
```

- [A] 04H [B] 03H [C] 15H [D] 11H

179. LDA, STA are examples of

- [A] Register indirect addressing modes.
 [B] Register addressing modes.
 [C] Implicit addressing modes.
 [D] Direct addressing modes

180. How many T-states has 'Opcode Fetch' machine cycle

- [A] 2 T states [B] 3 T states [C] 4 T states [D] 5 T states

PART-IV: FOOD PROCESSING TECHNOLOGY

181. Bernoulli's equation is applicable for

- [A] rotational flow of an incompressible fluid
 [B] irrotational flow of compressible or incompressible fluid
 [C] steady rotational flow of an incompressible fluid
 [D] steady irrotational flow of an incompressible fluid

182. Thermophilic bacteria can survive

- [A] HTST pasteurization [B] LTLT pasteurization
 [C] Sterilization [D] Both (a) and (b)

183. Concentration of orange juice by boiling off excess water is carried out by

- [A] Dehumidification [B] Evaporation
 [C] Centrifugation [D] Crystallization

184. The velocity of a fluid in a pipe of diameter, 'd' is 'V'. The pipe is connected to another pipe of diameter, 4d. Reynolds number in the pipe of diameter 'd' in relation to the pipe of diameter '4d' is

- [A] double [B] four times [C] half [D] same

185. Stokes' law is generally used for

- [A] Streamline flow [B] laminar flow [C] turbulent flow [D] none of these

186. The temperature range for ultra-high-temperature(UHT) sterilization of milk is
[A] 90 to 100°C [B] 100 to 115°C [C] 135 to 150°C [D] 180-210°C
187. Addition of water to bran and endosperm of kernel before milling is called
[A] Tempering [B] Soaking [C] Watering [D] None of these
188. The equipment commonly used to measure specific heat is
[A] Thermometer [B] Hygrometer [C] Manometer [D] Bomb calorimeter
189. Name the principle gas generally used in Modified Atmosphere Packaging
[A] Oxygen [B] Carbon dioxide [C] Nitrogen [D] All of the above
190. Which of the following is a Class II preservative?
[A] Salt [B] Sugar [C] Spices [D] Sodium benzoate
191. In ultrasonic cleaning, the waves are
[A] Electric waves [B] Sound waves
[C] Magnetic waves [D] Combination of the above three
192. Soxhlet method is used for the determination of
[A] Crude fat [B] Crude protein [C] Crude fibre [D] Total sugars
193. Which of the following is not a fermented product?
[A] Idli [B] Cheese [C] Tofu [D] Cake
194. The maximum heat transfer coefficient from steam heating will be attained when steam is
[A] Superheated [B] Saturated [C] Wet [D] None of these
195. Saponification involves reaction between
[A] Sodium hydroxide and Hydrochloric acid [B] Sodium hydroxide and Fat
[C] Hydrogen and Oxygen [D] Hydrogen and Fat
196. By chemical means hydrogen can be added to an oil to saturate its fatty acid thereby converting it to a solid. The process is termed as
[A] Homogenization [B] Hydrogenation [C] Purification [D] Centrifugation
197. The P^H value of pure water should be
[A] 0 [B] 7 [C] 10 [D] 14
198. The first acid to be produced by fermentation was
[A] Lactic acid [B] Acetic acid [C] Citric acid [D] Malic acid
199. Which of the following is an unsaturated fatty acid.
[A] palmitic [B] stearic [C] arachidonic [D] none
200. Work done in a free expansion process is
[A] Zero [B] Minimum [C] Maximum [D] positive
201. Non-reducing sugar is
[A] Fructose [B] Glucose [C] Sucrose [D] Mannose
202. Homogenization of milk must have 90% of fat globules smaller than _____ in diameter.
[A] 1 μ [B] 2 μ [C] 3 μ [D] 4 μ
203. Which of the following is used to grow bacterial cultures continuously?
[A] Chemostat [B] Coulter Counter
[C] Hemostat [D] petroff-Hausser chamber

204. What type of medium contains at least one component that is not pure and does not have an exact chemical formula?
[A] Synthetic [B] Chemically defined
[C] Complex [D] Differential
205. The manufacture of a HFCS (high fructose corn syrup)- sweetened soft drink involves the _____ processing industry
[A] Beverage [B] Fats and Oil [C] Corn [D] Both A and C
206. Enzymes are made up by
[A] Nucleic acid [B] protein [C] Vitamin [D] Carbohydrates
207. A value that defines the difference between acceptable and unacceptable is defined as
[A] Critical limit [B] Critical control point
[C] HACCP [D] Hazard
208. Psychrometric chart is used to determine the following property of air
[A] Relative humidity [B] Dew point temperature
[C] Both [D] None
209. When the humidity of air increases, the drying rate slightly
[A] increase [B] decrease [C] remain constant [D] none
210. A Carnot engine operates between 200°C and 20°C . Its maximum possible efficiency is
[A] 90% [B] 100% [C] 38% [D] 72%
211. What is the change in internal energy if 500J of heat are added to the system and 125 J of work are done on a system?
[A] - 625J [B] -375J [C] 625J [D] 375J
212. An adiabatic process is one in which
[A] No heat enters or leaves the gas
[B] the temperature of the gas changes
[C] the change in internal energy is equal to the work done
[D] All of the above
213. Specific rotation (degree) of D-glucose is
[A] +32.2 [B] -32.2 [C] +52.2 [D] -52.2
214. Retrogradation is related to
[A] Protein [B] fat [C] Starch [D] None
215. Viscosity of a liquid is measure of
[A] Repulsive forces between the liquid molecules
[B] Frictional resistance
[C] Intermolecular forces between the molecules
[D] None of the above
216. A substance above critical temperature exists as
[A] solid [B] Liquid [C] Gas [D] Wet Vapour
217. Which is the extensive property of a thermodynamic system?
[A] Volume [B] Pressure [C] Temperature [D] Density

218. If all the variables of a steam are independent of time it is said to be in
 [A] Steady flow [B] uniform flow [C] unsteady flow [D] closed flow
219. Cellulose is polymer made up of
 [A] Glucose [B] Galactose [C] Mannose [D] None
220. Which of the following affect microbial growth
 [A] pH [B] moisture
 [C] oxidation-reduction potential [D] all

PART-V (CIVIL ENGINEERING – CONSTRUCTION TECHNOLOGY)

221. A first class brick should have a minimum crushing strength of
 [A] 7 MN/m² [B] 10.5 MN/m² [C] 12.5 MN/m² [D] 14 MN/m²
222. The process of mixing clay, water and other ingredients to make brick, is known as
 [A] Tempering [B] Pugging [C] Kneading [D] moulding
223. The amount of gypsum, usually added in the manufacture of cement is
 [A] 0.1% to 0.5% [B] 0.5% to 1% [C] 1 to 3% [D] 3 to 5%
224. The solvent used in cement paints is
 [A] thinner [B] turpentine [C] water [D] spirit
225. The base material for distemper is
 [A] chalk [B] lime [C] clay [D] lime putty
226. The instrument attached to the wheel of a vehicle in order to measure the distance travelled, is called
 [A] Passometer [B] Pedometer [C] Odometer [D] Speedometer
227. Compensating errors that occur in chaining are proportional to
 [A] L [B] \sqrt{L} [C] $1/L$ [D] $1/\sqrt{L}$
228. In an optical square, the angle between the first incident ray and the last reflected ray is
 [A] 60° [B] 90° [C] 120° [D] 150°
229. At the magnetic poles, the amount of dip is
 [A] 0° [B] 45° [C] 60° [D] 90°
230. The capacity of a telescope of producing a sharp image is called its
 [A] definition [B] brightness [C] sensitivity [D] magnification
231. The ratio of linear stress to linear strain is called
 [A] modulus of rigidity [B] bulk modulus
 [C] modulus of elasticity [D] Poisson's ratio
232. When a bar is subjected to a change of temperature and its deformation is prevented, the stress induced in the bar is
 [A] tensile stress [B] compressive stress
 [C] shear stress [D] thermal stress

233. The relation between young's modulus (E), shear modulus (C) and bulk modulus (K) is given by
 [A] $E = \frac{3KC}{3K+c}$ [B] $E = \frac{6KC}{3K+c}$ [C] $E = \frac{9KC}{3K+c}$ [D] $E = \frac{12KC}{3K+c}$
234. The polar modulus for a solid shaft of diameter (D) is
 [A] $\frac{\pi D^2}{4}$ [B] $\frac{\pi D^3}{16}$ [C] $\frac{\pi D^3}{32}$ [D] $\frac{\pi D^4}{64}$
235. A manometer is used to measure
 [A] low pressure [B] moderate pressure
 [C] high pressure [D] atmospheric pressure
236. The centre of gravity of the volume of the liquid displaced is called
 [A] centre of pressure [B] centre of buoyancy
 [C] metacentre [D] none of these
237. Segregation in concrete results in
 [A] honey combing [B] porous layers [C] surface scaling [D] all of these
238. The importance of batching is to obtain
 [A] Strength [B] workability [C] durability [D] all of these
239. The smallest sieve size according to Indian standards is
 [A] 0.0045 mm [B] 0.045 mm [C] 0.45 mm [D] 0.154 mm
240. As per IS: 456-1978, the permissible value of bond stress for M15 grade of concrete is limited to
 [A] 0.5 N/mm² [B] 1 N/mm² [C] 1.5 N/mm² [D] 2 N/mm²
241. The axial load which is sufficient to keep the column in a slight deflected shape is called
 [A] Critical load [B] crippling load [C] buckling load [D] any of these
242. The effective length of fillet weld should not be less than
 [A] the size of weld [B] two times the size of weld
 [C] three times the size of weld [D] four times the size of weld
243. The representative fraction 1/3500 means that the scale is
 [A] 1 cm = 0.35 m [B] 1 cm = 3.5 m [C] 1 cm = 35 m [D] 1 cm = 350 m
244. In a cantilever with uniformly distributed load the shearing force varies following a
 [A] linear law [B] parabolic law
 [C] either of the above [D] none of these
245. A backsight reading on BM = 100 m was 2.350 m. The inverted staff reading to the bottom of a girder was 1.350 m. The RL of the bottom of girder is
 [A] 103.00 [B] 103.70 [C] 101.00 [D] 101.70
246. Pick out the incorrect statement
 [A] Closely spaced contour lines indicate a gentle slope
 [B] Surface slope on a map may be indicated by short lines of various widths known as hachures.
 [C] The direction of the steepest slope on a contour map is along the normal to the contour line.
 [D] A contour line is the intersection of a level surface with the surface of the earth.

247. If the forebearing of a line is $N21^{\circ}35'W$, its backbearing will be
 [A] $S21^{\circ}35'E$ [B] $S26^{\circ}35'W$ [C] $N21^{\circ}35'E$ [D] $N26^{\circ}35'W$
248. The combined correction of curvature and refraction for a distance of 1400 m is
 [A] 0.153 m [B] 0.132 m [C] 0.094 m [D] 0.021 m
249. The process of determining the location of the station (on the map) occupied by the plane table is called as
 [A] Intersection [B] three-point problem
 [C] Traversing [D] resection
250. When a tensile or compressive force (P) acts on a body, the change in its length is given by
 [A] $\frac{Pl}{AE}$ [B] $\frac{AE}{Pl}$ [C] $\frac{PE}{Al}$ [D] $\frac{PA}{lE}$
251. Strain in a direction at right angles to the direction of applied force is known as
 [A] Lateral strain [B] Shear strain [C] Volumetric strain [D] none of these
252. The point of contraflexure is also called
 [A] the point of inflexion [B] a virtual hinge
 [C] either of the above [D] none of the above
253. In a simply supported beam carrying a load whose intensity varies uniformly from zero at one end to W per unit run at the other end, the maximum B.M. is equal to
 [A] $\frac{Wl^2}{8}$ [B] $\frac{Wl^2}{12}$ [C] $\frac{Wl^2}{24}$ [D] $\frac{Wl^2}{9\sqrt{3}}$
254. The strength of a hollow shaft for the same length, material and weight is
 [A] less than a solid shaft [B] more than a solid shaft
 [C] equal to a solid shaft [D] none of the above
255. A beam is loaded as cantilever, if the load at the end is increased, the failure will occur
 [A] in the middle [B] at the tip below the load
 [C] at the support [D] anywhere
256. The strength of timber is maximum when load applied is
 [A] parallel to grain [B] perpendicular to grain
 [C] Inclined at 45° to grain [D] inclined at 60° to grain
257. Lime mortar is generally made with
 [A] quick lime [B] fat lime [C] hydraulic lime [D] white lime
258. King closet are related to
 [A] doors and windows [B] king post truss
 [B] queen post truss [D] brick masonry
259. The load carrying capacity of a column designed by working stress method is 500kN. The collapse load of the column is
 [A] 500.0 kN [B] 662.5 kN [C] 750.0 kN [D] 1100.0 kN
260. Two tanks are connected in parallel by two pipes A and B of identical friction factors and lengths. If the size of pipe A is double than that of the pipe B, then their discharges will be in the ratio of
 [A] 2 [B] 4 [C] 5.66 [D] 32

PART-VI (INFORMATION TECHNOLOGY)

261. Which of the following computer language is used for artificial intelligence?
 [A] FORTRAN [B] PROLOG [C] C [D] COBOL
262. ASCII stands for
 [A] American Stable Code for International Interchange
 [B] American Standard Case for Institutional Interchange
 [C] American Standard Code for Information Interchange
 [D] American Standard Code for Interchange Information.
263. Hard disk is divided into tracks which is further subdivided into
 [A] Clusters [B] Sectors [C] Vectors [D] Heads
264. The BCD number for decimal 347 is _____.
 [A] 1100 1011 1000. [B] 0011 0100 0111
 [C] 0011 0100 0001 [D] 1100 1011 0110
265. The simplest equation which the K-map in bellow figure is

		\bar{C}	C
\bar{A}	\bar{B}	0	0
\bar{A}	B	1	1
A	B	1	1
A	\bar{B}	0	1

- [A] $X = AC + B$ [B] $X = A\bar{B}$
 [C] $ABC\bar{C} + ABC + A\bar{B}C$ [D] $AB + \bar{A}B$
266. Use Boolean algebra to find the most simplified expression
267. $F = ABD + CD + ACD + ABC + ABC$ [D]
 [A] $F = ABD + ABC + CD$ [B] $F = CD + AD$
 [C] $F = BC + AB$ [D] $F = AC + AD$
268. The value of EOF is _____.
 [A] -1 [B] 0 [C] 1 [D] 10
269. Each C preprocessor directive begins with
 [A] # [B] include [C] main() [D] {
270. What will be output of the following program?

```
#include<stdio.h>
int main()
{
  int i=5,j;
  j=++i+++i+++i;
  printf("%d %d",i,j);
  return 0; }
```

- [A] 721 [B] 8 21 [C] 7 24 [D] 8 24

271. A Gigabyte is equal to
 [A] 1024 Megabytes [B] 1024 Kilobytes
 [C] 1024 Terabytes [D] 1024 Bytes
272. The database design that consists of multiple tables that are linked together through matching data stored in each table is called a:
 [A] Hierarchical database [B] Network database
 [C] Object oriented database [D] Relational database
273. The property (or set of properties) that uniquely defines each row in a table is called the:
 [A] identifier [B] index [C] primary key [D] symmetric key
274. This is Employee table.

Employee_id	Name	salary
1001	Anil	6000
1009	Raj	4500
1018	Ross	7000

from Employee table.

Select * from employee where employee_id>1009;

Which of the following employee_id will be displayed?

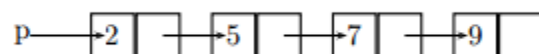
- [A] 1009, 1001, 1018 [B] 1009, 1018
 [C] 1001 [D] 1018
275. The situation when in a linked list START=NULL is
 [A] underflow [B] overflow [C] housefull [D] saturated
276. The term "push" and "pop" is related to the
 [A] array [B] lists [C] stacks [D] queue
277. Consider a linked list, implemented by the following data structure:

```

struct lnode {
int data ;
struct lnode * next ;
};
typedef struct lnode * LIST ;
void pf ( LIST p)
{
if ( p == 0) return ;
else {
pf ( p -> next );
printf ( " %d " , p -> data );
}
}

```

Now suppose the list has the following data inside:



What is the output on screen of calling pf() on the above list?

- [A] 2 5 7 9 [B] 9 [C] 9 7 5 2 [D] out of memory

278. CISC stands for
- [A] Common Instruction Set Computers
 [B] Complex Instruction Set Compilers
 [C] Complex Instruction Set Computers
 [D] Compound Instruction Set Computers
279. The transfer of large chunks of data with the involvement of the processor is done by _____.
- [A] DMA controller [B] Arbitrator
 [C] User system programs [D] None of the above
280. In immediate addressing the operand is placed
- [A] in the CPU register [B] after OP code in the instruction\
 [C] in memory [D] in stack
281. Which of the following memories must be refreshed many times per second?
- [A] Static RAM [B] Dynamic RAM [C] EPROM [D] ROM
282. The purpose of a firewall on computer networks is to –
- [A] prevent computers from overheating
 [B] prevent unwanted network connections from being made
 [C] allow more than 4 computers to share the same Internet connection
 [D] allow pictures and video to be downloaded from a camera to a computer
283. What is the valid host range the IP address 172.16.10.22 and mask 255.255.255.240 is a part of
- [A] 172.16.10.20 through 172.16.10.22
 [B] 172.16.10.1 through 172.16.10.255
 [C] 172.16.10.17 through 172.16.10.31
 [D] 172.16.10.17 through 172.16.10.30
284. Round robin scheduling is essentially the preemptive version of _____.
- [A] FIFO [B] Shortest job first
 [C] Shortest job remaining [D] Longest time first
285. A page fault occurs
- [A] when the page is not in the memory
 [B] when the page is in the memory
 [C] when the process enters the blocked state
 [D] when the process is in the ready state
286. Fork is
- [A] the dispatching of a task [B] the creation of a new job
 [C] the creation of a new process [D] increasing the priority of a task
287. Images included in many software titles are called _____.
- [A] clipart [B] popups [C].jpg files [D] .tiff files
288. Some DVDs have a capacity up to four times that of others. They do this by:
- [A] using a different type of laser [B] using narrower tracks
 [C] using multiple layers [D] using data compression
289. In _____ transmission mode, the flow of information is bidirectional at the same time.
- [A] Half-duplex [B] Full-duplex [C] Simplex [D] None of these

297. Mapping from MAC address to IP address is done by
[A] RARP [B] DHCP [C] BOOTP [D] All of these
298. The minimum number of nodes in a binary tree of depth d (root is at level 0) is
[A] $2^d - 1$ [B] $d + 1$ [C] $2^{d+1} - 1$ [D] d
299. Usage of Preemption and Transaction Rollback prevents
[A] Unauthorised usage of data file [B] Deadlock situation
[C] Data Manipulation [D] File pre-emption
300. A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlock free is
[A] 4 [B] 2 [C] 3 [D] 1

SPACE FOR ROUGH WORK
