D-C E T – 2018

EC	COURSE: ELECTRONICS AND COMMUNICATION	VERSION CODE: A	QUESTION BOOKLET SERIAL NUMBER: 108388

MAXIMUM MARKS	TOTAL DURATION	TIME
180	200 Minutes	10.00 a.m. to 1.00 p.m.

MAXIMUM TIME FOR ANSWERING	MENTION YOUR DIPLOMA CET NUMBER				
180 Minutes					

DOs :

1. Candidate must verify that the DCET number and Name printed on the OMR Answer Sheet is tallying with the DCET number and Name printed on the Admission Ticket. Discrepancy if any, report to invigilator.
2. This question booklet is issued to you by the invigilator after the **2nd bell i.e., after 9.50 a.m.**
3. The Version Code of this Question Booklet should be entered on the OMR Answer Sheet and the respective circle should also be shaded completely.
4. The Version Code and Serial Number of this question booklet should be entered on the Nominal Roll without any mistakes.
5. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'Ts :

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. The **3rd Bell rings at 10.00 a.m., till then;**
   - Do not remove the seal present on the right hand side of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

SEAL

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 180 (items) questions and each question will have one statement and four answers. (Four different options / responses.)
2. After the **3rd Bell is rung at 10.00 a.m.**, remove the paper seal of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 180 minutes:
   - Read each question (item) carefully.
   - Choose one correct answer from out of the four available responses (options / choices) given under each question / item. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **only one response** for each item.
   - Completely **darken / shade** the relevant circle with a **blue or black ink ballpoint pen against the question number on the OMR answer sheet**.

ಸರಿಯಾದ ಕ್ರಮ CORRECT METHOD	ತಪ್ಪು ಕ್ರಮಗಳು WRONG METHODS
① ● ③ ④	⊗ ② ③ ④ ① ② ③ ✓ ① ● ● ④
	● ② ③ ④ ① ● ③ ④

4. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
5. After the **last bell is rung at 1.00 p.m.**, stop marking on the OMR answer sheet and affix your **left hand thumb impression** on the OMR answer sheet as per the instructions.
6. Hand over the **OMR answer sheet** to the room invigilator as it is.
7. After separating the top sheet (Dept. Copy), the invigilator will return the bottom sheet replica (candidate's copy) to you to carry home for self-evaluation.
8. Preserve the replica of the OMR answer sheet for a minimum period of **ONE year**.

[P.T.O.

PART – A

It consists of **1 – 40** questions.

1. If $A = \begin{bmatrix} 3 & 0 \\ -2 & 1 \end{bmatrix}$, then $2A - 3A^T =$

(1) $\begin{bmatrix} -3 & -6 \\ -4 & 1 \end{bmatrix}$ (2) $\begin{bmatrix} -3 & 6 \\ -2 & 1 \end{bmatrix}$

(3) $\begin{bmatrix} -3 & 6 \\ -4 & -1 \end{bmatrix}$ (4) $\begin{bmatrix} -3 & 6 \\ 4 & -1 \end{bmatrix}$

2. If $\begin{bmatrix} 3 & 4 & x \end{bmatrix} \begin{bmatrix} -1 \\ 2 \\ 5 \end{bmatrix} = [2x + 8]$ then the value of x =

(1) 1 (2) –1

(3) $-\frac{1}{2}$ (4) $\frac{1}{2}$

3. If $\begin{vmatrix} 3 & m-1 \\ m+1 & 2 \end{vmatrix} = 3$, then the value of m =

(1) ±1 (2) $\pm\sqrt{2}$

(3) ±3 (4) ±2

4. In solving simultaneous linear equations x – y = 4, 2y + 3z = –2 and 3x + y + 2z = 1 using Cramer's rule, the value of determinant of co-efficients of x, y and z is

(1) 6 (2) 12

(3) –8 (4) –16

SPACE FOR ROUGH WORK

5. If $A = \begin{bmatrix} -2 & 5 \\ 2 & -3 \end{bmatrix}$, then inverse of A =

(1) $\frac{1}{4}\begin{bmatrix} 2 & -5 \\ -2 & 3 \end{bmatrix}$ (2) $\frac{1}{4}\begin{bmatrix} -3 & -5 \\ -2 & -2 \end{bmatrix}$

(3) $\frac{1}{4}\begin{bmatrix} -2 & 2 \\ 5 & -3 \end{bmatrix}$ (4) $\frac{1}{4}\begin{bmatrix} 3 & 5 \\ 2 & 2 \end{bmatrix}$

6. The characteristic roots of the matrix $\begin{bmatrix} 4 & -2 \\ -3 & -1 \end{bmatrix}$ are

(1) 2 and –5 (2) –2 and 5

(3) –2 and –5 (4) 2 and 5

7. If $\vec{a} = 2\hat{i} - 3\hat{j} + 5\hat{k}$
$\vec{b} = 3\hat{i} - 2\hat{j} - 5\hat{k}$ and
$\vec{c} = \hat{i} + 4\hat{k}$
then the scalar product of $\vec{a} + \vec{b}$ and $\vec{b} - \vec{c}$ is

(1) –9 (2) 9

(3) 20 (4) –20

8. If A, B and C are three consecutive vertices of a parallelogram with position vectors $3\hat{i} - 2\hat{j} + \hat{k}, 2\hat{i} + \hat{j} - \hat{k}$ and $\hat{i} - \hat{j} + \hat{k}$, then area of the parallelogram is

(1) $3\sqrt{5}$ sq. units (2) $5\sqrt{3}$ sq. units

(3) $2\sqrt{5}$ sq. units (4) $5\sqrt{2}$ sq. units

9. Work done by the force 2i – 3j + 5k in moving a particle from (–3, 1, 2) to (1, –1, 1) is

(1) 3 (2) 9

(3) 6 (4) 15

SPACE FOR ROUGH WORK

10. The probability of drawing a non-diamond card from a well shuffled deck of 52 cards is

(1) $\frac{3}{4}$ (2) $\frac{1}{2}$

(3) $\frac{1}{4}$ (4) $\frac{12}{13}$

11. If $\tan\theta = \frac{2}{3}$ and $\pi < \theta < \frac{3\pi}{2}$, then $\sin\theta + \cos\theta =$

(1) $\frac{5}{\sqrt{13}}$

(2) $\frac{-1}{\sqrt{13}}$

(3) $\frac{1}{\sqrt{13}}$

(4) $\frac{-5}{\sqrt{13}}$

12. If $\tan A + \tan B + \tan A \tan B = 1$, then $A + B =$

(1) 180° (2) 90°

(3) 45° (4) 360°

13. $\sqrt{\frac{1-\cos 40°}{1+\cos 40°}} =$

(1) tan 20° (2) cot 40°

(3) tan 10° (4) tan 40°

14. If $\tan A = \frac{1}{2}$ and $\tan B = \frac{2}{3}$ then $\tan(A - B)$ is

(1) –1 (2) 1

(3) $\frac{-1}{8}$ (4) $\frac{1}{8}$

SPACE FOR ROUGH WORK

15. The numerical value of $\sin 10° \sin 50° \sin 70°$ =

(1) $\frac{\sqrt{3}}{8}$ (2) $\frac{1}{8}$

(3) $\frac{3}{16}$ (4) $\frac{1}{16}$

16. $\frac{\sin 12° + \cos 12°}{\sin 12° - \cos 12°}$ =

(1) cot 33° (2) –tan 33°

(3) –tan 57° (4) tan 57°

17. The polar form of the complex number $\sqrt{3} - i$ is

(1) $2\left[\cos\frac{\pi}{6} + i\sin\frac{\pi}{6}\right]$ (2) $2\left[\cos\frac{\pi}{6} - i\sin\frac{\pi}{6}\right]$

(3) $2\left[\cos\frac{\pi}{3} + i\sin\frac{\pi}{3}\right]$ (4) $2\left[\cos\frac{\pi}{3} - i\sin\frac{\pi}{3}\right]$

18. The value of $\lim_{x\to\infty} x\left[\sqrt{x^2+1} - x\right]$ is

(1) 1 (2) 2

(3) $\frac{1}{2}$ (4) 0

19. The value of $\underset{x\to 3}{Lt} \frac{x\sqrt{x} - 3\sqrt{3}}{\sin(x-3)}$ is

(1) $\frac{3\sqrt{3}}{2}$ (2) $3\sqrt{3}$

(3) $\frac{2}{3\sqrt{3}}$ (4) $\frac{1}{3\sqrt{3}}$

SPACE FOR ROUGH WORK

20. The value of $\lim_{x \to 0} \frac{1-\sqrt{\cos x}}{x^2}$ is

(1) 1 (2) $\frac{1}{4}$

(3) 2 (4) $-\frac{1}{2}$

21. The equation of line passing through the point (1, –3) and having slope $\frac{1}{2}$ is

(1) $x - 2y - 7 = 0$ (2) $2x - y + 7 = 0$

(3) $x - 2y - 4 = 0$ (4) $x - y + 4 = 0$

22. The equation of line passing through the point (–2, 3) and parallel to the line $5x + 3y + 5 = 0$ is,

(1) $5x + 3y - 19 = 0$ (2) $5x + 3y + 1 = 0$

(3) $5x + 3y + 19 = 0$ (4) $3x - 5y + 1 = 0$

23. If $y = e^x \log x$ then $\frac{dy}{dx}$ is

(1) $e^x\left[\frac{1}{x} + \log x\right]$ (2) $e^x\left[\frac{1}{x} - \log x\right]$

(3) $e^x \cdot \frac{1}{x}$ (4) $e^x + \frac{1}{x}$

24. If $y = \log(\tan x + \sec x)$, then $\frac{dy}{dx}$ is,

(1) $-\sec x$

(2) $\sec x$

(3) $\frac{\sec x}{\tan x + \sec x}$

(4) $\log(\sec^2 x + \tan x \sec x)$

SPACE FOR ROUGH WORK

25. If $\frac{x^2}{2}+\frac{y^2}{2}=1$ then $\frac{dy}{dx}$ is

(1) $\frac{1+x}{y}$ (2) $\frac{x}{y}$

(3) $\frac{-x}{y}$ (4) $\frac{1-x}{y}$

26. If $x=\frac{1}{t}$; $y = 3t^3$ then $\frac{dy}{dx}$ is,

(1) $-6t^4$ (2) $-9t^4$

(3) -6 (4) -9

27. If $y = (\sin x)^{\log x}$ then $\frac{dy}{dx}$ is

(1) $(\sin x)^{\log x}\left[\log x \cos x + \frac{\log \sin x}{x}\right]$ (2) $(\sin x)^{\log x}\left[\frac{\log x}{\sin x} + \frac{\log \sin x}{x}\right]$

(3) $(\sin x)^{\log x}$ [$-\log x \cot x + \log \sin x$] (4) $(\sin x)^{\log x}\left[\log x \cot x + \frac{\log \sin x}{x}\right]$

28. If $y = e^{5x} + e^{-5x}$ then $\frac{d^2y}{dx^2}$ at $x = 0$ is,

(1) 25 (2) –25

(3) 50 (4) –50

29. The rate of change of volume of a sphere with respect to radius, when its radius 3 cm is

(1) 3π (2) 6π

(3) 18π (4) 36π

30. The equation of normal to the curve $y = x^2$ at (2, 2) is

(1) $x - 4y - 10 = 0$ (2) $x - 4y + 10 = 0$

(3) $x + 4y - 10 = 0$ (4) $x + 4y + 10 = 0$

SPACE FOR ROUGH WORK

31. The value of $\int e^{5\log x}\,dx$ is

(1) $5x^4 + C$ (2) $\frac{x^6}{6} + C$

(3) $6x^6 + C$ (4) $\frac{x^5}{5} + C$

32. The value of $\int \frac{\cos x - \sin x}{\cos x} dx$ is

(1) $x - \cos x + C$ (2) $x + \cos x + C$

(3) $x + \log \sec x + C$ (4) $x - \log \sec x + C$

33. The value of $\int (2 + \sin^3 x)\cos x\,dx$ is,

(1) $2\sin x + \frac{(\sin x)^4}{4} + C$ (2) $\frac{\sin^4 x}{4} + C$

(3) $2\cos x + \frac{(\cos x)^4}{4} + C$ (4) $\frac{\cos^4 x}{4} + C$

34. The value of $\int \frac{x+5}{x^2+10x-5} dx$ is,

(1) $\log (x^2 + 10x - 5)^2 + C$ (2) $\frac{1}{2} \log (x^2 + 10x - 5) + C$

(3) $\frac{1}{2} \log (x + 5) + C$ (4) $\log (x + 5)^2 + C$

35. The value of $\int 4x \log 5x\,dx$ is,

(1) $\frac{x^2 \log 5x}{2} - \frac{x^2}{4} + C$ (2) $\frac{x \log 5x}{5} + \frac{x^2}{2} + C$

(3) $5x \log 5x + 1 + C$ (4) $2x^2 \log 5x - x^2 + C$

SPACE FOR ROUGH WORK

36. $\int_0^{\pi/4} \frac{\sec^2 x}{1+\tan x}\,dx =$

(1) $-\log 2$ (2) $\log 2$

(3) $\log 3$ (4) $\log 4$

37. The volume of a solid generated by revolving the curve $y = \tan x$ about x-axis between the lines $x = 0$ and $x = \frac{\pi}{4}$ is,

(1) $\pi + \frac{\pi^2}{4}$ cu. units (2) $1 + \frac{\pi}{4}$ cu. units

(3) $1 - \frac{\pi}{4}$ cu. units (4) $\pi - \frac{\pi^2}{4}$ cu. units

38. Order and degree of differential equation $\frac{d^2y}{dx^2} = \sqrt{1 - \frac{dy}{dx}}$ are

(1) 2 and 2 respectively (2) 2 and 1 respectively

(3) 1 and 2 respectively (4) 1 and 1 respectively

39. The differential equation obtained by eliminating the arbitrary constants from the equation $y^2 = a \sin x + b \cos x$ is

(1) $2y\frac{d^2y}{dx^2} + 2\left(\frac{dy}{dx}\right)^2 - y^2 = 0$ (2) $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 + y^2 = 0$

(3) $2y\frac{d^2y}{dx^2} - 2\left(\frac{dy}{dx}\right)^2 + y^2 = 0$ (4) $2y\frac{d^2y}{dx^2} + 2\left(\frac{dy}{dx}\right)^2 + y^2 = 0$

40. The solution of differential equation $x\frac{dy}{dx} + y = x - 1$ is

(1) $xy = x - \frac{x^2}{2} + C$ (2) $xy = \frac{x^2}{2} - x + C$

(3) $xy + \frac{x^2}{2} + x = C$ (4) $xy - \frac{x^2}{2} - x = C$

SPACE FOR ROUGH WORK

PART – B

It consists of **41 – 80** questions.

41. The value of 20 peta Hertz is

(1) 20×10^9 Hz (2) 20×10^{12} Hz

(3) 20×10^{15} Hz (4) 20×10^{18} Hz

42. The total reading for Screw Gauge is found by

(1) TR = PSR + (HSR × LC) ± ZE

(2) TR = PSR + (HSR × LC) ± ZC

(3) TR = (PSR + HSR) × LC ± ZE

(4) TR = (PSR + HSR) × LC ± ZC

43. The least count of a slide calipers is 0.01 cm. In a setting the zero of the Vernier Scale lies between 3.2 cm and 3.3 cm and 5^{th} division of the Vernier co-incides with the main scale division. The total reading is

(1) 3.35 cm (2) 3.35 mm

(3) 3.25 cm (4) 3.25 mm

44. The rectangular component of a vector R are

(1) $R_X = R\cos\theta$, $R_Y = R\sin\theta$

(2) $R_X = R\sin\theta$, $R_Y = R\cos\theta$

(3) $R_X = \cos\theta$; $R_Y = \sin\theta$

(4) $R_X = -\cos\theta$; $R_Y = -\sin\theta$

45. A body of weight 5 kg is suspended by means of a light string. It is pulled horizontally until the string makes an angle of 30° with the vertical. Then the horizontal force applied is

(1) $\frac{1}{\sqrt{3}}$ kg wt (2) 5 kg wt

(3) $5\sqrt{3}$ kg wt (4) $\frac{5}{\sqrt{3}}$ kg wt

SPACE FOR ROUGH WORK

46. Among these which is the vector quantity ?

(1) Work (2) Energy

(3) Surface tension (4) Power

47. The resultant of two like parallel forces P and Q acting at a point is

(1) P + Q away from P

(2) P + Q away from Q

(3) P ~ Q in between P and Q

(4) P + Q in between P and Q

48. Shock absorbers in automobiles is an example for

(1) Tensile stress (2) Compressive stress

(3) Shear stress (4) Breaking stress

49. The elasticity of steel compared to rubber is

(1) More (2) Less

(3) Equal (4) Less than or equal

50. The stress-strain graph for an elastic body within elastic limit is

(1) Linear (2) Curved

(3) Parabola (4) Hyperbola

51. The maximum stress of steel wire is 500 N/mm^2, if the area of cross section of wire is 0.05 m^2 then the force is

(1) 25 N (2) 25 KN

(3) 25 MN (4) 250 N

52. In case of concave meniscus, the angle of contact is

(1) Acute (2) Right angle

(3) Linear (4) Obtuse

SPACE FOR ROUGH WORK

53. The surface tension of a liquid varies as
    (1) Directly with temperature, inversely with density
    (2) Directly with both temperature and density
    (3) Inversely with both temperature and density
    (4) Inversely with temperature and directly with density

54. The thrust on the bottom of a container having base area 0.5 m^2 filled with water to a height of 6 cm is
    (1) 147 N (2) 294 N
    (3) 147 dynes (4) 294 dynes

55. The fastest mode of transfer of heat is
    (1) Conduction (2) Convection
    (3) Radiation (4) Transmission

56. Pressure is directly proportional to absolute temperature at constant volume is a statement of
    (1) Charle's law (2) Boyle's law
    (3) Gay-Lussac's law (4) Boltzmann's law

57. Boyle's law is applicable for
    (1) Isothermal process (2) Isobaric process
    (3) Isochoric process (4) Isotonic process

58. At absolute zero temperature, the pressure and volume of a given mass of gas is
    (1) 1 (2) 273
    (3) −273 (4) 0

59. In cold countries, the windows are provided with double doors because
    (1) Air between two windows behaves as a perfect insulator
    (2) Air between two windows behaves as a perfect conductor
    (3) To strengthen the windows
    (4) Security purpose

SPACE FOR ROUGH WORK

60. The sound waves and light waves can be differentiated by

(1) Interference (2) Diffraction

(3) Reflection (4) Polarization

61. The velocity of sound in gas is independent of

(1) Temperature (2) Pressure

(3) Humidity (4) Density

62. The superposition of two waves of same frequency moving in opposite direction is

(1) Progressive wave (2) Transverse waves

(3) Sound wave (4) Stationary wave

63. For every degree raise of temperature, the velocity of sound waves in gas is increased by

(1) 6 m/s (2) 60 m/s

(3) 0.6 s/m (4) 0.6 m/s

64. The angle between the particle vibration and wave propagation in a transverse wave is

(1) 0° (2) 45°

(3) 90° (4) 180°

65. The original tension in the string if the frequency of a sonometer wire is doubled, when the tension is increased by 12 kg wt is

(1) 2 kg wt (2) 4 kg wt

(3) 8 kg wt (4) 12 kg wt

66. At resonance, the body vibrates with

(1) Small amplitude (2) Large amplitude

(3) Zero amplitude (4) Same amplitude

SPACE FOR ROUGH WORK

67. Beats occurs in mining due to the presence of
    (1) Ore
    (2) Water
    (3) Contaminated air
    (4) Fossils

68. The statement which is correct in these is
    (1) X-rays have longer wavelength than microwaves
    (2) Gamma rays have shorter wavelength than microwaves
    (3) UV-rays have shorter wavelength than violet rays
    (4) Red rays have longer wavelength than infrared rays

69. LASER is used in
    (1) LIDAR
    (2) RADAR
    (3) SONAR
    (4) GPS

70. Nano means
    (1) One hundredth of meter
    (2) One thousandth of meter
    (3) One millionth of meter
    (4) One billionth of meter

71. Microphone is a
    (1) Transducer
    (2) Receiver
    (3) Channel
    (4) Transmitter

72. The principle behind optical fibre is
    (1) Total internal refraction
    (2) Total internal reflection
    (3) Reflection
    (4) Refraction

73. Faraday's I law of electrolysis is represented mathematically as
    (1) $M = ZQ$
    (2) $Z = MQ$
    (3) $Q = MZ$
    (4) $M = \frac{Z}{Q}$

SPACE FOR ROUGH WORK

74. A galvanic cell setup between two dissimilar metals in contact is called
(1) Concentration cell
(2) Composition cell
(3) Stress cell
(4) Secondary cell

75. In which of these cells the reaction can be reversed ?
(1) Primary cell
(2) Secondary cell
(3) Solar cell
(4) Photo cell

76. The statement which is true for fuel cell is
(1) They make more pollution
(2) They produce noise
(3) They liberate more heat
(4) They are heavy in weight

77. Alloy of steel is a mixture of
(1) Chromium, iron and nickel
(2) Chromium, iron and zinc
(3) Chromium, iron and aluminium
(4) Chromium, iron and tin

78. The materials with weak intermolecular forces of attraction between polymer chains are
(1) Elastomers
(2) Fibres
(3) Thermoplastic
(4) Thermosetting polymers

79. The type of composite material to which reinforced concrete belongs is
(1) Laminate
(2) Particulate
(3) Short fibre
(4) Long fibre

80. pH value of a solution is given by
(1) $-\log_{10}[H^+]$
(2) $-\log_e[OH^-]$
(3) $-\log_e[H^+]$
(4) $\log_{10}[H^+]$

SPACE FOR ROUGH WORK

PART – C

It consists of **81 – 180** questions.

81. When three resistors of values 10 ohm, 20 ohm and 30 ohm are connected in parallel, their effective resistance is

(1) 5.46 ohm (2) 60 ohm

(3) 0.183 ohm (4) 6 ohm

82. In pure capacitor, the current leads the voltage by

(1) 90° (2) 180°

(3) 45° (4) 360°

83. For a sine wave alternating voltage is

(1) $E_{av} = 1.11\ E_m$ (2) $E_{av} = 0.707\ I_m$

(3) $E_{av} = 0.637\ E_m$ (4) $E_{av} = 1.11\ I_m$

84. _____ law of electromagnetic induction provides the relationship between change in magnetic flux and the EMF induced in a conductor placed in magnetic field.

(1) Coloumb's law (2) Faraday's law

(3) Lenz law (4) Kirchoff's law

85. Quality factor of a coil is

(1) $\frac{X_L}{L}$ (2) $\frac{X_L}{C}$ (3) $\frac{X_L}{R}$ (4) $\frac{R}{X_L}$

86. Relationship between number of turns, voltage and currents in primary and secondary windings of transformer is

(1) $\frac{N_1}{N_2} = \frac{V_1}{V_2} = \frac{I_1}{I_2}$ (2) $\frac{N_2}{N_1} = \frac{V_1}{V_2} = \frac{I_2}{I_1}$ (3) $\frac{N_1}{N_2} = \frac{V_1}{V_2} = \frac{I_2}{I_1}$ (4) $\frac{N_1}{N_2} = \frac{V_2}{V_1} = \frac{I_1}{I_2}$

SPACE FOR ROUGH WORK

87. Cells are connected in parallel when more _____ is required.

(1) Current (2) Voltage

(3) Resistance (4) Capacitance

88. Resistance R of a conductor material is

(1) $R = \rho \frac{a}{l}$ (2) $R = \rho \frac{l}{a}$

(3) $R = a \frac{l}{\rho}$ (4) $R = \frac{a}{\rho l}$

89. Semiconductors have _____ temperature coefficient of resistance.

(1) Positive (2) Negative

(3) Both (1) and (2) (4) None of the above

90. Zener diode is used as

(1) Amplifier (2) Oscillator

(3) Regulator (4) Filter

91. BJT is a _____ device.

(1) Current controlled (2) Voltage controlled

(3) Unipolar (4) None of the above

92. _____ is operated in negative resistance region as relaxation oscillator.

(1) FET (2) BJT

(3) UJT (4) Diode

93. In PIN diode, I stands for

(1) Insulator (2) Intrinsic

(3) Impedance (4) None of the above

SPACE FOR ROUGH WORK

94. The passive component that cannot be fabricated on an IC is

(1) Resistor (2) Capacitor

(3) Inductor (4) None of the above

95. The primary function of filter is to

(1) Minimize AC input voltage

(2) Suppress odd harmonics

(3) Stabilize DC level of the output voltage

(4) Remove ripples from rectified output

96. The type of power amplifier which exhibits cross over distortion in its output is

(1) Class A (2) Class B

(3) Class AB (4) Class C

97. The Barkhausen criteria for sustained oscillation is given by

(1) $A\beta \neq 1$ (2) $A\beta < 1$ (3) $A\beta = 180°$ (4) $A\beta \geq 1$

98. The primary function of clamper circuit is

(1) Introduce a DC level into an AC signal

(2) Suppress variation in signal voltage

(3) Raise positive half cycle of the signal

(4) Lower negative half cycle of the signal

99. An ideal op-amp has input impedance

(1) 1 MΩ (2) Infinity

(3) 1 kΩ (4) Zero

100. In positive feedback the amplifier gain

(1) Increases (2) Decreases

(3) Zero (4) None of the above

SPACE FOR ROUGH WORK

101. $V_O = \frac{1}{RC} \int V_{in}\, dt$ is an output voltage for

(1) Differentiator (2) Integrator

(3) Phase shift oscillator (4) Square wave generator

102. A filter which rejects frequencies within specified band and passes all other frequencies outside this band is known as

(1) Low pass filter (2) High pass filter

(3) Band stop filter (4) Band pass filter

103. The smallest change in the measuring variable to which an instrument will respond is called

(1) Precision (2) Accuracy

(3) Sensitivity (4) Selectivity

104. Probable error γ is equal to

(1) $\pm 67.45\ \sigma$ (2) $\pm 6.74\ \sigma$

(3) $\pm 674.5\ \sigma$ (4) $\pm 0.6745\ \sigma$

105. The meter which has a low resistance so that when connected in series with any circuit does not change the circuit current is

(1) Voltmeter (2) Wattmeter

(3) Watthourmeter (4) Ammeter

106. Wheatstone bridge is used for the measurement of unknown

(1) Resistance (2) Capacitance

(3) Inductance (4) Impedance

107. In FET input DC voltmeter lower millivolts measurements cannot be achieved as there exists _____ problem.

(1) CMMR (2) Drift (3) Overload (4) Slew rate

SPACE FOR ROUGH WORK

108. _____ is an example of digital transducer.

(1) Proximity sensor (2) Strain gauge

(3) Optical encoder (4) Thermo couple

109. Thermocouple works on the principle of _____ effect.

(1) Piezo electric (2) Magneto striction

(3) Hall (4) Seebeck

110. When the anode of SCR is made positive with respect to cathode a small leakage current flows through the device. The SCR is said to be in

(1) Reverse Blocking Mode

(2) Forward Blocking Mode

(3) Reverse Conduction Mode

(4) Forward Conduction Mode

111. Snubber circuit is a _____ circuit.

(1) Series RC (2) Parallel RC

(3) Series LC (4) Parallel LC

112. A dual converter can be used to control _____ of DC motor.

(1) Tripping (2) Regenerative braking

(3) Non-Regenerative braking (4) Re-Regenerative braking

113. Relay logic control is replaced by

(1) Programmable logic controller (2) Microcontroller

(3) Microprocessor (4) None of the above

114. In PLC, ladder logic is executed using the status of the

(1) Outputs (2) Normally closed contact

(3) Normally open contact (4) Inputs

SPACE FOR ROUGH WORK

115. Expansion of SCADA is

(1) Supervisory Control and Data Acquisition

(2) Sensitivity Control and Data Acquisition

(3) Supervisory Control and Digital Acquisition

(4) None of the above

116. Inverter is a circuit which converts DC power into AC power at the desired voltage and

(1) Current (2) Frequency

(3) Phase (4) None of the above

117. 9AFH is equivalent to

(1) 100110101111 (2) 100010101111

(3) 100110111111 (4) 100110101110

118. In general a logic gate whose all output entries are '0' except for one entry it is '1'

(1) NAND, OR (2) AND, NOR

(3) NAND, NOR (4) EX-OR, OR

119. Mark the incorrect Boolean Expression.

(1) $1 + A = 1$ (2) $A + A = A$

(3) $1 + A = A$ (4) $A + AB = A$

120. A full adder is made by use of two half adder and one

(1) AND Gate (2) NAND Gate

(3) NOR Gate (4) OR Gate

121. Race around condition does not exist in

(1) RS flip-flop (2) JK flip-flop

(3) JK master-slave flip-flop (4) RS clocked flip-flop

SPACE FOR ROUGH WORK

122. Minimum number of flip-flops needed to construct a BCD decade counter is

(1) 4 (2) 3

(3) 10 (4) None of the above

123. The basic element used to construct S-RAM is

(1) Capacitor (2) Flip-flop

(3) Capacitor and flip-flop (4) None of the above

124. Programmable Logic Devices (PLD) that have fixed AND gates and programmable OR gates is

(1) PAL (2) PLA

(3) PROM (4) None of the above

125. The system that prevents the driver and front seat passenger from crashing against the steering wheel and wind shield is

(1) Car Safety Belt System (2) Air Bag System

(3) Electronically Controlled Suspension (4) Car Navigation System

126. The Universal product code which is 2-dimensional used for scanning of trade items is known as

(1) QR code (2) Bar code

(3) Both (1) and (2) (4) None of the above

127. In a color TV receiver Y, I, Q refers to

(1) Luminance signal, Inphase color component, Quadrature phase color component

(2) Composite color signal, Inphase color component, Quadrature phase color component

(3) Composite video signal, Inphase video component, Quadrature video color component

(4) A method of demodulating stereo sound

SPACE FOR ROUGH WORK

128. Radial movement in and out to the manipulator arm of a Robot is provided by

(1) Elbow extension (2) Wrist blend

(3) Wrist swivel (4) Wrist yaw

129. The maximum power transferred to a load of 5 ohms for a Thevenins voltage of 10 volts is

(1) 80 watts (2) 0.2 watts

(3) 20 watts (4) 5 watts

130. Impedance is maximum at _____ resonance.

(1) Series (2) Parallel

(3) Series-parallel (4) None of the above

131. An ideal filter has a _____ loss in its pass band.

(1) Zero (2) Infinite

(3) Finite (4) None

132. The characteristic impedance of the transmission line is given by

(1) $Z_0 = \sqrt{\frac{R + j\omega C}{G + j\omega L}}$ (2) $Z_0 = \frac{R + j\omega L}{G + j\omega C}$

(3) $Z_0 = \sqrt{\frac{R + j\omega L}{G + j\omega C}}$ (4) $Z_0 = \frac{R + j\omega C}{G + j\omega L}$

133. Ionospheric propagation is also termed as

(1) Ground wave propagation

(2) Space wave propagation

(3) Surface wave propagation

(4) Sky wave propagation

SPACE FOR ROUGH WORK

134. The modulation index of Amplitude Modulation (AM) is given by

(1) $\frac{V_m}{V_c}$ (2) $\frac{V_{max} - V_{min}}{V_{max} + V_{min}}$

(3) Both (1) and (2) (4) None

135. _____ device converts sound waves into electrical signals.

(1) Microphone (2) Loud speaker

(3) Both (1) and (2) (4) None of the above

136. The condition for Nyquist rate is given by

(1) $fs \geq 2\ fm$ (2) $fs \leq 2\ fm$

(3) $fs > 2\ fm$ (4) $fs = 2\ fm$

137. If the probability $p(x_i) = \frac{1}{4}$ then what is the amount of information ?

(1) 2 bits (2) 3 bits

(3) 4 bits (4) 1 bit

138. In delta modulation if the step size is too large then it undergoes _____ distortion.

(1) Slope overload distortion (2) Granular noise

(3) Both (1) and (2) (4) None of the above

139. Alternate Mark Inversion (AMI) is also referred as

(1) Polar NRZ and RZ

(2) Unipolar NRZ and RZ

(3) Bipolar NRZ and RZ

(4) Split Phase Manchester

SPACE FOR ROUGH WORK

140. Envelope detector is used in _____ type of detection of BFSK signal.
(1) Coherent detection of BFSK (2) Non coherent detection of BFSK
(3) Both (1) and (2) (4) None of the above

141. Telephone Communication uses _____ type of multiple access method.
(1) FDMA (2) TDMA
(3) CDMA (4) None of the above

142. The principle used in the propagation of light within the optical fibre is
(1) Refraction (2) Total Internal Reflection
(3) Diffraction (4) None of the above

143. The cross field tubes in which electric field and magnetic fields are perpendicular to each other are known as
(1) Klystron (2) Reflex klystron
(3) Magnetron (4) Travelling wave tube

144. A scope display uses _____ modulation.
(1) Intensity (2) Deflection
(3) Current (4) Voltage

145. When the satellite rotates in the same direction as the rotation of the earth is termed as
(1) Posigrade (2) Retrograde
(3) Both (1) and (2) (4) None of the above

146. A typical uplink frequency for satellite communication is
(1) 5 GHz (2) 8 GHz
(3) 4 GHz (4) 6 GHz

147. The process of transferring a mobile station from one base station to another is
(1) MSC (2) Roamer
(3) Handoff (4) Forward control

SPACE FOR ROUGH WORK

148. In Mobile Assisted Handoff (MAHO) the handoff takes place when

(1) The power received by the mobile station from other base station is more than the serving base station

(2) The channel allocates is not available

(3) The mobile station has no signal

(4) All of the above

149. The basic unit of bluetooth system is

(1) Micronet (2) Mininet

(3) Piconet (4) Scatternet

150. In OSI Model, the network support layers are

(1) Physical, Datalink and Transport Layer

(2) Application, Presentation and Session Layer

(3) Physical, Datalink and Network Layer

(4) None of the above

151. Token Bus (IEEE 802.4) combines the features of

(1) Ethernet and data frame (2) Ethernet and token ring

(3) Token ring and subnet (4) None of the above

152. In _____ class of IP address, the first 8 bits identify the network and remaining 24 bits indicate the host within the network.

(1) A (2) B

(3) C (4) D

153. The E-mail protocols are

(1) TCP and IP (2) SMTP and TCP

(3) IP and POP (4) SMTP and POP

SPACE FOR ROUGH WORK

154. Information sent in both directions at the same time without interference

(1) Simplex (2) Half duplex

(3) Full duplex (4) None of the above

155. _____ holds different types of data under one capsule.

(1) Arrays (2) Functions

(3) String (4) Structures

156. The function which returns the length of string is

(1) Strcmp( ) (2) Strlen( )

(3) Strcat( ) (4) Strcpy( )

157. In C-programming, what type of bitwise operator is used in the statement X = Y > > 2 ?

(1) Left shift operator (2) Bitwise AND operator

(3) Bitwise OR operator (4) Right shift operator

158. What symbol precedes all comments in matlab ?

(1) $ (2) %

(3) // (4) <

159. The matlab command which clears all data and variables stored in memory

(1) CLC (2) Clear all

(3) Close all (4) None of the above

160. When used in the fprintf command the \n is used to

(1) add a space between any two characters

(2) place a number into the comment

(3) add a line space (enter key)

(4) clear the comment

SPACE FOR ROUGH WORK

161. In _____ type of architecture both data and code can be stored in single memory space.

(1) Von Neumann (2) Harvard

(3) Both (1) and (2) (4) None

162. 8051 Microcontroller has _____ bytes of ON chip ROM and _____ bytes of RAM respectively.

(1) 8K bytes and 256 bytes (2) 4K bytes and 128 bytes

(3) 4K bytes and 256 bytes (4) 8K bytes and 128 bytes

163. MOV A, @ R_0 is an example for _____ addressing mode in 8051 microcontroller.

(1) Register addressing mode

(2) Indexed addressing mode

(3) Register indirect addressing mode

(4) Direct addressing mode

164. Which instruction is used to perform NOT operation on the carry bit of 8051 microcontroller ?

(1) CPL C (2) CLR C

(3) CPL bit (4) None

165. Address of Interrupt Service Routine (ISR) for timer 0 in 8051 microcontroller is

(1) 0000h (2) 000Bh

(3) 001Bh (4) 0013h

166. In 8051 microcontroller _____ register is used to start/stop the timer/counter.

(1) TMOD (2) TCON

(3) Both (1) and (2) (4) None of the above

SPACE FOR ROUGH WORK

167. The range of values for 16 bit signal integer in embedded C of 8051 microcontroller is

(1) –128 to +127 (2) 0 to 65535

(3) 0 to 255 (4) –32768 to +32767

168. AMBA stands for

(1) Application Microcontroller Bus Architecture

(2) Advanced Microcontroller Bus Application

(3) Advanced Microcontroller Bus Architecture

(4) None of the above

169. _____ is used to preprocess one of the operand present in R_m register before entering into ALU in ARM controller.

(1) MAC (2) Barrel shifter

(3) Address register (4) Instruction decoder

170. All thumb instructions are _____ bit long.

(1) 8 (2) 32

(3) 64 (4) 16

171. _____ register is used to control the direction of each port pin in ARM controller.

(1) IOCLR (2) IOSET

(3) IOPIN (4) IODIR

172. The PLL multiplier and divider values are controlled by _____ register.

(1) PLLCON (2) PLLCFG

(3) Both (1) and (2) (4) None of the above

173. Types of quality attributes of embedded systems

(1) Operational (2) Non operational

(3) Both (1) and (2) (4) None of the above

SPACE FOR ROUGH WORK

174. Constant generator registers used in MSP 430

(1) R_3 and R_4 (2) R_2 and R_3

(3) R_2 and R_4 (4) None of the above

175. In the instruction MOV.B R_4, R_5 where R_4 = 1234 H and R_5 = 6558 H after execution, content of R_5 is

(1) 1234 H (2) 6558 H

(3) 6534 H (4) 1258 H

176. Which of the following is correct about Watch Dog Control Register (WDTCTL) ?

(1) It is a 16 bit register

(2) It is guided against accidental writes that requires a password

(3) A reset will occur if a value with an incorrect password is written to WDTCTL

(4) All of the above

177. Comparator A+ module in MSP430 is controlled with _____ peripheral register.

(1) CACTL1 (2) CACTL2

(3) CACTL1 and CACTL2 (4) None of the above

178. Verilog data types store the value

(1) I (2) Z

(3) X (4) All of the above

179. _____ operator in verilog has the highest priority.

(1) ( ) (2) [ ] (3) ! (4) = =

180. Which loop statement is not used in verilog ?

(1) for loop (2) while loop

(3) forever loop (4) foreach loop

SPACE FOR ROUGH WORK

SEAL

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