DIPLOMA - COMMON ENTRANCE TEST-2019

EC	COURSE	DAY : SUNDAY DATE : 21-07-2019
	ELECTRONICS AND COMMUNICATION	TIME : 10.00 a.m. to 1.00 p.m.

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
180	200 MINUTES	180 MINUTES

MENTION YOUR DIPLOMA CET NUMBER	QUESTION BOOKLET DETAILS	
	VERSION CODE	SERIAL NUMBER
	A	241673

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 am**.
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.

DONTs :

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 am, 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.

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 am**, 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
(A) ● (C) (D)	(A) (B) (C) (D) (A) (B) (C) ✓ (A) ● ● (D) (A) (B) (C) (D) (A) ◉ (C) (D)

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 pm**, 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 (KEA 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**.

EC-A

PART – A

APPLIED SCIENCE

1. One of the basic unit in SI is

   (A) Newton (B) Joule

   (C) Kilometer (D) Ampere

2. The pitch of screw is $\frac{1}{2}$ mm. The number of divisions on head scale of screw gauge is 50. The least count of screw gauge is

   (A) 0.1 mm (B) 0.5 mm

   (C) 0.01 mm (D) 0.05 mm

3. Which one of the following is a vector quantity ?

   (A) Speed (B) Density

   (C) Velocity (D) Mass

4. The magnitude of resultant of two forces $\vec{P}$ & $\vec{Q}$ acting perpendicular to each other is

   (A) $\sqrt{P^2 + Q^2}$ (B) $\sqrt{P^2 - Q^2}$

   (C) $P^2 - Q^2$ (D) $P^2 + Q^2$

5. A force of 50 N acts at a point making an angle of 30° with the horizontal. The vertical component is

   (A) 50 N (B) 25 N

   (C) 150 N (D) 1.6 N

Space For Rough Work

6. A couple produces

(A) pure linear motion (B) pure rotational motion

(C) both linear and rotational motion (D) neither linear nor rotational motion

7. The resultant of two like parallel forces acts in the direction of

(A) same as that of two forces (B) opposite to two forces

(C) perpendicular to two forces (D) direction cannot be specified

8. The reciprocal of bulk modulus of elasticity is called

(A) Compressibility (B) Rigidity

(C) Modulus of elasticity (D) Viscosity

9. A steel wire has a cross sectional area of 0.05 m^2. If the maximum stress of steel wire is 1000 N/m^2. The force is

(A) 20×10^3 N (B) 50 N

(C) 200 N (D) 20 N

10. The pressure at a point on surface of a liquid is

(A) minimum (B) maximum

(C) zero (D) infinity

11. The pressure exerted by sea water of density 1025 kg/m^3 on a fish at a depth of 10 m ($g = 10\ m/s^2$) is

(A) 1025 kPa (B) 10.25 kPa

(C) 1.025 kPa (D) 102.5 kPa

Space For Rough Work

12. A drop of rain assumes spherical shape due to

(A) Density (B) Viscosity

(C) Surface tension (D) Humidity

13. The phenomenon of rise or fall of liquid in a capillary tube is

(A) Viscosity (B) Capillarity

(C) Density (D) Elasticity

14. The S.I. unit of coefficient of viscosity is

(A) Ns/m^2 (B) Nm^2/s

(C) m^2s/N (D) Ns/m

15. The expression that represents Boyle's law is

(A) PV = constant (B) PT = constant

(C) VT = constant (D) PVT = constant

16. The volume of gas at 30 °C is 2 litres. To what temperature the gas must be heated for its volume to become 4 litres at constant pressure.

(A) 300 °C (B) 273 °C

(C) 333 °C (D) 606 °C

17. Working of pressure cooker is based on the principle of

(A) Boyle's law (B) Charle's law

(C) Laplace's law (D) Gay-Lussac's law

Space For Rough Work

18. Land and sea breeze is an example of

(A) Conduction (B) Convection

(C) Condensation (D) Radiation

19. The measure of average kinetic energy of all the particles in a gas is

(A) Heat (B) Mechanical energy

(C) Chemical energy (D) Temperature

20. When a wave travels through the medium, the particles of the medium are

(A) displaced in the direction of wave

(B) displaced opposite to the direction of wave

(C) mean position remains same

(D) starts rotating

21. Two waves with very little difference in their frequencies overlap on one another to produce

(A) Stationary waves (B) Progressive waves

(C) Beats (D) Transverse waves

22. The acceleration of the particle executing simple harmonic motion is directly proportional to its

(A) displacement from its mean position

(B) period of motion

(C) frequency of vibration

(D) amplitude of wave

Space For Rough Work

23. In the expression for velocity of sound in air, $V = \sqrt{\frac{\gamma P}{\rho}}$, notation γ is equal to

(A) $C_P + C_V$ (B) $C_P - C_V$

(C) $C_P \times C_V$ (D) $\frac{C_P}{C_V}$

24. Velocity of sound in outer space is

(A) 3×10^8 m/s (B) 330 m/s

(C) zero (D) 360 m/s

25. A string of length 1 m and mass 0.04 kilogram vibrates with fundamental frequency of 100 Hz then the tension in the string is

(A) 4000 N (B) 1600 N

(C) 400 N (D) 1000 N

26. Nodes and antinodes are characteristics of

(A) Stationary waves (B) Longitudinal waves

(C) Transverse waves (D) Beats

27. Natural frequency of a string does not vary with

(A) thickness (B) applied force

(C) tension (D) length

28. The electromagnetic radiation used in Forensic Department to study the finger print is

(A) Ultraviolet Ray (UV Ray) (B) Radio wave

(C) Micro wave (D) X-ray

Space For Rough Work

29. The type of light used to study Holography is

(A) Visible light (B) Laser light

(C) Sodium light (D) Mercury light

30. Which technology is used to develop Sun Screen lotion and cosmetics ?

(A) Geo-technology (B) Nano-technology

(C) Electro-technology (D) Micro-technology

31. The process of separating the information signal from the carrier wave at the receiver is known as

(A) Amplification (B) Modulation

(C) Attenuation (D) Demodulation

32. Optical fibre is used in

(A) Pressure sensors (B) Drilling

(C) Holography (D) Welding

33. The mass of copper deposited on the cathode of a copper voltmeter by a current of 2 amperes in 30 minutes is

(Given ece of copper (Z) = 0.0003 gm / coulomb)

(A) 3.2 gm (B) 4.3 gm

(C) 1.08 gm (D) 2.5 gm

34. The process of coating zinc over iron or steel is known as

(A) Galvanizing (B) Tinning

(C) Alloying (D) Non-Metallic coating

Space For Rough Work

35. SOFC is a type of

(A) Primary cell (B) Secondary cell

(C) Fuel cell (D) Solar cell

36. Magnalium is an alloy made by the combination of aluminium and

(A) Phosphorous (B) Zinc

(C) Tin (D) Magnesium

37. Zinc-carbon battery is an example for

(A) Secondary Battery (B) Fuel cell

(C) Primary Battery (D) Solar cell

38. Which of the following is not a polymer ?

(A) Teflon (B) Nylon

(C) Bakelite (D) Glass

39. Ceramic is which type of material ?

(A) Composite material (B) Alloy

(C) Polymer (D) Bio-material

40. The pH value of distilled water is

(A) 13 (B) 7

(C) 2 (D) 11

Space For Rough Work

PART – B

ENGINEERING MATHEMATICS

41. If $A = \begin{bmatrix} -3 & 4 \\ 2 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 2 \\ -2 & 1 \end{bmatrix}$, then $B^T \cdot A^T$ is

(A) $\begin{bmatrix} 3 & 8 \\ -4 & 0 \end{bmatrix}$

(B) $\begin{bmatrix} -5 & -2 \\ -2 & 4 \end{bmatrix}$

(C) $\begin{bmatrix} 5 & 2 \\ -2 & -4 \end{bmatrix}$

(D) $\begin{bmatrix} 5 & 2 \\ 2 & 4 \end{bmatrix}$

42. The value of the $\begin{vmatrix} \tan\theta & 0 & -1 \\ 1 & 0 & \tan\theta \\ 2 & -1 & 3 \end{vmatrix}$ is

(A) $-\sec^2\theta$

(B) $\operatorname{cosec}^2\theta$

(C) 1

(D) $\sec^2\theta$

43. The values of x and y in the simultaneous equations $2x - 3y = 13$ and $3x + 4y = -6$ are

(A) $x = -3, y = 2$

(B) $x = -2, y = -3$

(C) $x = 2, y = -3$

(D) $x = 2, y = 3$

44. If $\begin{vmatrix} 3 & -2 & 4 \\ 4 & 0 & x \\ 2 & -5 & 4 \end{vmatrix} = -4$, then the value of x is

(A) 4

(B) –4

(C) $\frac{44}{19}$

(D) $-\frac{44}{19}$

Space For Rough Work

45. The characteristics roots of the matrix $\begin{bmatrix} 2 & 0 \\ 0 & -3 \end{bmatrix}$ are

(A) $\lambda = 2$ and $\lambda = 3$ (B) $\lambda = -2$ and $\lambda = -3$

(C) $\lambda = 2$ and $\lambda = -3$ (D) $\lambda = -2$ and $\lambda = 3$

46. The adjoint of the matrix $\begin{bmatrix} 4 & 2 \\ -3 & 1 \end{bmatrix}$ is

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

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

47. If A = (1, 2, –3) and B = (2, 0, –1) then $\overrightarrow{AB}$ is

(A) $i - 2j + 2k$ (B) $-i + 2j - 2k$

(C) $3i + 2j - 4k$ (D) $i + 2j - 2k$

48. The work done by the force $\vec{F} = 2i + 6j - 8k$, whose displacement is $\vec{S} = -2i + 3j - k$ is

(A) 26 units (B) –22 units

(C) 22 units (D) 30 units

49. The vector product of $\vec{a} = 4i - j + k$ and $\vec{b} = 3i - 2k$ is

(A) $2i - 11j + 3k$ (B) $2i + 11j + 3k$

(C) $2i + 5j + 3k$ (D) $2i + 11j - 3k$

50. When a fair coin is tossed two times, the event A "getting exactly one tail" is given by

(A) {HT, TH} (B) {TT}

(C) {TH} (D) {TT, HT}

Space For Rough Work

51. If $\tan\theta = \frac{5}{12}$ and $\pi < \theta < \frac{3\pi}{2}$, then the value of $\sin\theta - \cos\theta$ is

(A) $\frac{17}{13}$ (B) $\frac{7}{13}$

(C) $-\frac{17}{13}$ (D) $-\frac{7}{13}$

52. The value of $\tan 225° \times \cot 405°$ is

(A) 1 (B) –1

(C) 2 (D) $\frac{1}{2}$

53. The value of $\sin 50° \cos 20° - \cos 50° \cdot \sin 20°$ is

(A) $\sin 70°$ (B) $\frac{\sqrt{3}}{2}$

(C) $\frac{1}{2}$ (D) $-\frac{1}{2}$

54. If $\cos A = \frac{15}{17}$ and $\sin B = \frac{3}{5}$, then the value of $\cos(A + B)$ is

(A) $\frac{84}{85}$ (B) $-\frac{36}{85}$

(C) $-\frac{84}{85}$ (D) $\frac{36}{85}$

55. The value of $\sqrt{\frac{1+\sin 2A}{1-\sin 2A}}$ is

(A) $\cot\left(\frac{\pi}{4}+A\right)$ (B) $\cot\left(\frac{\pi}{4}-A\right)$

(C) $\tan\left(\frac{\pi}{4}-A\right)$ (D) $\cot\left(\frac{\pi}{2}-A\right)$

Space For Rough Work

56. The value of $\cos 40° + \sin 10°$ is

(A) $\sin 20°$ (B) $-\cos 20°$

(C) $\cos 20°$ (D) $-\sin 20°$

57. The value of $i + i^2 + i^3 + i^4$ is

(A) i (B) –i

(C) 1 (D) 0

58. $\lim_{x \to 0} \frac{x}{\sqrt{1+x}-1}$ is equal to

(A) 0 (B) 1

(C) 2 (D) ∞

59. $\lim_{x \to \infty} \frac{3x^3 + 4x + 7}{(6 + x^2)(x - 1)} =$

(A) 3 (B) –3

(C) $\frac{1}{2}$ (D) $\frac{1}{6}$

60. $\lim_{x \to 0} \frac{3x + \sin 4x}{2 \sin 3x - 5x} =$

(A) $\frac{4}{3}$ (B) 7

(C) $\frac{3}{5}$ (D) $\frac{7}{11}$

Space For Rough Work

61. The slope and y-intercept of the line $6x - 4y + 3 = 0$ are respectively

(A) $\frac{3}{2}$ and $\frac{3}{4}$ (B) $\frac{2}{3}$ and $\frac{4}{3}$

(C) $\frac{-3}{2}$ and $\frac{4}{3}$ (D) $\frac{3}{2}$ and $\frac{2}{3}$

62. The equation of the line joining the points (1, 3) and (2, –4) is

(A) $7x - y - 10 = 0$ (B) $7x + y - 10 = 0$

(C) $x + 7y + 10 = 0$ (D) $x - 7y - 10 = 0$

63. If $y = e^{-2x} + 4a^x$, then $\frac{dy}{dx} =$

(A) $\frac{e^{-2x}}{2} + \frac{4a^x}{\log a}$ (B) $e^{-2x} + 4x\, a^{x-1}$

(C) $-2e^{-2x} + 4a^x \log a$ (D) $2e^{-2x} - 4a^x \log a$

64. If $y = \log(\log 3x)$ then $\frac{dy}{dx} =$

(A) $\frac{1}{x \log 3x}$ (B) $\frac{3}{x \log 3x}$

(C) $2 \log 3x$ (D) $\frac{1}{\log x}$

65. If $xy = x + y^2$, then $\frac{dy}{dx} =$

(A) $\frac{x - 2y}{1 - y}$ (B) $\frac{1 - y}{x - 2y}$

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

Space For Rough Work

66. If $x = \tan^{-1} t$ and $y = 3t + t^3$ then $\frac{dy}{dx} =$

(A) 3

(B) $3(1 + t^2)^2$

(C) $\frac{3}{(1 + t^2)^2}$

(D) $\frac{1}{3(1 + t^2)^2}$

67. If $y = (x)^{\frac{1}{x}}$, then $\frac{dy}{dx} =$

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

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

(C) $\frac{1 - \log x}{x^2 y}$

(D) $\frac{y[1 - \log x]}{x^2}$

68. Which of the following equations satisfy for the function $y = e^{\tan^{-1} x}$ with usual notations ?

(A) $(1 + x^2)y_2 + (2x - 1)y_1 = 0$

(B) $(1 + x^2)y_2 + 2xy_1 = 0$

(C) $(1 - x^2)y_2 - xy_1 - y = 0$

(D) $xy_2 - 2y_1 - xy = 0$

69. The equation of a normal to the curve $y = 4x^3 + 3x^2 + 4$ at the point $(-1, 3)$ is

(A) $6x + y - 19 = 0$

(B) $x + 6y - 17 = 0$

(C) $x - 6y + 17 = 0$

(D) $6x - y + 19 = 0$

70. The rate of change of surface area of a sphere is 12 cm^2/s. The rate at which the radius is changing when the radius of the sphere is 2 cm is equal to

(A) $\frac{\pi}{4}$ cm/s

(B) $\frac{3\pi}{4}$ cm/s

(C) 3π cm/s

(D) $\frac{3}{4\pi}$ cm/s

Space For Rough Work

71. $\int \left(1 + x - \frac{1}{x} + e^x\right) dx$

(A) $1 - \frac{1}{x^2} + e^x + c$

(B) $1 + \frac{x^2}{2} - \frac{1}{x^2} + e^x + c$

(C) $x + \frac{x^2}{2} - \log x + e^x + c$

(D) $x + 1 - \frac{1}{x^3} - e^x + c$

72. $\int e^{\tan x} \cdot \sec^2 x \, dx =$

(A) $e^{\tan x} + c$

(B) $e^{\sec^2 x} + c$

(C) $e^{\tan^2 x} + c$

(D) $e^{\sec x} + c$

73. $\int \cot^2 x \, dx =$

(A) $-\text{cosec}\, x + c$

(B) $-\cot x - x + c$

(C) $-\cot x + x + c$

(D) $\cot x + x + c$

74. $\int x \sin x \, dx =$

(A) $x \sin x - \cos x + c$

(B) $x \cos x - \sin x + c$

(C) $x \sin x + \cos x + c$

(D) $-x \cos x + \sin x + c$

75. $\int \sqrt[3]{x^2} \, dx =$

(A) $\frac{5}{2} x^{\frac{5}{2}} + c$

(B) $\frac{3}{5} x^{\frac{5}{3}} + c$

(C) $\frac{5x^{\frac{2}{5}}}{2} + c$

(D) $\frac{x^2}{2} + c$

Space For Rough Work

76. $\int_0^{\pi/2} \cos^2 x \, dx =$

(A) $\frac{\pi}{2}$ (B) $\frac{\pi}{6}$

(C) $\frac{\pi}{3}$ (D) $\frac{\pi}{4}$

77. The volume of a solid generated when the curve $y = \sqrt{x^2 + 4}$ is rotated about x-axis between the ordinates $x = -1$ and $x = 1$ is

(A) $\frac{23\pi}{3}$ cubic units (B) $\frac{26\pi}{3}$ cubic units

(C) $\frac{16\pi}{3}$ cubic units (D) 0

78. The order and degree of the differential equation $\frac{dy}{dx} = \sqrt{1 + \frac{d^2y}{dx^2}}$ respectively are

(A) 1 and 1 (B) 1 and 2

(C) 2 and 1 (D) 2 and 2

79. The differential equation formed from the equation $y = ae^x + be^{-x}$ by eliminating arbitrary constants is

(A) $\frac{d^2y}{dx^2} - y = 0$ (B) $\frac{d^2y}{dx^2} + y = 0$

(C) $\frac{dy}{dx} + y = 0$ (D) $\frac{dy}{dx} - y = 0$

80. Solution of the differential equation $\frac{dy}{dx} = \frac{1 + y^2}{1 + x^2}$ is

(A) $\tan^{-1} y + \tan^{-1} x = k$ (B) $\tan^{-1} y - \tan^{-1} x = k$

(C) $\sin^{-1} y + \sin^{-1} x = k$ (D) $\sin^{-1} y - \sin^{-1} x = k$

Space For Rough Work

PART – C

ELECTRONICS AND COMMUNICATION

81. According to Ohm's law, current flowing through a conductor is directly proportional to applied voltage only at

(A) Constant pressure (B) Constant temperature

(C) Unilateral circuit (D) Constant humidity

82. Two resistors of values 1 kΩ and 2 kΩ are connected in series. 5V dc supply is connected across this network. Find the voltage across 1 kΩ resistor.

(A) 1.6 V (B) 2 V

(C) 2.5 V (D) 0.6 V

83. Equivalent capacitance 'C' of three capacitors C_1, C_2 & C_3 connected in series is given by

(A) $C = C_1 + C_2 + C_3$ (B) $\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}$

(C) $C = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}$ (D) $C = \frac{1}{C_1 + C_2 + C_3}$

84. 5 mH inductor is connected in series with 5 V dc supply, then the inductive reactance is

(A) 5 Ω (B) 1 Ω

(C) Zero (D) Infinity (∞)

85. The concept of one coil inducing a voltage into another coil is

(A) Electrical isolation (B) Self inductance

(C) Mutual inductance (D) Coefficient of coupling

86. In a pure lossless inductor connected across AC circuit,

(A) Voltage leads current by 60° (B) Voltage lags current by 60°

(C) Voltage leads current by 90° (D) Voltage lags current by 90°

Space For Rough Work

87. The colour code combination for the 220 Ω carbon resistor is

(A) Red-Red-Black (B) Red-Red-Brown

(C) Orange-Orange-Black (D) Orange-Orange-Brown

88. A step-up transformer will

(A) Increase the current in secondary

(B) Increase the voltage in secondary

(C) Decrease the power in secondary

(D) Decrease the voltage in secondary

89. Resistance of a semiconductor exhibits

(A) Positive temperature coefficient (B) Negative temperature coefficient

(C) Constant temperature coefficient (D) Will not depend on temperature

90. Knee voltage for Ge-Type PN junction diode is

(A) 0.1 V (B) 0.7 V

(C) 0.3 V (D) 0.5 V

91. Find the value of β if $\alpha = 0.85$.

(A) 4.66 (B) 5.67

(C) 6.67 (D) 10.67

92. The current amplification factor in a transistor with common base configuration is denoted by

(A) β (B) γ

(C) α (D) δ

93. Number of PN junction in GUNN diode :

(A) zero (B) 1

(C) 2 (D) 3

Space For Rough Work

94. Which of the following component cannot be fabricated on IC ?
(A) Resistor (B) Capacitor
(C) Inductor (D) Diode

95. Ripple factor in ideal half wave rectifier is
(A) 0.86 (B) 1.21
(C) 0.48 (D) 0.5

96. LM 317 IC has a voltage output of _____ type.
(A) variable (B) fixed
(C) zero (D) negative

97. The phase difference between the output and input voltage of a CE amplifier is
(A) 180° (B) 0° (zero degree)
(C) 90° (D) 270°

98. When negative voltage feedback is applied to an amplifier, its voltage gain is
(A) Increased (B) Decreased
(C) Remains the same (D) None of these

99. Which of the following is not an ideal characteristic of an Op-Amp ?
(A) Infinite open loop gain (B) Infinite bandwidth
(C) Zero input resistance (D) Infinite CMRR

100. When square wave I/P is applied to the integrator circuit the O/P waveform is
(A) Sine wave (B) Square wave
(C) Sawtooth wave (D) Pulses

101. Circuits which converts irregularly shaped waveform to regular shaped waveform
(A) Schmitt trigger (B) Voltage limiter
(C) Comparator (D) Integrator

Space For Rough Work

102. Oscillator must employ

(A) Positive feedback

(B) Negative feedback

(C) Neither positive nor negative feedback

(D) Both positive feedback and negative feedback

103. An SCR has _____ PN junctions.

(A) two (B) three

(C) four (D) None

104. A freewheeling diode is used in a controlled rectifier circuits in case of

(A) Resistive loads. (B) Capacitive loads.

(C) Inductive loads. (D) All types of loads.

105. The duty cycle of a chopper is given by

(A) $\frac{T_{on}}{T_{off}}$ (B) $\frac{T_{on}}{T}$

(C) $\frac{T}{T_{on}}$ (D) $T_{off} \times T_{on}$

106. The dc supply of voltage source inverter has _____ at all the frequencies.

(A) High impedance (B) Low impedance

(C) Variable (D) None of these

107. A Cycloconverter is

(A) Single phase type

(B) Three phase type

(C) Either of the single phase type or three phase type

(D) None of these

Space For Rough Work

108. Ladder Logic Programming consists primarily of

(A) Virtual relay contracts and coils

(B) Logic gate symbols with connecting lines

(C) Functions blocks with connecting lines

(D) Text-based code

109. In a PLC, the scan time refers to the amount of time in which

(A) the technician enters the program

(B) timers and counters are indexed by

(C) one "rung" of ladder logic takes to complete

(D) the entire program takes to execute

110. 8051 microcontroller has _____ byte ROM on chip.

(A) zero K (B) 2 K

(C) 4 K (D) 8 K

111. To access Internal ROM in 8051 PIN 31 is to be

(A) connected to +5V (B) connected to ground

(C) left open (D) connected to 24 V

112. When 8051 microprocessor is reset, the content of S.P. is

(A) 00H (B) FFH

(C) 0FH (D) 07H

113. PUSH and POP instruction uses only

(A) Register addressing mode (B) Direct addressing mode

(C) Immediate addressing mode (D) Register indirect addressing mode

114. Memory type used to access bit addressable internal data memory in 8051 C is

(A) Code (B) Data

(C) b data (D) X data

Space For Rough Work

115. Interrupt vector location of external hardware interrupt is

(A) 0000H (B) 0003H

(C) 0013H (D) 001BH

116. In 8051 for serial data transfer, timer mode used is _____.

(A) Timer 0 in Mode 1 (B) Timer 1 in Mode 1

(C) Timer 0 in Mode 2 (D) Timer 1 in Mode 2

117. Super position theorem can be applied to a linear bilateral network having

(A) only one source (B) more than one source

(C) no voltage source (D) no current source

118. When the load resistance is equal to the Thevenin resistance of a network, then _____ is transferred to the load from source.

(A) Maximum power (B) Maximum resistance

(C) Minimum power (D) Maximum inductance

119. Series Resonance has the following condition :

(A) $X_L = X_C$ (B) $R_L = R_O$

(C) $Z_1 = R_2$ (D) $X_L > X_C$

120. Bandwidth end points on a series resonance curve are called

(A) Half frequency points (B) Half power points

(C) Full frequency points (D) Full power points

121. Design equation for series element of a constant-K low pass filter is

(A) $\frac{\pi f_c}{R_o}$ (B) $\frac{R_o}{\pi f_c}$

(C) $\frac{\pi}{f_c R_o}$ (D) $\frac{f_c}{\pi R_o}$

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122. Equation for characteristic impedance of a transmission line is

(A) $Z_0 = \sqrt{\frac{Y}{Z}}$ (B) $Z_0 = \sqrt{ZY}$

(C) $Z_0 = \sqrt{\frac{Z}{Y}}$ (D) $Z_0 = \sqrt{Z^2Y}$

123. In Amplitude Modulation amplitude of the carrier signal is varied in accordance with the amplitude of the _____ signal.

(A) Carrier (B) Information

(C) Signal Higher than Carrier (D) None of these

124. Base 16 refers to which number system ?

(A) BCD (B) Hexadecimal

(C) Octal (D) Decimal

125. Which of the examples below expresses the commutative law of multiplication ?

(A) $C + D = D + C$ (B) $C * D = D + C$

(C) $C * (D * E) = (C * D) * E$ (D) $C * D = D * C$

126. Applying DeMorgan's theorem to the expression $(\overline{x + y} + \overline{z})$ we get

(A) $(x + y)\, z$ (B) $(\overline{x} + \overline{y})\, z$

(C) $(x + y)\, \overline{z}$ (D) $(\overline{x} + \overline{y})\, \overline{z}$

127. The 1's complement of $101010_{(2)}$ is

(A) $010110_{(2)}$ (B) $010101_{(2)}$

(C) $110111_{(2)}$ (D) $101011_{(2)}$

Space For Rough Work

128. A single bit full adder adds

(A) two 2 bit binary numbers

(B) two 4 bit binary numbers

(C) two single bits and one carry bit

(D) two 2 bit numbers and one carry bit

129. The edge triggered flip-flops respond to inputs present at

(A) transition of the clock pulse. (B) when clock is high.

(C) when clock is low. (D) when clock signal is not given.

130. Find the resolution of a 4 bit DAC system if the full scale output voltage is 15 V.

(A) 2 V (B) 1 V

(C) 4 V (D) 15 V

131. Which of the following memory is volatile ?

(A) ROM (B) EEPROM

(C) RAM (D) Flash

132. Aliasing effect occurs if _____, where fs is sampling rate and f_x is highest frequency component.

(A) $fs < 2f_x$ (B) $fs > 2f_x$

(C) $f_x < 2fs$ (D) $f_x > 2fs$

133. Sequence to generate PCM signal is

(A) Analog signal → Quantizer → Sampler → Encoder

(B) Digital signal → Sampler → Quantizer → Encoder

(C) Sampler → Quantizer → Encoder → Analog signal

(D) Analog signal → Sampler → Quantizer → Encoder

Space For Rough Work

134. Slope overload and Granular noise type of distortions are found in

(A) Adaptive delta modulation (B) Pulse code modulation

(C) Delta modulation (D) Differential pulse code modulation

135. In _____ format the transmitted pulse waveform occupies full duration of a symbol.

(A) Bipolar RZ (B) NRZ

(C) Unipolar RZ (D) Polar RZ

136. _____ involves switching the frequency of a sinusoidal carrier between 2 frequencies in accordance with the incoming binary data while keeping the amplitude and phase constant.

(A) BFSK (B) BPSK

(C) BASK (D) DPSK

137. In _____, multiple signals share the common bandwidth of a single communication channel each occupying a separate position of the bandwidth.

(A) TDM (B) TDMA

(C) CDMA (D) FDM

138. Unguided media use _____ as the transmission medium.

(A) twisted pair cable (B) coaxial cable

(C) air (D) fibre-optic cable

139. _____ are used when spanning distance is less than 2 or 3 kms, in connection with computer networks.

(A) LANs (B) MANs

(C) WANs (D) PANs

140. _____ layer in the OSI model is responsible for assigning a globally unique address to every device.

(A) Datalink layer (B) Network layer

(C) Transport layer (D) Session layer

Space For Rough Work

141. Ethernet is a _____ network.

(A) Unicast (B) Multicast

(C) Bicast (D) Broadcast

142. 115.168.212.192 is an example of _____ IP address.

(A) class B (B) class C

(C) class D (D) class A

143. The term socket is defined as

(A) IP address + Modem number (B) Physical address + Port number

(C) IP address + Port number (D) E-mail address + Port number

144. In 'C' which character is used to terminate the instruction ?

(A) . (B) ;

(C) : (D) ,

145. The output of the program given below is

```
main( )
{
    int a = 200, b, c;
    if (a > = 400)
    b = 300;
    c = 200;
    print f("%d%d\n", b, c);
}
```

(A) 300 200 (B) 200 300

(C) Garbage 200 (D) Prints nothing.

146. An array element is accessed using

(A) a FIFO approach (B) an index number

(C) the operator (D) a member name

Space For Rough Work

147. MAT LAB stands for

(A) Mathematical lab

(B) Matrix lab

(C) Modulation lab

(D) Mathematical analysis and tools lab

148. The precedence order in which arithmetic operations are evaluated in MAT lab

(A) *, ∧, ( ), +

(B) ( ), ∧, *, +

(C) +, *, ( ), ∧

(D) ( ), +, ∧, *

149. Which of the following is used to check if two elements are equal in MAT LAB ?

(A) ! =

(B) = =

(C) is equal

(D) =

150. Register bit size in ARM controller in LPC 2148 is

(A) 8-bit

(B) 16-bit

(C) 32-bit

(D) 64-bit

151. Instruction which moves data from GPR register to CPSR :

(A) MSR

(B) MRS

(C) MOV

(D) MVN

152. All the thumb instruction are _____ in length.

(A) 8-bit

(B) 16-bit

(C) 32-bit

(D) 64-bit

153. The LPC 2148 has _____ byte of flash memory.

(A) 128 K

(B) 256 K

(C) 512 K

(D) 1024 K

Space For Rough Work

154. Function of pin connect block

(A) to select the function of pin which have more than one function

(B) to select the direction of data flow

(C) to reserve some pins

(D) to mask some pins

155. Watch dog timer is timing circuit

(A) that prevents the processor from unexpected hault when the supply voltage falls below the specified voltage.

(B) that resets the system processor when the program execution hangs up.

(C) it resets when high voltage occurs.

(D) it resets when processor temperature raises.

156. MSP 430 is _____ RISC processor.

(A) 8-bit (B) 16-bit

(C) 32-bit (D) 64-bit

157. MSP 430 has _____ byte RAM.

(A) 64 (B) 128

(C) 256 (D) 512

158. Which one of the following instruction is an example for indexed addressing mode ?

(A) MOV R10, R11 (B) MOV 2(R5), 6(R6)

(C) MOV @ R10, R1 (D) MOV # 1600 H, R6

159. In MSP 430, _____ register is used to enable or disable pull up/pull down resistor.

(A) PXDIR (B) PXIN

(C) PXREN (D) PXSEL

Space For Rough Work

160. Which of the following is not a data type in Verilog ?

(A) Wire (B) Reg

(C) Integer (D) Float

161. Symbol 'X' represents _____ in Verilog.

(A) Logic zero (B) False definition

(C) Unknown logic value (D) True condition

162. The construct that is executed only once in the simulation is called _____ construct.

(A) Always (B) Behavioural

(C) Initial (D) Conditional

163. The dominant mode of waveguide depends on

(A) The power level of the signal (B) The point of the power injection

(C) The shape of the waveguide (D) None of these

164. The velocity of propagation in a waveguide is

(A) more than in free space (B) less than in free space

(C) equal to free space velocity (D) None of these

165. The radar range is given by the equation

(A) $r = \frac{2C}{\Delta t}$ (B) $r = \frac{C(\Delta t)}{2}$

(C) $r = \frac{2(\Delta t)}{C}$ (D) $r = \frac{2}{C(\Delta t)}$

166. The satellite orbit is said to be _____ if the direction of the satellite's revolution is the same as that of earth's rotation.

(A) Retrograde (B) Descending node

(C) Ascending node (D) Posigrade

Space For Rough Work

167. GPS satellites circle the earth _____ a day.

(A) one time (B) two times

(C) three times (D) four times

168. _____ provides authentication and verify user's identity.

(A) ILR (B) EIR

(C) AUC (D) IWF

169. The mobile station (MS) moves from one cell to another but strays within the control of the same base station controller (BSC), then Handoff performed is

(A) Intra-cell handoff

(B) Inter-cell, Intra BSC handoff

(C) Inter-BSC, Intra MSC handoff

(D) Inter MSC handoff

170. Microwave oven makes use of the following principle for heating the food :

(A) Electric heating (B) Magnetic heating

(C) Dielectric heating (D) Direct heating

171. QR-code stands for

(A) Quality Record Code (B) Quick Response Code

(C) Coulomb Recorder (D) Quiescent Recorder

172. Carbon microphone is a type of

(A) Velocity microphone (B) Pressure microphone

(C) Temperature microphone (D) Humidity microphone

173. The _____ uses mirrors to reflect the light in an image.

(A) LCD projector (B) LED projector

(C) DLP projector (D) OHP projector

Space For Rough Work

174. The closeness with which an instrument reading approaches the true value of the variable is called

(A) Error (B) Sensitivity

(C) Accuracy (D) Expected value

175. A Wheatstone bridge is used for measurement of

(A) Resistance (B) Inductance

(C) Capacitance (D) Frequency

176. A transducer that requires an auxiliary energy source for energy conversion are called

(A) Active transducer (B) Both Active and Passive transducer

(C) Passive transducer (D) None of these

177. Transducer used for determining the type of (P or N) semiconductor is

(A) Capacitive type (B) Resistance type

(C) Hall effect type (D) Piezo-electric type

178. PMMC meter operates on the basic principle of

(A) Alternator (B) AC meter

(C) DC meter (D) 3-phase motor

179. A DC ammeter is constructed using

(A) A PMMC meter and a shunt resistance

(B) Two parallel resistances

(C) A PMMC meter and a series resistance

(D) Two series resistances

180. Time base generator in a CRO is used to generate _____ type of voltage.

(A) Sine wave (B) Triangular wave

(C) Square wave (D) Sawtooth wave

Space For Rough Work

Space For Rough Work