DIPLOMA - COMMON ENTRANCE TEST-2016

EC	COURSE	DAY : SUNDAY
	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
	D - 1	123136

DOs :

1. Check whether the Diploma CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. This Question Booklet is issued to you by the invigilator after the **2nd Bell i.e., after 09.50 a.m.**
3. The Serial Number of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
4. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
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 paper seal / polythene bag 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 a.m.,** remove the paper seal / polythene bag 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 BALL POINT PEN against the question number on the OMR answer sheet.**

Correct Method of shading the circle on the OMR answer sheet is as shown below :

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 (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**.

PART – A

APPLIED SCIENCE

1. The resultant intensity of interference of two monochromatic waves having same amplitude and constant phase difference equal to ϕ is

(A) $2a\cos\left(\frac{\phi}{2}\right)$ (B) $4a^2\cos^2\left(\frac{\phi}{2}\right)$

(C) $4a^2\cos\left(\frac{\phi}{2}\right)$ (D) $4a\cos^2\left(\frac{\phi}{2}\right)$

2. For two objects to be just resolved, the principle maximum should be on

(A) first maximum (B) second maximum

(C) first minimum (D) second minimum

3. Resolving power of microscope is given by

(A) $\frac{\lambda}{2n\sin\theta}$ (B) $\frac{n}{2\lambda\sin\theta}$

(C) $\frac{2\lambda\sin\theta}{n}$ (D) $\frac{2n\sin\theta}{\lambda}$

4. In case of acids, the concentration of H^+ ions is

(A) more than 10^{-7} g ions/litre.

(B) less than 10^{-7} g ions/litre.

(C) equal to 10^{-7} g ions/litre.

(D) between 10^{-7} g ions/litre and 10^{-14} g ions/litre.

5. Corrosion of metal can be prevented by keeping it in

(A) acidic medium (B) basic medium

(C) neutral medium (D) moisture

Space For Rough Work

6. An example of basic S.I. unit is

(A) Newton (B) Joule

(C) Ampere (D) Watt

7. The prefix used for 10^{+2} is

(A) hecta (B) centi

(C) pico (D) peta

8. An example of dimensionless physical quantity is

(A) surface tension (B) strain

(C) impulse (D) period

9. The velocity of a freely falling body gradually _____ as it falls.

(A) decreases (B) increases

(C) remains same (D) increases and then decreases

10. A main scale is divided into half mm and having a vernier containing 20 divisions has a least count of _____ cm.

(A) 2.5×10^{-2} (B) 0.5×10^{-2}

(C) 0.025×10^{-2} (D) 0.25×10^{-2}

11. For a particular mass of the moving body, its friction is minimum when it is

(A) sliding (B) static

(C) rolling (D) dragged

Space For Rough Work

12. All equations of motion hold good under the condition of

(A) constant velocity (B) constant acceleration

(C) variable velocity (D) variable acceleration

13. A force of 1.5×10^{-2} N acts for 3 seconds on a body of mass 0.05 kg moving with velocity 4 m/s. The final velocity of the body is

(A) 4.9 m/s (B) 18 m/s

(C) 9 m/s (D) 7.5 m/s

14. To check the equilibrium of five coplanar concurrent forces, we use law of

(A) Parallelogram of forces (B) Triangle of forces

(C) Lami's theorem (D) Polygon of forces

15. The S.I. unit of momentum is

(A) kg m (B) $kg\ m^{-1}s^{-1}$

(C) $kg\ m\ s^{-2}$ (D) $kg\ m\ s^{-1}$

16. When three forces acting at a point are in equilibrium, the angle opposite to biggest force is always _____ angle.

(A) biggest (B) smallest

(C) equal to other (D) obtuse

17. Towing of a boat by two forces is an illustration of

(A) Law of parallelogram of forces. (B) Lami's theorem.

(C) Law of triangle of forces. (D) Law of polygon of forces.

Space For Rough Work

18. Two forces 3N and 5N acts on a body simultaneously making an angle 60° between them. The resultant force on the body is

(A) 8 N (B) 4 N

(C) 7 N (D) 49 N

19. Dimensional formula for stress is

(A) $[LM^{-1}T^{-2}]$ (B) $[L^{-1}MT^{-2}]$

(C) $[L^{-1}M^{-1}T]$ (D) $[L^{2}M^{-1}T^{-2}]$

20. The pull in the bicycle chain is an example of

(A) tensile stress (B) volume stress

(C) shear stress (D) shear strain

21. Viscosity of water at 20 °C in centipoise is

(A) 1.792 (B) 0.650

(C) 1.005 (D) 0.470

22. Dimensional formula of surface tension is

(A) $[LMT^{-2}]$ (B) $[L^{2}MT^{-2}]$

(C) $[LM^{-1}T^{-2}]$ (D) $[L^{0}MT^{-2}]$

23. A steel needle can be floated on the surface of water because of the

(A) density of steel is greater than water

(B) density of steel is less than water

(C) surface tension

(D) viscosity

Space For Rough Work

24. Thrust on the bottom of the container having a base area of 10 m^2 filled with water to a height of 6 m is

(A) 60×10^2 N (B) 58.8×10^4 N

(C) 60.8 N (D) 600 N

25. Keeping the temperature constant, if the pressure of the gas is doubled its volume

(A) remains constant (B) doubles

(C) reduces to one fourth (D) reduces to half

26. Heat transfer in the absence of the medium is

(A) conduction (B) convection

(C) radiation (D) absorption

27. Zero of absolute scale of temperature is at

(A) 0 °C (B) 100 °C

(C) 273 °C (D) – 273 °C

28. Ripples on water surface is an example of

(A) electromagnetic waves (B) transverse waves

(C) waves travelling in space (D) longitudinal waves

29. The time interval between two consecutive waxing and waning of sound waves is

(A) beat period (B) wave period

(C) beat frequency (D) wave frequency

Space For Rough Work

30. S.I. unit of intensity of sound is

(A) watt per square meter (B) watt per meter

(C) watt square meter (D) watt meter

31. The study of characteristics of buildings with reference to sound is

(A) resonance (B) interference

(C) echo (D) acoustics

32. The distance travelled by the disturbance in the medium for one complete oscillation is

(A) wave velocity (B) wavelength

(C) wave frequency (D) wave amplitude

33. Momentum of a photon is given by

(A) $P = \frac{\lambda}{h}$ (B) $P = \frac{h}{\lambda}$

(C) $P = \lambda h$ (D) $P = \lambda^2 h$

34. The velocity of sound in case of liquids is given by

(A) $\sqrt{\frac{d}{k}}$ (B) $\sqrt{kd}$

(C) $\sqrt{\frac{k}{d}}$ (D) $\sqrt{\frac{d^2}{k}}$

35. A tuning fork vibrating in air is an example of

(A) damped free vibrations (B) resonant vibrations

(C) undamped free vibrations (D) forced vibrations

Space For Rough Work

36. Raman lines are

(A) unpolarised (B) polarised

(C) diffracted (D) reflected

37. A crystal which has two optic axes is

(A) calcite (B) quartz

(C) mica (D) glass

38. Electron microscope is used to

(A) study virus and bacteria

(B) view three dimensional images

(C) automatic switching on and off of street-lights

(D) electronic industry for soldering

39. Which of the following statements is correct in case of γ-rays ?

(A) Penetrating power is less than β-rays.

(B) Penetrating power is less than α-rays.

(C) Penetrating power is very high.

(D) γ particles are nothing but electrons.

40. For destructive interference of light the path difference should always be

(A) $(2n + 1)\frac{\lambda}{2}$ (B) $\frac{n\lambda}{2}$

(C) $(2n + 1)\frac{\lambda}{3}$ (D) $n\lambda$

Space For Rough Work

PART – B
APPLIED MATHEMATICS

41. The equation of normal to the curve $y = (2x + 1)^2$ at $(-2, 0)$ is

(A) $x - 16y + 2 = 0$ (B) $x - 12y + 2 = 0$

(C) $x + 16y + 2 = 0$ (D) $x + 12y + 2 = 0$

42. The maximum value of the function $y = 2x^3 + 3x^2 - 36x$ is

(A) -44 (B) -30

(C) 81 (D) -81

43. The value of $\int \sin 3x \cos 2x \, dx$ is

(A) $\frac{-1}{2}\left[\frac{\cos 5x}{5} + \cos x\right] + C$ (B) $\frac{1}{2}\left[\frac{-\cos 5x}{5} + \cos x\right] + C$

(C) $\frac{1}{2}\left[\frac{\cos 5x}{5} + \cos x\right] + C$ (D) $\frac{-1}{2}[\cos 5x + \cos x] + C$

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

(A) $\frac{-\cos(2x^3)}{6} + C$ (B) $\frac{-\cos(2x^3)}{3} + C$

(C) $12x^3 \cos(2x^3) + C$ (D) $\frac{\cos(2x^3)}{6} + C$

45. $\int \log x \, dx$ is

(A) $\frac{1}{x} + C$ (B) $\frac{1}{x} - x + C$

(C) $x \log x + x + C$ (D) $x \log x - x + C$

Space For Rough Work

46. The value of $\int_0^{\pi/2} \sqrt{1+\sin 2x}\, dx$ is

(A) 0 (B) 1

(C) 2 (D) -2

47. $\int_0^1 \frac{x}{1+x^4}$ is

(A) $\frac{\pi}{4}$ (B) $\frac{\pi}{8}$

(C) $\frac{-\pi}{8}$ (D) $\frac{-\pi}{4}$

48. The area formed by the curve $y = (2x + 1)^3$ between the ordinates $x = -1$ and $x = 1$ is

(A) $\frac{41}{4}$ sq. units (B) 2 sq. units

(C) 20 sq. units (D) 10 sq. units

49. The order and degree of differential equation $\left[1+\left(\frac{dy}{dx}\right)^4\right]^{2/3} = \frac{d^2y}{dx^2}$ is

(A) order 2 and degree 3 (B) order 2 and degree 1

(C) order 1 and degree 2 (D) order 1 and degree 4

50. The solution of differential equation $\sec^2 x \tan y\, dx + \sec^2 y \tan x\, dy = 0$ is

(A) $\tan^2 x + \tan^2 y = C$ (B) $\tan x + \tan y = C$

(C) $\tan x \tan y = C$ (D) $x + y + \log(\sec x \sec y) = C$

Space For Rough Work

51. The value of the determinant $A = \begin{vmatrix} 1 & 1 & 1 \\ 3 & 3 & 3 \\ 4 & 5 & 6 \end{vmatrix}$ is

(A) 1 (B) 3

(C) -2 (D) 0

52. The value 'x' by Cramer's rule in $3x + 2y = 4$ and $x - 2y = 8$ is

(A) 12 (B) 3

(C) -13 (D) 15

53. If $A = \begin{bmatrix} 2 & -3 \\ 1 & 5 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix}$, then $A + 2B$ is

(A) $\begin{bmatrix} 4 & 1 \\ 9 & -1 \end{bmatrix}$ (B) $\begin{bmatrix} 4 & 1 \\ 9 & 1 \end{bmatrix}$

(C) $\begin{bmatrix} 3 & -1 \\ 5 & 2 \end{bmatrix}$ (D) $\begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$

54. If $A = \begin{bmatrix} 2 & 3 & 4 \\ -2 & x & -4 \\ -5 & 6 & 7 \end{bmatrix}$ is singular, then the value of x is

(A) -3 (B) 3

(C) $\frac{1}{3}$ (D) $\frac{-1}{3}$

Space For Rough Work

55. The characteristic roots of the matrix $A = \begin{bmatrix} 1 & 4 \\ 3 & 2 \end{bmatrix}$ is

(A) 5, 2 (B) –5, –2

(C) 5, –2 (D) –5, 2

56. If ${}^{n}C_{16} = {}^{n}C_{3}$, then the value of n is

(A) –19 (B) 19

(C) 13 (D) –13

57. The last term in the expansion of $\left(3x^2 + \frac{1}{2x^2}\right)^4$ is

(A) $\frac{1}{8x^8}$ (B) $\frac{1}{16x^8}$

(C) $81\,x^8$ (D) $12\,x^8$

58. The unit vector of $\vec{a} = 2i - 3j + 4k$ is

(A) $\frac{2i-3j+4k}{\sqrt{29}}$ (B) $\frac{2i-3j+4k}{\sqrt{11}}$

(C) $\frac{2i-3j+4k}{\sqrt{3}}$ (D) $\frac{\sqrt{29}}{2i-3j+4k}$

59. If $\vec{a} = i - 4j + 3k$ and $\vec{b} = -2i + j + 6k$, then the projection of $\vec{a}$ on $\vec{b}$ is

(A) $\frac{24}{\sqrt{41}}$ (B) $\frac{12}{\sqrt{26}}$

(C) $\frac{-12}{\sqrt{41}}$ (D) $\frac{12}{\sqrt{41}}$

Space For Rough Work

60. The area of triangle whose two sides are $\vec{a} = 3i + 4j + k$ and $\vec{b} = 5i + 6j + 2k$ is

(A) 3 sq. units (B) $\frac{1}{2}$ sq. units

(C) $\frac{3}{2}$ sq. units (D) $\frac{9}{2}$ sq. units

61. The simplification of $\frac{1}{1+\sin\theta} + \frac{1}{1-\sin\theta}$ is

(A) $2\cos^2\theta$ (B) $2\sec^2\theta$

(C) $\tan^2\theta$ (D) $2\operatorname{cosec}^2\theta$

62. The value of $\tan^2 30° + \sin^2 45° + \cos^2 90° + \cos^2 60°$ is

(A) $\frac{4}{3}$ (B) $\frac{13}{12}$

(C) $\frac{13}{24}$ (D) $\frac{25}{12}$

63. The simplification of $\frac{\sin(180°-A)\cos(360°-A)}{\tan(90°+A)\sin(-A)}$ is

(A) sin A (B) cosec A

(C) – sin A (D) – cosec A

64. If $\cos A = \frac{-3}{5}$ where $90° < A < 180°$, then the value of cot A is

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

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

Space For Rough Work

65. The value of cos 105° is

(A) $\frac{\sqrt{3}-1}{2\sqrt{2}}$ (B) $\frac{\sqrt{3}+1}{2\sqrt{2}}$

(C) $\frac{2\sqrt{2}}{1-\sqrt{3}}$ (D) $\frac{1-\sqrt{3}}{2\sqrt{2}}$

66. If $\tan\frac{A}{2}=\frac{1-\cos A}{\sin A}$, then the value of $\tan 22\frac{1}{2}^\circ$ is

(A) $\sqrt{2}+1$ (B) $1-\sqrt{2}$

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

67. The value of $\cos 5x \cdot \cos 3x$ is

(A) $\cos 8x + \cos 2x$ (B) $\frac{1}{2}(\cos 8x + \cos 2x)$

(C) $\frac{1}{2}(\sin 8x + \sin 2x)$ (D) $\frac{1}{2}(\cos 8x - \cos 2x)$

68. The simplified value of $\tan^{-1}\left(\frac{1}{2}\right)+\tan^{-1}\left(\frac{1}{3}\right)$ is

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

(C) 1 (D) $\tan^{-1}\left(\frac{1}{7}\right)$

69. Distance of a point P(– 2, 5) from the origin is

(A) $\sqrt{29}$ (B) $\sqrt{21}$

(C) $\sqrt{3}$ (D) 29

70. The co-ordinates of the point which divides the line joining the points A (8, 3) and B(–5, 6) in the ratio of 2 : 3 externally is

(A) (– 34, –3) (B) (34, 3)

(C) $\left(\frac{14}{5},\frac{21}{5}\right)$ (D) (34, –3)

Space For Rough Work

71. The area of triangle with the vertices (5, 3), (4, 6) and (5, 8) is

(A) $\frac{15}{2}$ sq. units (B) 15 sq. units

(C) $\frac{5}{2}$ sq. units (D) $\frac{45}{2}$ sq. units

72. The slope of the line making an angle 150° with the x-axis is

(A) $\frac{-1}{\sqrt{3}}$ (B) $\frac{1}{\sqrt{3}}$

(C) $\sqrt{3}$ (D) $-\sqrt{3}$

73. The two point form of a straight line is

(A) $y - y_1 = m(x - x_1)$ (B) $\frac{y - y_1}{x - x_1} = \frac{y_2 - y_1}{x_2 - x_1}$

(C) $\frac{y}{x} = \frac{y_2 - y_1}{x_2 - x_1}$ (D) $\frac{y - y_2}{x - x_2} = \frac{y_2 - y_1}{x_2 - x_1}$

74. The equation of straight line perpendicular to $2x + 5y - 8 = 0$ and passing through $(-1, 2)$ is

(A) $2x + 5y + 9 = 0$ (B) $5x - 2y + 1 = 0$

(C) $5x - 2y + 9 = 0$ (D) $5x + 2y - 9 = 0$

75. The value of $\lim_{x \to 3} \frac{2x^2 - 7x + 3}{2x - 6}$ is

(A) 3 (B) $\frac{2}{5}$

(C) $\frac{5}{2}$ (D) 5

Space For Rough Work

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

(A) $\frac{1}{\sqrt{2}}$ (B) $\sqrt{2}$

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

77. If $y = e^x (\cos x - \sin x)$, then $\frac{dy}{dx}$ is

(A) $2e^x \cos x$ (B) $-2e^x \cos x$

(C) $2e^x \sin x$ (D) $-2e^x \sin x$

78. If $x + y = \log x + \log y$, then $\frac{dy}{dx}$ at $x = -1$ and $y = 2$ is

(A) $-\frac{1}{4}$ (B) -4

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

79. If $x = a \cos^2 \theta$ and $y = b \sin^2 \theta$, then $\frac{dy}{dx}$ is

(A) $\frac{-b}{a}$ (B) $\frac{b}{a}$

(C) $\frac{a}{b}$ (D) $\frac{-a}{b}$

80. The second derivative of $y = \log\left(\frac{1}{x}\right)$ is

(A) x (B) 1

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

Space For Rough Work

PART – C

ELECTRONICS AND COMMUNICATION

81. Single phase full bridge voltage source inverter has

(A) Four SCRs and Four diodes (B) Two SCRs and Two diodes

(C) Three SCRs and Two diodes. (D) Two SCRs and Four diodes

82. Electrical Signal converted into physical condition by

(A) Sensor (B) Actuators

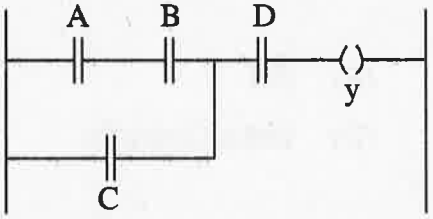
(C) Timer (D) Rung

83. Which logic gate is formed by connecting normally closed gates in parallel ?

(A) OR gate (B) NAND gate

(C) NOR gate (D) AND gate

84. What is the Boolean expression for a given Ladder diagram y = ?



(A) $y = (A + B \cdot C) D$ (B) $y = (AB + D) C$

(C) $y = (AB + C) D$ (D) $y = AB + DC$

85. If CS = 1800 H & IP = 2315 H then effective address is

(A) 1970 H (B) 1A315 H

(C) 3B15 H (D) A245 H

86. In 8086 memory address in interrupt vector table of type 1 interrupt is

(A) 0000C (B) 00008

(C) 00004 (D) 00010

Space For Rough Work

87. The signal used to access a byte being at an odd address or if a word at an even address in 8086.

(A) $M|\overline{IO}$ (B) $\overline{BHE}$

(C) $DT|\overline{R}$ (D) $MN|\overline{MX}$

88. 8257 can transfer a block of data upto _____ between memory & peripheral directly.

(A) 8 k bytes (B) 4 k bytes

(C) 57 k bytes (D) 16 k bytes

89. The technique is used for high speed data transfer is

(A) USART (B) DMA

(C) RS-232 (D) PPI

90. IC 8259 is known as

(A) PIC (B) PPI

(C) USART (D) DMA Controller

91. Typical value of resting potential of a cell will be

(A) – 90 m.v. (B) + 90 m.v.

(C) + 100 m.v. (D) – 100 m.v.

92. The process of exiting the cell, so that it will change from resting potential to action potential is called

(A) Polarization (B) Depolarization

(C) Activation (D) Deactivation

Space For Rough Work

93. ECG is not used to identify one of these :

(A) Cardiac hypertropy (B) Arrhythmia

(C) Infarcation (D) Epilapsy

94. Placement of electrode is deviced by International Federation of Society's of EEG known as

(A) 10 – 20 system (B) 10 – 10 system

(C) 20 – 20 system (D) 10 – 15 system

95. The differential WBC count must be obtained

(A) Electromagnetic method (B) Microscopic method

(C) Ultrasonic method (D) Ionic method

96. Which principle is used to in formation of X-ray image in the body ?

(A) Absorption (B) Reflection

(C) Refraction (D) Defraction

97. A-mode displays gives _____ dimension information.

(A) Three (B) Two

(C) One (D) Omni

98. Which telemetry is used for monitoring astronauts in space ?

(A) Ionic (B) Radio

(C) Space (D) Micro

Space For Rough Work

99. The basic unit of electric charge is

(A) Coulomb (B) Farad

(C) Joule (D) kWh

100. Two resistors of 1 Ω and 10 Ω are connected in parallel. Total resistance is

(A) 10 Ω (B) 1 Ω

(C) 11 Ω (D) Less than 1 Ω

101. A 10 W lamp is used for 6 hours a day. Energy consumed for 30 days is

(A) 0.6 kWh (B) 100 kWh

(C) 18 kWh (D) 180 kWh

102. Whenever an alternating voltage is applied to a pure inductive coil, then the

(A) Current lags voltage by 90° (B) Current leads voltage by 90°

(C) Phase difference is zero (D) Voltage lags current by 90°

103. A capacitor

(A) Passes AC but blocks DC (B) Passes DC but blocks AC

(C) Passes both AC and DC (D) Blocks both AC and DC

104. A transformer works on the principle of

(A) Self induction (B) Mutual induction

(C) Dynamically induced emf (D) Transfer of electrical energy

105. Electronic equipments can be protected against abnormal condition like over voltage, over current, using

(A) Inductors (B) Capacitors

(C) Relays (D) Transistors

Space For Rough Work

106. In a semiconductor material, the energy gap between valance and conduction band is

(A) Large (B) Small

(C) Zero (D) Infinity

107. If the reverse bias applied to a PN junction is increased, its barrier capacitance

(A) Increases (B) Remains same

(C) Independent of bias (D) Decreases

108. In an NPN common base transistor circuit, if $\alpha = 0.95$ and $I_E = 20$ mA, the value of base current is

(A) 1 mA (B) 19 mA

(C) 21.05 mA (D) 0.1 mA

109. A tunnel diode is

(A) a very heavily doped PN junction diode

(B) a high resistivity PN junction diode

(C) a slow switching device

(D) used with reverse bias

110. An SCR is a semiconductor device which consists of

(A) 4 PN Junctions (B) Three PN Junctions

(C) 2 PN Junctions (D) 1 PN Junction

111. FETs are

(A) Voltage controlled device with high input impedance

(B) Current controlled device with low input impedance

(C) Voltage controlled device with low input impedance

(D) Current controlled devices with high input impedance

112. Which of the following device has revolutionized the field of computers ?

(A) BJTs (B) Enhancement MOSFETs

(C) Depletion MOSFETs (D) JFETs

Space For Rough Work

113. 1110 is the gray code equivalent of binary number

(A) 1011 (B) 0111

(C) 0100 (D) 0011

114. D flip-flop can be made from a J-K flip-flop by making

(A) J = K (B) J = K = 1

(C) J = K = 0 (D) J = $\overline{K}$

115. If a mod-6 counter is constructed using 3 flip-flops, the counter will skip

(A) 4 counts (B) 3 counts

(C) 2 counts (D) 1 count

116. The basic shift-register with inverse feedback is called as

(A) Ring counter (B) Johnson counter

(C) Asynchronous counter (D) Serial-in-parallel at SR

117. A data selector is also called a

(A) Demultiplexer (B) Multiplexer

(C) Priority encoder (D) Decoder

118. Power dissipation is low in

(A) TTL devices (B) CMOS devices

(C) ECL devices (D) DTL devices

119. What is the bit storage capacity of ROM with 512 × 4 organization ?

(A) 4K (B) 1K

(C) 2K (D) 3K

120. The reciprocal of the number of discrete steps in the D to A output is

(A) Error (B) Accuracy

(C) Resolution (D) Monotomy

Space For Rough Work

121. The number of comparators required to build an eight-bit simultaneous or flash ADC is

(A) 127 (B) 256

(C) 255 (D) 8

122. The Programmable Logic-Device (PLD) having programmable AND-array at the input and a programmable OR-array at the output is called a

(A) Programmable Logic Array (PLA)

(B) Programmable Array Logic (PAL)

(C) Programmable Gate Array (PGA)

(D) Application Specific Integrated Circuit (ASIC)

123. A program written in mnemonics is known as

(A) Assembly language (B) Low level language

(C) High level language (D) Machine level language

124. Program counter is used to

(A) Store address of the next instruction to be executed

(B) Store temporary data to be used in arithmetic operation

(C) Store the status of the microprocessor

(D) Store the result

125. If the value of the operand is specified within the instruction itself, then the resulting addressing mode is

(A) Direct addressing (B) Immediate addressing

(C) Register addressing (D) Implicit addressing

126. Which one is not true while declaring the variable ?

(A) Reserve words cannot be used. (B) Blank is not allowed.

(C) It is case sensitive. (D) It is not case sensitive.

Space For Rough Work

127. "\b" indicates which escape sequence ?

(A) horizontal tab (B) new line

(C) back space (D) carriage return

128. Write the order of precedence.

1. Unary 2. Logical

3. Binary 4. Equality operator

(A) 1, 2, 3, 4 (B) 1, 3, 4, 2

(C) 1, 4, 3, 2 (D) 2, 1, 4, 3

129. What is the output of following code :

```
int x, y, z ;
z = 8 ;
x = + + z ;
y = z + + ;
z = + + z ;
```

The values of x, y, z are

(A) 9, 9, 11 (B) 9, 10, 11

(C) 8, 9, 10 (D) 9, 8, 9

130. Identify the false statement in 'C'.

(A) While loop is executed atleast once.

(B) While loop is executed only when condition is satisfied.

(C) Do-while loop is executed atleast once.

(D) For-loop is used when the number of iteration is pre-determined.

Space For Rough Work

131. What is the output of the code ?

```
for (i = 0; i < 11; i ++)
  {
   if ((i = = 4) 11 (i = = 7))
   Continue ;
  Printf ("the value of i is % d \ n", i) ;
  }
```

(A) 0 to 10 numbers are printed
(B) 0 to 11 numbers are printed
(C) 4 & 7 numbers are printed
(D) 0 to 10 numbers are printed except 4 & 7

132. Identify the false statement with respect to array.

(A) Array is a data structure which can store the value of some data type.
(B) Array is data structure which can be store the value of different data types.
(C) Maximum number of data stored in array is (size-1).
(D) Array elements are stored in consecutive memory location.

133. In an array, elements are accessed using

(A) First in first out approach
(B) Dot operator
(C) An index number
(D) By using member name

134. In a full-wave rectifier, the current in each of the diodes flows for

(A) Complete cycle of the input signal
(B) Half-cycle of the input signal
(C) Less than half of the input signal
(D) More than half cycle

135. Improper biasing of a transistor circuit leads to

(A) Excessive heat production at collector circuit
(B) Heavy loading emitter terminal
(C) Faulty location of load line
(D) Distortion in output signal

Space For Rough Work

136. Which of the following best describes a class A amplifier ?

(A) High efficiency & high distortion (B) Low efficiency & high distortion

(C) Low efficiency and low distortion (D) High efficiency and low distortion

137. An RC–high pass circuit can also possibly be

(A) an integrator circuit (B) a differentiator circuit

(C) either a differentiator or integrator (D) an amplifier circuit.

138. The ideal value of common mode rejection ratio is

(A) 1 (B) 0

(C) ∞ (D) $-\infty$

139. In a Wein bridge oscillator, frequency of oscillations is given by

(A) $f = \frac{1}{2\pi RC}$ (B) $f = \frac{1}{RC}$

(C) $f = \frac{1}{2\pi\sqrt{6RC}}$ (D) $f = \frac{1}{2\pi\sqrt{3RC}}$

140. A monostable multivibrator circuit

(A) has no stable state

(B) give two output pulses for one input trigger pulse

(C) returns to its stand-by states automatically

(D) has no energy storage element

141. The main function of clipping circuit is to

(A) remove a certain portion of the input signal above or below a certain level

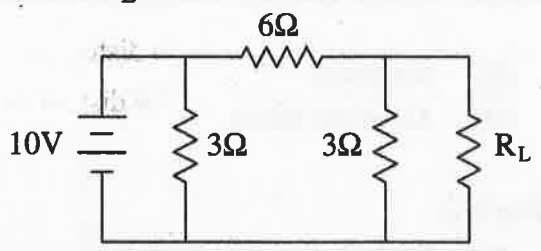
(B) restore dc level to the signal

(C) suppress amplitude variations in the input signal voltage

(D) passes the entire waveform

Space For Rough Work

142. The valve of R_L for which maximum power transfer takes place in the network shown is



(A) 3Ω (B) 12Ω
(C) 6Ω (D) 2Ω

143. The bandwidth of a resonant circuit is sharper for
(A) high Q values (B) low Q values
(C) independent of Q value (D) Depends on the application

144. In a series RLC circuit, at resonance
(A) $WLC = 1$ (B) $WL^2C^2 = 1$
(C) $W^2LC = 1$ (D) $W^2L^2C^2 = 1$

145. Which of the following steps is not included in the process of reception in communication ?
(A) Decoding (B) Encoding
(C) Storage (D) Interpretation

146. The AM wave will have
(A) Carrier, LSB and USB (B) LSB and USB
(C) LSB (D) One side band & vestige of other band

147. Pre-emphasis deals with
(A) Emphasizing low frequency components
(B) Emphasizing high frequency components
(C) Emphasizing frequency components
(D) Eliminating low frequency components

148. Pulse code modulation involves
(A) PAM followed by quantization
(B) Direct encoding using binary words
(C) PAM followed by quantization & encoding
(D) PAM followed by encoding using binary word

Space For Rough Work

149. If a higher scale ammeter is used to measure too low current, then the measurement would have low

(A) Precision (B) Accuracy

(C) Resolution (D) All of the above

150. An advantage of PMMC instrument is that it is

(A) free from friction errors (B) has high torque/weight ratio

(C) has low torque/weight ratio (D) can be used on both ac & dc

151. The moving coil in a dynamometer wattmeter is connected

(A) In series with the fixed oil (B) Across the supply

(C) In series with the load (D) Across the load

152. Maxwell's bridge is used for the measurement of

(A) Capacitance (B) Flux density

(C) Resistance (D) Inductance

153. In a CRO, the Saw-tooth voltage is applied at the

(A) accelerating anode (B) cathode

(C) horizontal deflection plates (D) vertical deflection plates

154. Frequency spectrum of waveform can be determined using a

(A) Wave analyzer (B) Q-meter

(C) LCR bridge (D) Wein-bridge oscillator

155. Commonly used device for measuring temperature

(A) Strain guage (B) Thermistor

(C) Photodiode (D) Piezo-electric crystal

156. LVDT is used for

(A) Vibration measurement (B) Angular velocity measurement

(C) Force measurement in beam (D) Load measurement on column

Space For Rough Work

157. A capacitive-transducer is employed for

(A) Dynamic measurements (B) Transient measurements

(C) Static-dynamic measurements (D) Static measurements

158. IEEE 488 standard is based on transmission of

(A) 4 bit data word (B) 8 bit data word

(C) 16 bit data word (D) 24 bit data word

159. Which bits of PSW are used for selecting memory banks in 8051 ?

(A) PSW7, PSW1 (B) PSW5, PSW4

(C) PSW4, PSW3 (D) PSW3, PSW2

160. The address range of bit addressable RAM in 8051 is

(A) 08 – 0F H (B) 20 – 2F H

(C) 30 – 7FH (D) 00 – 7FH

161. Instruction used for accessing external memory in 8051 is

(A) MOV (B) Load

(C) MOVX (D) MVI

162. The timers will be set to split mode in

(A) Mode 0 (B) Mode 1

(C) Mode 2 (D) Mode 3

163. LJmp is an example of _____ byte instruction.

(A) 1 (B) 2

(C) 3 (D) 4

164. In 8051, as soon as the transmission is complete, _____ flag of SCON register is raised.

(A) REN (B) TI

(C) RI (D) TB8

Space For Rough Work

165. During POP operation in 8051, the stack pointer gets
(A) decrement by 1 (B) decrement by 2
(C) increment by 1 (D) increment by 2

166. Routing is done in
(A) transport layer (B) data-link layer
(C) physical layer (D) network layer

167. How many layers are there in OSI Module ?
(A) 6 (B) 7
(C) 4 (D) 8

168. In which switching, resources should be dedicated for the entire duration of data transfer ?
(A) Circuit switching (B) Packet switching
(C) Message switching (D) Data switching

169. Bridge operation is in _____ of internet module.
(A) application and session layer (B) network and transport layer
(C) physical and data link layer (D) presentation and session layer

170. Internet is connected to telephone network by
(A) Gate ways (B) Bridges
(C) Routers (D) Repeaters

171. FDM is a/an
(A) Analog technique (B) Digital technique
(C) Hybrid technique (D) Discrete technique

172. Which is a false statement in mesh topology ?
(A) Guarantees that each connection can carry its data
(B) Robust
(C) Advantages of privacy & security
(D) Presence of hub

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173. Ethernet is most widely used in

(A) LAN (B) WAN

(C) MAN (D) Computer

174. IPV_4 is

(A) 32 bit (B) 64 bit

(C) 128 bit (D) 48 bit

175. A transmitter can transmit of the baudrate of 500 bd & 8 different symbols are used. How many bits are transmitted per second ?

(A) 1000 (B) 4000

(C) 2000 (D) 1500

176. Compared to BJT, MOSFET's drive circuits, power requirement is

(A) Lesser (B) Greater

(C) Greater than or equal (D) Equal

177. Thyristor is a generic name for a semiconductor switch having _____ layers.

(A) 2 or 3 (B) 4 or more

(C) 2 (D) 3

178. Snubber circuit protects SCR from

(A) high voltage (B) high current

(C) di/dt (D) dv/dt

179. Type E chopper is also called as

(A) First quadrant chopper (B) Second quadrant chopper

(C) Two quadrant chopper (D) Four quadrant chopper

180. Main application of cyclo-converter circuit is

(A) Lift and hoist (B) Speed control of DC motor

(C) Speed control of AC motor (D) traction

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