DIPLOMA - COMMON ENTRANCE TEST-2019

EE	COURSE	DAY : SUNDAY DATE : 21-07-2019
	ELECTRICAL AND ELECTRONICS	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	230665

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)	(✖) (B) (C) (D) (A) (B) (C) (✓) (A) ● ● (D) (●) (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**.

EE-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, $V = \sqrt{\dfrac{\gamma P}{\rho}}$, notation γ is equal to

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

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

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) $\csc^2\theta$

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

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 $\overrightarrow{F} = 2i + 6j - 8k$, whose displacement is $\overrightarrow{S} = -2i + 3j - k$ is

(A) 26 units   (B) −22 units

(C) 22 units   (D) 30 units

49. The vector product of $\overrightarrow{a} = 4i - j + k$ and $\overrightarrow{b} = 3i - 2k$ 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 $\tan \theta = \dfrac{5}{12}$ and $\pi < \theta < \dfrac{3\pi}{2}$, then the value of $\sin \theta - \cos \theta$ is

(A) $\dfrac{17}{13}$

(B) $\dfrac{7}{13}$

(C) $-\dfrac{17}{13}$

(D) $-\dfrac{7}{13}$

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

(A) 1

(B) −1

(C) 2

(D) $\dfrac{1}{2}$

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

(A) $\sin 70°$

(B) $\dfrac{\sqrt{3}}{2}$

(C) $\dfrac{1}{2}$

(D) $-\dfrac{1}{2}$

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

(A) $\dfrac{84}{85}$

(B) $-\dfrac{36}{85}$

(C) $-\dfrac{84}{85}$

(D) $\dfrac{36}{85}$

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

(A) $\cot \left(\dfrac{\pi}{4} + A\right)$

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

(C) $\tan \left(\dfrac{\pi}{4} - A\right)$

(D) $\cot \left(\dfrac{\pi}{2} - A\right)$

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. $\lim\limits_{x \to 0} \dfrac{x}{\sqrt{1+x}-1}$ is equal to

(A) 0 (B) 1

(C) 2 (D) ∞

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

(A) 3 (B) -3

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

60. $\lim\limits_{x \to 0} \dfrac{3x + \sin 4x}{2 \sin 3x - 5x} =$

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

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

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 $\dfrac{dy}{dx} =$

(A) 3

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

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

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

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

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

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

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

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

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 $12 \text{ cm}^2/\text{s}$. The rate at which the radius is changing when the radius of the sphere is 2 cm is equal to

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

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

(C) 3π cm/s

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

Space For Rough Work

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

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

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

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

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

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) $-\operatorname{cosec} x + c$

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

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

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

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

Space For Rough Work

76. $\int\limits_{0}^{\pi/2} \cos^2 x \, dx =$

(A) $\dfrac{\pi}{2}$

(B) $\dfrac{\pi}{6}$

(C) $\dfrac{\pi}{3}$

(D) $\dfrac{\pi}{4}$

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) $\dfrac{23\pi}{3}$ cubic units

(B) $\dfrac{26\pi}{3}$ cubic units

(C) $\dfrac{16\pi}{3}$ cubic units

(D) 0

78. The order and degree of the differential equation $\dfrac{dy}{dx} = \sqrt{1 + \dfrac{d^2y}{dx^2}}$ 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) $\dfrac{d^2y}{dx^2} - y = 0$

(B) $\dfrac{d^2y}{dx^2} + y = 0$

(C) $\dfrac{dy}{dx} + y = 0$

(D) $\dfrac{dy}{dx} - y = 0$

80. Solution of the differential equation $\dfrac{dy}{dx} = \dfrac{1 + y^2}{1 + x^2}$ 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) $\sin^{-1} y - \sin^{-1} x = k$

PART – C

ELECTRICAL & ELECTRONICS ENGINEERING

81. A coil has a resistance of 100 Ω at 90 °C. At 100 °C resistance is increased to 101 Ω. The temperature co-efficient of resistance of wire at 90 °C is

    (A) 0.0002   (B) 0.001

    (C) 0.1   (D) 0.01

82. The unit of Absolute Permittivity of dielectric material is

    (A) Farad per metre   (B) Farad-metre

    (C) Newton per metre   (D) Joules per metre

83. A coil of 200 turns is linked with 8 mWb when carrying a current of 10A. If the current is reversed in 0.05 seconds, find the emf induced in the coil.

    (A) 16 V   (B) 32 V

    (C) 64 V   (D) 48 V

84. Two parallel plate capacitors have plates of equal area and different relative permittivity and spacing between plates.

    If $\dfrac{\epsilon_{r_1}}{\epsilon_{r_2}} = 2$ and $\dfrac{d_1}{d_2} = 0.5$

    The ratio of their capacitances $\dfrac{c_1}{c_2}$ is

    (A) 2   (B) 6

    (C) 8   (D) 4

85. A 100 W bulb burns an average of 10 hours a day. The energy consumed by bulb for 10 days is

    (A) 10 units   (B) 15 units

    (C) 100 units   (D) 20 units

Space For Rough Work

86. Reluctance of a magnetic current is given by

(A) $\dfrac{\mu_0 \mu_r l}{A}$

(B) $\dfrac{l}{\mu_0 \mu_r A}$

(C) $\dfrac{l \mu_0}{\mu_r A}$

(D) $\dfrac{A}{\mu_0 \mu_r l}$

87. The material used to make PIN type insulator for over head lines is

(A) PVC

(B) Rubber

(C) Mica

(D) Porcelain

88. A circuit whose characteristics changes with change in direction of current or voltage is called
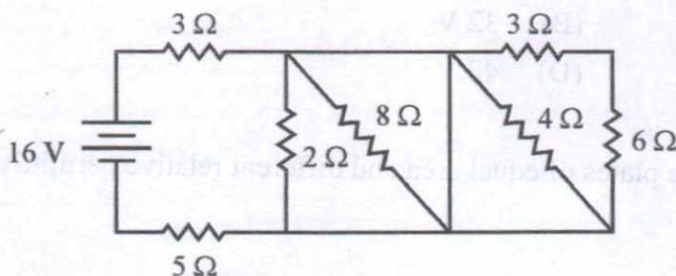
(A) Bilateral

(B) Unilateral

(C) Linear

(D) Non-linear

89.

3 Ω   3 Ω

16 V   8 Ω   4 Ω   6 Ω

2 Ω

5 Ω

Find the current through the 5Ω resistor

(A) 4A

(B) 2A

(C) 6A

(D) 8A

90. Unit of Magnetic permeability is

(A) Wb/m²

(B) Wb/A.T

(C) Henry/m

(D) Tesla

91. For a sine-wave amplitude factor is

(A) 0.707

(B) 1.414

(C) 1.11

(D) 1.21

Space For Rough Work

92. The power dissipated in the circuit resistance is
    (A) Reactive Power   (B) Apparent Power
    (C) Volt Ampere Power   (D) Active Power

93. The Emf induced due to relative motion between the flux and the conductor is called
    (A) Statically Induced Emf. (B) Dynamically Induced Emf.
    (C) Self Induced Emf.   (D) Mutually Induced Emf.

94. The minimum number of wattmeters required to measure 3–ϕ, 3 wire balanced or unbalanced power is
    (A) 1   (B) 2
    (C) 3   (D) 4

95. In an Indicating Instrument, the damping force acts on the moving system only when it is
    (A) stationary   (B) moving
    (C) near its full deflection (D) just starting to move

96. Permanent – Magnet type Instruments are used to measure
    (A) Both A.C. and D.C   (B) Only A.C.
    (C) Only D.C.   (D) Neither A.C. nor D.C.

97. Which of the following instruments cannot be used for measuring D.C.
    (A) Induction type   (B) Hot wire type
    (C) Moving Iron Attraction type (D) Moving Coil Permanent Magnet type

98. Which of the following loss will not be present in dynamometer instrument
    (A) Copper loss   (B) Eddy current loss
    (C) Hysterisis loss   (D) Air friction loss

99. The range of moving coil Ammeter can be extended by using
    (A) High Resistance Multiplier (B) High Resistance Shunt
    (C) Low Resistance Shunt   (D) Low Resistance Multiplier

Space For Rough Work

100. The normal ratio of current transformer is

(A) Rated Secondary winding current to rated primary winding current.

(B) Rated primary winding current to rated secondary winding current.

(C) Number of secondary winding turns to number of primary winding turns.

(D) Number of primary winding turns to number of secondary winding turns.

101. Lap winding is suitable for _____ voltage and _____ current DC generator.

(A) high, low   (B) low, high

(C) high, high   (D) low, low

102. Commutator is made up of

(A) Iron laminations

(B) Copper segments

(C) Iron laminations and copper segments

(D) Solid iron

103. In a DC machine interpoles are provided to _____.

(A) neutralize armature reaction effect

(B) increase the emf generated

(C) increase the main field flux

(D) increase the vibration

104. The efficiency of shunt generator is maximum when its constant loss is equal to _____.

(A) iron loss   (B) variable loss

(C) friction loss   (D) windage loss

105. If the flux of a DC motor approaches zero its speed will

(A) approach dangerously high speed.

(B) approach zero.

(C) approach a stable value somewhere between zero and infinity.

(D) no change due to corresponding change in back emf.

Space For Rough Work

106. Between no-load and full load _____ motor develops the least torque.

    (A) shunt   (B) series

    (C) cumulative compound   (D) differential compound

107. Synchronous reactance of an alternator is given by X_S is equal to

    (A) $X_L + X_A$ (B) $X_L - X_A$

    (C) $\dfrac{X_L}{X_A}$ (D) $\dfrac{X_A}{X_L}$

108. In an alternator the voltage of the field system is usually

    (A) between 400 V and 600 V   (B) about 1000 V

    (C) more than 1000 V   (D) less than 200 V

109. In an alternator the armature reaction will be completely demagnetising in case of _____ load power factor.

    (A) zero leading   (B) zero lagging

    (C) unity   (D) 0.866

110. If the excitation of two alternators operating in parallel is changed, this leads to change in

    (A) Back emf   (B) Generated voltage

    (C) Reactive power   (D) Active power

111. The primary and secondary induced emf E_1 and E_2 in a two winding transformer are always

    (A) out of phase   (B) equal in magnitude

    (C) determined by the load   (D) inphase

112. Hysterisis loss in a transformer is proportional to

    (A) $B_{max}^{1.6} \cdot f^2$ (B) $B_{max}^{2} \cdot f^2$

    (C) $B_{max}^{1.6} \cdot f$ (D) $B_{max} \cdot f$

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113. The chemical used in breather

(A) SF_6 (B) Silica gel

(C) Sodium chloride   (D) Asbestos

114. Transformer operation requires

(A) Constant magnetic flux   (B) Constant current

(C) Variable magnetic flux   (D) Constant voltage

115. The primary equivalent of the secondary induced voltage E_2 is _____.

(A) $E_2^1 = \dfrac{E_2}{k}$ (B) $E_2^1 = kE_2$

(C) $E_2^1 = \dfrac{E_2}{k^2}$ (D) $E_2^1 = k^2 E_2$

116. Slip ring of an IM is made of

(A) Aluminium   (B) Copper

(C) Carbon   (D) Phosphorous Bronze

117. The synchronous speed of the IM is more as

(A) the number of poles decreases   (B) the number of poles increases

(C) the frequency decreases   (D) the supply decreases

118. An inverted V curve of synchronous motor gives the relation between

(A) Power factor and supply voltage   (B) Supply voltage and field current

(C) Power factor and DC field current   (D) Field current and armature current

119. The speed of squirrel-cage IM cannot be controlled by

(A) Rotor resistance control   (B) Auto transformer

(C) Primary resistance control   (D) Star-delta starter

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120. Synchronous capacitor is

   (A) an ordinary static capacitor bank

   (B) an over-excited synchronous motor driving mechanical load

   (C) under excited synchronous motor

   (D) an over-excited synchronous motor running without mechanical load

121. In Thermal power plant, condensers are used for condensing

   (A) Water to Ice   (B) Carbon di-oxide to dry ice

   (C) Steam to water   (D) Hydrogen gas to liquid Hydrogen

122. The running cost of a power plant depends only upon

   (A) Units generated   (B) Units utilized

   (C) Total capacity   (D) Average capacity

123. When the water is below mean sea level, it is called

   (A) Low tide   (B) High tide

   (C) Ebb tide   (D) Flood tide

124. The heat from flue gases of a Thermal Power station is recovered by

   (A) Super heater   (B) Economizer

   (C) Drier   (D) Air Pre-heater

125. In the combustion chamber of gas power plant, heat is added to the air by burning

   (A) Coal   (B) Oil

   (C) CO_2 (D) Hydrogen

126. Which of the following power plants are movable & portable ?

   (A) Thermal Power Plant   (B) Diesel Power Plant

   (C) Tidal Power Plant   (D) Hydro Electric Power Plant

Space For Rough Work

127. Which of the following is an impulse turbine ?

- (A) Pelton wheel
- (B) Francis turbine
- (C) Kaplan turbine
- (D) Propeller turbine

128. The electrical power transmission at high voltage.

- (A) Increases the volume of conductor material
- (B) Decreases the volume of conductor material
- (C) Increases the power line losses
- (D) Increases the voltage drop in the line

129. The steel wire used in ACSR conductor increases

- (A) Current carrying capacity
- (B) Voltage carrying capacity
- (C) Power carrying capacity
- (D) Mechanical strength of conductor

130. The corona formed in transmission line results in

- (A) Increase of efficiency of line.
- (B) Decrease in effective capacitance of line conductor.
- (C) Corrosion of conductor due to chemical reaction.
- (D) Sinusoidal voltage drop in the line.

131. For voltage more than 66 kV, cable used is

- (A) Screened cable
- (B) Belted cable
- (C) SL-type cable
- (D) Pressure cable

132. The expansion of SCADA is

- (A) Super Computer and Data Acquisition
- (B) Super Control and Data Acquisition
- (C) Supervisory Control and Data Acquisition
- (D) Supervisory Computer and Data Acquisition

Space For Rough Work

133. Which of the following is not used as refrigerant ?

(A) Carbon monoxide (CO)   (B) Sulphur dioxide (SO_2)

(C) Carbon dioxide (CO_2)   (D) Ammonia (NH_3)

134. The luminous efficiency of mercury vapour lamp is

(A) 80 – 100 lumens/watt   (B) 30 – 40 lumens/watt

(C) 10 – 20 lumens/watt   (D) 100 – 120 lumens/watt

135. For short line fault without switching resistor, the most suitable circuit breaker is

(A) Air blast circuit breaker   (B) Minimum oil circuit breaker

(C) Plain oil circuit breaker   (D) SF_6 circuit breaker

136. For the given fuse element, which of the following is correct ?

(A) Minimum Fusing Current > Current Rating

(B) Minimum Fusing Current < Current Rating

(C) Minimum Fusing Current = Current Rating

(D) Minimum Fusing Current = 2 × Current Rating

137. Practically Instantaneous Relay has to operate within _____ seconds.

(A) 0.3 seconds   (B) less than 0.2 seconds

(C) greater than 0.3 seconds   (D) No time gap

138. Symmetrical fault current arises only when

(A) One phase and ground is shorted   (B) One phase and neutral is shorted

(C) All the three phase are shorted   (D) Only two phases are shorted.

139. Differential protection scheme is not suitable for.

(A) Alternator   (B) Transformer

(C) Short transmission lines   (D) Long transmission lines

Space For Rough Work

140. Which of the following is not a current interrupting device ?

(A) Circuit Breaker   (B) Fuse

(C) MCB   (D) Relay

141. If the doping level of a cryNal diode is increased, the breakdown voltage _____.

(A) remains the same   (B) is increased

(C) is decreased   (D) is zero

142. Chose the correct statement :

(A) MOSFET is a uncontrolled device

(B) MOSFET is a voltage controlled device

(C) MOSFET is a current controlled device

(D) MOSFET is a temperature controlled device

143. The ripple rejection capability is very good in _____.

(A) C filter   (B) Pie filter

(C) LC filter   (D) L filter

144. In order to use a transistor as an amplifier, it should be operated in _____.

(A) saturation region   (B) active region

(C) cut-off region   (D) peak reverse region

145. Which of the following is not a ideal characteristic of an op-amp ?

(A) infinite open loop gain

(B) zero o/p impedance

(C) zero common-mode rejection ratio

(D) infinite band width

146. If the i/p signal of a differentiator is a triangular wave, then o/p will be _____ wave.

(A) Sine   (B) Rectangular

(C) Spiken   (D) Cosine

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147. The time period of the monostable 555 timer is given by

(A) T = 3 RC

(B) T = 0.33 RC

(C) T = 1.11 RC

(D) T = RC

148. Convert the binary number

1101 0000 1011 0000 to hexadecimal number

(A) D010

(B) D0B0

(C) 70B0

(D) 5050

149. $A \cdot \overline{A}$ is equal to

(A) A

(B) $\overline{A}$

(C) 0

(D) 1

150. Master-Slave flip-flop consists of flip-flops

(A) 1

(B) 2

(C) 3

(D) 4

151. The fastest logic family is

(A) ECL

(B) DTL

(C) TRL

(D) TTL

152. A shift register is defined as

(A) The register capable of counting decimal numbers

(B) The register capable of shifting information either to the right or to the left.

(C) The register capable of shifting information to the right only.

(D) The register capable of shifting information to the left only.

153. The maximum state of count value of a n bit binary counter is

(A) 2n

(B) $n - 1$

(C) $2^n - 1$

(D) $2^n + 1$

Space For Rough Work

154. Computers invariably use RAM for

    (A)   High complexity

    (B)   High Resolution

    (C)   High Speed Main Memory

    (D)   High Flexibility

155. The most widely used data communication code is

    (A)   MORSE

    (B)   ASCII

    (C)   BAUDOT

    (D)   EBCDIC

156. In a communication system noise affects the signal

    (A)   at the transmitter

    (B)   in the channel

    (C)   in the information source

    (D)   at the destination

157. Commercial super Heterodyne Radio Receiver has an intermediate frequency choosen as

    (A)   255 kHz

    (B)   455 kHz

    (C)   955 kHz

    (D)   1055 kHz

158. The speed of a Serial Data Transmission is usually expressed in

    (A)   Bits per second

    (B)   Bytes per second

    (C)   Kilobytes per second

    (D)   Megabytes per second

159. Which of the following device is used to demultiplex received signals ?

    (A)   Band pass filter

    (B)   Band stop filter

    (C)   Low pass filter

    (D)   High pass filter

160. The Radio wave signals which are affected by the Ionosphere are

    (A)   Ground waves

    (B)   Sky-waves

    (C)   Space-waves

    (D)   Direct-waves

161. After firing SCR, if the gate current is removed, then anode current

    (A)   Reduces to zero

    (B)   Remains same

    (C)   Increases slowly

    (D)   Rises up a little and then falls to zero

Space For Rough Work

162. MOSFET is an example for

(A) Unipolar device   (B) Bi-polar device

(C) Tri-polar device   (D) Uni-Junction device

163. Pulse Transformer is usually used

(A) To step-up the voltage   (B) To step-down the voltage

(C) To isolate the circuits   (D) To break the circuits

164. The converter used to change the frequency of A.C. supply directly is

(A) Inverter   (B) Rectifier

(C) Chopper   (D) Cyclo-Converter

165. The sensitivity of TRIAC is great when

(A) MT2 positive gate positive   (B) MT2 positive gate negative

(C) MT2 negative gate positive   (D) MT2 negative gate negative

166. In static A.C. circuit Breaker, static switches are turned ON when

(A) Load voltage is zero   (B) Load current is zero

(C) Supply voltage is zero   (D) Peak of supply voltage

167. The Buck-converter is used to _____ the output voltage.

(A) decrease   (B) increase

(C) reverse   (D) stabilize

168. For forward Generating, which of the following statement are true ?

(A) Speed is positive, torque is negative

(B) Speed is negative, torque is negative

(C) Speed is positive, torque is positive

(D) Speed is negative, torque is positive

Space For Rough Work

169. The tractive effort during acceleration period considering rotational inertia is _____.

(A) $\dfrac{277.8\,\alpha}{W}$

(B) $277.8\,W\alpha$

(C) $277.8\,W$

(D) $277.8\,\alpha$

170. Group drive is generally employed for _____.

(A) Rolling Mill

(B) Paper Mill

(C) Flour Mill

(D) Textile Mill

171. Crushers used in cement mills, use _____ motors.

(A) Synchronous

(B) Squirrel Cage

(C) D.C. Shunt

(D) Slip ring

172. In long distance electric trains, power for lighting in passenger coaches is provided

(A) through locomotive

(B) through rails

(C) through individual generators of coaches & batteries

(D) directly from overhead lines.

173. An elevator drive operates in _____.

(A) one Quadrant only

(B) two Quadrant only

(C) three Quadrant only

(D) four Quadrants

174. The motor preferred for quick speed reversal is _____.

(A) D.C. shunt motor

(B) Cumulative compound D.C. motor

(C) Squirrel cage Induction Motor

(D) Synchronous Motor

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175. The type of Earthing preferred around a sub-station is

(A) Plate Earthing
(B) Pipe Earthing
(C) Mat Earthing
(D) Both Plate and Pipe Earthing

176. In transmission lines, the suspension insulators are used only for

(A) A – type towers
(B) B – type towers
(C) C – type towers
(D) D – type towers

177. The maximum allowable earth resistance for distribution transformers is

(A) 0.5 Ω
(B) 1 Ω
(C) 2 Ω
(D) 5 Ω

178. Electronic Ballast are required to start and operate which type of lamps with high energy efficiency ?

(A) Discharge lamps
(B) Halogen lamps
(C) LED lamps
(D) Incandescent lamps

179. The coolant used in cooling systems (like Refrigerators, Air conditioners, etc) which destroys ozone layer is

(A) Chloro – Phospho carbon compound
(B) Chloro – Methane carbon compound
(C) Chloro – Ethane carbon compound
(D) Chloro – Fluro carbon compound

180. Which of the following meter is not associated with energy auditing ?

(A) Anemometer
(B) pH meter
(C) Contact thermometer
(D) Galvanometer

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