Kerala PSC DRAFTSMAN GR II _SECOND GRADE OVERSEER- ELECTRICAL - PWD_IRRIGATION 2016_English

111/2016

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. Which of the following is used in ceiling fan?
   (A) Universal motor
   (B) Synchronous motor
   (C) Series motor
   (D) Induction motor

2. Active power in 3 phase circuit is :
   (A) $\sqrt{3}\ V_L I_L \cos\phi$
   (B) $3\ V_L I_L \cos\phi$
   (C) $\sqrt{3}\ V_{ph} I_{ph} \cos\phi$
   (D) $\sqrt{3}\ V_{ph} I_{ph} \sin\phi$

3. Unit of luminous intensity :
   (A) Lumen
   (B) Lux
   (C) Lumen/m^2
   (D) Candela

4. The power factor of pure resistive circuit is :
   (A) Zero
   (B) Leading
   (C) Lagging
   (D) Unity

5. Illumination of a surface is inversely proportional to :
   (A) Luminous intensity
   (B) Distance from the source
   (C) Square of the distance from the source
   (D) Total Lumen

6. The pitch of wave winding is :
   (A) $Y_B - Y_F$
   (B) Y_B
   (C) $Y_B + Y_F$
   (D) Y_F

7. Generator efficiency is maximum when :
   (A) Variable loss is minimum
   (B) Constant loss = Variable loss
   (C) Constant loss is minimum
   (D) Constant loss is half of the variable loss

8. Form factor =

(A) rms value/avg value
(B) avg. value/rms value
(C) rms value/peak value
(D) peak value/rms value

9. Resultant flux of 3 phase induction motor is :

(A) $\frac{\sqrt{3}}{2}\phi m$
(B) $\frac{3}{2}\phi m$
(C) $3\,\phi m$
(D) $2\,\phi m$

10. Maximum number of electrons in valence shell of an atom is :

(A) 3
(B) 6
(C) 8
(D) 16

11. Resonant frequency of an ac series circuit is :

(A) $1/2\pi\sqrt{LC}$
(B) $1/4\pi\sqrt{LC}$
(C) $1/4\pi LC$
(D) $1/2\pi\ LC$

12. Insulation resistance can be measured using :

(A) Ohm-meter
(B) Multimeter
(C) Clampmeter
(D) Megger

13. Absolute permeability μ_0 =

(A) $4\pi \times 10^{-7}$ H/m
(B) $2\pi \times 10^{-7}$ H/m
(C) $4\pi \times 10^{-14}$ H/m
(D) $2\pi \times 10^{-14}$ H/m

14. Two wattmeter method of power measurement is suitable for :

(A) balanced load only
(B) unbalanced load
(C) both balanced and unbalanced load
(D) delta connected load

15. Ward-Leonard system is used for :

(A) Voltage regulation of transformer
(B) Speed control of dc motor
(C) Excitation of alternator
(D) Voltage regulation of alternator

16. Base of BJT is :

(A) Lightly doped
(B) Heavily doped
(C) Moderately doped
(D) Not doped

17. Dielectric strength of air is ———— kv/mm.

(A) 2.5
(B) 25
(C) 3.2
(D) 16

18. Relative permeability of material =

(A) Flux density produced in vacuum
(B) Flux density produced in material
(C) $\frac{\text{Flux density produced in vacuum}}{\text{Flux density produced in material}}$
(D) $\frac{\text{Flux density produced in material}}{\text{Flux density produced in vacuum}}$

19. The tube of fluorescent lamp is filled with :

(A) Mercury and Nitrogen
(B) Mercury and Argon
(C) Nitrogen and Argon
(D) Oxygen and Argon

20. Armature torque of a DC motor =

(A) $\frac{Eb\ Ia}{N}$ N – m
(B) $9.55\frac{Eb Ia}{N}$ N – m
(C) $9.55\frac{Eb\ Ia}{N}$ N
(D) $\frac{Eb\ Ia}{N}$ N

21. Transformers are rated in :

(A) KW
(B) MW
(C) KVA
(D) KVAR

22. Frequency of rotor current of 3 phase induction motor is :

(A) Slip × Frequency of stator current
(B) Frequency of rotor current
(C) Slip / Frequency of stator current
(D) Frequency of stator current / slip

23. ———— is known as universal gate.

(A) AND gate
(B) NAND gate
(C) OR gate
(D) NOT gate

24. 1 KWh =

(A) 36×10^2 J (B) 36×10^3 J

(C) 36×10^4 J (D) 36×10^5 J

25. $I_E : I_B : I_C$: :

(A) $1 : \alpha : (1+\alpha)$ (B) $1 : (1-\alpha) : \alpha$

(C) $1 : (1+\alpha) : \alpha$ (D) $1 : \alpha : (1-\alpha)$

26. Number of parallel path in wave winding is :

(A) 3 (B) 4

(C) 6 (D) 2

27. Zener diodes are commonly used as :

(A) Rectifier (B) Amplifier

(C) Voltage regulator (D) Filter

28. Which is secondary cell?

(A) Dry cell (B) Leclanche cell

(C) Voltaic cell (D) Lead acid cell

29. 1 nF =

(A) 10^{-6} F (B) 10^{-9} F

(C) 10^9 F (D) 10^6 F

30. The time taken by an alternating quantity to complete one cycle :

(A) Time period (B) Frequency

(C) Angular velocity (D) Time constant

31. Speed of dc motor is directly proportional to ———— and inversely proportional to :

(A) flux, back emf (B) current, back emf

(C) back emf, flux (D) back emf, voltage

32. If capacitors are connected in series, effective capacitance is :

(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) $C = \frac{1}{C_1} - \frac{1}{C_2} + \frac{1}{C_3} - \frac{1}{C_4} + ...$

33. Watts =

(A) VA cos ϕ

(B) VA sin ϕ

(C) VA tan ϕ

(D) VA cot ϕ

34. EMF equation of DC generator is :

(A) $\frac{\phi ZN}{60} \times \frac{P}{A}$ Volt

(B) $\frac{\phi ZN}{60} \times \frac{P}{4}$ Volt

(C) $\frac{\phi ZN}{120} \times \frac{P}{A}$ Volt

(D) $\frac{\phi ZN}{30} \times \frac{P}{A}$ Volt

35. Admittance is the ———— of conductance and susceptance.

(A) Arithmetic sum

(B) Arithmetic difference

(C) Vector sum

(D) Reciprocal

36. Which has negative temperature coefficient of resistance?

(A) Copper

(B) Aluminium

(C) Iron

(D) Carbon

37. Which is class Y insulating material?

(A) Mica

(B) Cotton

(C) Porcelain

(D) Asbestos

38. Charge of an electron is :

(A) 6.242×10^{-18} C

(B) 6.242×10^{18} C

(C) 1.602×10^{-19} C

(D) 1.602×10^{-16} C

39. Atomic number is, the number of :

(A) Neutrons

(B) Protons and neutrons

(C) Valence electrons

(D) Electrons

40. Solder is the mixture of :

(A) Tin and Lead
(B) Copper and Tin
(C) Copper and Lead
(D) Iron and Lead

41. 1N 4007 is semi conductor diode. Here 1N represents :

(A) Forward current
(B) Voltage drop
(C) One layer
(D) One PN junction

42. Colour code for 47 Ω resistor with ± 5% tolerance :

(A) Yellow – Violet – Black – Gold
(B) Yellow – Black – Violet – Gold
(C) Yellow – Violet – Brown – Gold
(D) Yellow – Violet – Brown – Silver

43. Two current carrying conductors placed side by side, experience a force of attraction :

(A) When current direction of both conductors are same
(B) When current direction of both conductors are opposite
(C) Independent of the direction of currents
(D) Only when one conductor is carrying current

44. Fire caused by LPG is ———— Fire.

(A) Class B
(B) Class A
(C) Class D
(D) Class C

45. Which motor is used in portable drilling machine?

(A) Induction motor
(B) DC series motor
(C) Universal motor
(D) Shaded pole motor

46. Negative plate of lead acid cell :

(A) Carbon
(B) Spongy lead
(C) Lead peroxide
(D) Cadmium

47. Ammeter shunt is ———— resistance.

(A) High
(B) Medium
(C) Low
(D) Very high

48. Melting point of copper :

(A) 2305 °C
(B) 663 °C
(C) 1083 °C
(D) 3075 °C

49. 18 SWG = ———— mm.

(A) 1.22
(B) 1.42
(C) 0.91
(D) 0.61

50. Electrolyte used in Edison cell :

(A) H_2SO_4
(B) HCl
(C) KOH
(D) MNO_2

51. CT is used for measuring :

(A) Voltage
(B) Frequency
(C) Power factor
(D) Alternating current

52. Unit of reluctance :

(A) Ampere Turns/Weber
(B) Weber Turns
(C) Henry
(D) Weber Turns/Ampere

53. Energy stored in inductor is :

(A) $W = \frac{1}{4} LI^2$
(B) $W = \frac{1}{2} LI^2$
(C) $W = \frac{1}{2} L^2 I$
(D) $W = \frac{1}{2} L^2 I^2$

54. What is the capacitance of a capacitor that requires 0.9 C to charge it to 30 V :

(A) 0.003 F
(B) 0.3 F
(C) 0.03 F
(D) 0.3×10^{-3} F

55. Specific gravity of a fully charged lead acid cell is approximately :

(A) 1.18
(B) 1.21
(C) 1.17
(D) 1.16

56. Inductive reactance of a coil having inductance 4 H :

(A) $796 \times 10^{-6}\ \Omega$ (B) $1256\ \Omega$

(C) $314\ \Omega$ (D) $628\ \Omega$

57. Which of the following equation is wrong?

(A) $P = VI$ (B) $P = I^2R$

(C) $P = \frac{V^2}{R}$ (D) $P = \frac{V}{R^2}$

58. Capacitive reactance =

(A) $X_C = 2\pi FC$ (B) $X_C = 2\pi\sqrt{FC}$

(C) $X_C = \frac{1}{4\pi FC}$ (D) $X_C = \frac{1}{2\pi FC}$

59. Admittance, Y =

(A) $\frac{1}{Z}$ (B) $\frac{1}{X_L}$

(C) $\frac{1}{X_C}$ (D) $\frac{1}{R}$

60. Susceptance, b =

(A) $\frac{R}{Z}$ (B) $\frac{X}{Z^2}$

(C) $\frac{R}{Z^2}$ (D) $\frac{X}{Z}$

61. Two Wattmeters W_1 and W_2 are connected in a 3 phase circuit to measure 1 KW load at 0.5 PF. Which of the following reading will be correct?

(A) W_1 reads 500 W, W_2 reads 500 W

(B) W_1 reads 1200 W, W_2 attemp to read negative value

(C) W_1 reads 1000 W, W_2 reads zero

(D) W_1 reads 750 W, W_2 reads 250 W

62. Polarised electrolytic – Aluminium capacitors are designed to have DC working voltage in the range of ———— *V*.

(A) 200-1600
(B) 5-500
(C) 0-200
(D) 3-125

63. Time period of 240 *V* ac supply in India is :

(A) 0.02 seconds
(B) 50 Hz
(C) 0.002 seconds
(D) 55 Hz

64. Internal diameter of pipe earthing electrode should not be less than ———— mm.

(A) 28
(B) 76
(C) 38
(D) 19

65. In PTC resistor, as the temperature increases, the resistance :

(A) increases linearly
(B) increases nonlinearly
(C) decreases linearly
(D) decreases nonlinearly

66. Which is active component?

(A) Capacitor
(B) Diode
(C) Inductor
(D) Resistor

67. BY 127 is a:

(A) PNP transistor
(B) NPN transistor
(C) TRIAC
(D) Semi conductor diode

68. Colour of silica gel changes to ———— as it absorbs moisture from air.

(A) White
(B) Blue
(C) Pink
(D) Yellow

69. Synchronous speed of a 3 phase, 4 pole, 50 Hz induction motor :

(A) 1500 rpm
(B) 1440 rpm
(C) 3000 rpm
(D) 2880 rpm

70. Electric charge is equal to :

(A) $I\,t$
(B) I / t
(C) $I^2\,t$
(D) I^2 / t

71. Limiting temperature of F class insulating material :

(A) 225 °C
(B) 105 °C
(C) 120 °C
(D) 155 °C

72. Non uniform distribution of variable currents is solid conductors resulting in an increase in the current density near the surface :

(A) Corona
(B) Skin effect
(C) Joule effect
(D) Eddy current

73. Pick the correct one :

(A) Power = VQ/t
(B) Power = VQt
(C) Power = VIt
(D) Power = VI/t

74. One metric HP = ———— Watts.

(A) 746
(B) 756
(C) 735.5
(D) 756.5

75. ———— helps to find out the direction of current in the conductor of a generator.

(A) Cork screw rule
(B) Right hand thump rule
(C) Fleming's left hand rule
(D) Fleming's right hand rule

76. When two resistors are connected in series total resistance is 8Ω and when connected in parallel, equivalent resistance is 2Ω. Value of each resistance are :

(A) 5Ω and 3Ω
(B) 6Ω and 2Ω
(C) 4Ω and 4Ω
(D) 7Ω and 1Ω

77. An MI volt meter reads ———— value.

(A) Peak
(B) Average
(C) rms
(D) Peak to peak

78. Inductance, L =

(A) $L = \frac{X_L}{2\pi F}$
(B) $L = 2\pi F X_L$
(C) $L = \frac{F X_L}{2\pi}$
(D) $L = \frac{F}{2\pi X_L}$

79. One cycle is ———— electrical degrees.

(A) 180
(B) 270
(C) 90
(D) 360

80. RMS value = ———— × Maximum value.

(A) 0.636
(B) 0.85
(C) 0.607
(D) 0.707

81. In which country Mount Everest located?
(A) India (B) China
(C) Bhutan (D) Nepal

82. Which country contributed HORTUS MALABARICUS to the world?
(A) England (B) Dutch
(C) Portugal (D) France

83. Which Travancore ruler came to be known as "Dharma Raja"?
(A) Chithira Thirunal Balarama Varma (B) Anizhamthirunal Marthanda Varma
(C) Sreemoolam Thirunal Rama Varma (D) Karthika Thirunal Rama Varma

84. The Metropolitan city of India nearest to the equator is :
(A) Chennai (B) Mumbai
(C) Delhi (D) Calcutta

85. The Indian State which never share its boundary with Pakistan?
(A) Rajasthan (B) Gujarat
(C) Himachal Pradesh (D) Punjab

86. On the banks of which river Delhi situated?
(A) Narmada (B) Yamuna
(C) Ganga (D) Kosi

87. Who given the slogan "Do or Die"?
(A) Mahatma Gandhi (B) Balagangadhara Tilak
(C) Jawaharlal Nehru (D) Raja Ram Mohan Roy

88. The book 'India War of Independence' is written by :
(A) S.N. Sen (B) R.C. Majumdar
(C) S.B. Chaudhary (D) V.D. Savarkar

89. In which year partition of Bengal occurred?
(A) 1907 (B) 1905
(C) 1885 (D) 1916

90. Who among the following participated in all three Round Table Conferences?
(A) Madan Mohan Malaviya (B) Sardar Vallabhai Patel
(C) Jawaharlal Nehru (D) B.R. Ambedkar

91. Who founded 'Samathwasamajam'?
(A) Ayya Vaikundar
(B) Thycaud Ayya
(C) Chattambi Swamikal
(D) Dr. Palpu

92. Who was the founder and publisher of 'Swadeshabhimani'?
(A) Kumaranasan
(B) T.K. Madhavan
(C) Vakkom Moulavi
(D) Ramakrishna Pilla

93. Who is known as "Lincoln of Kerala"?
(A) Pandit Karuppan
(B) Sree Narayana Guru
(C) V.T. Bhattathiripad
(D) K. Kelappan

94. Who called Kumaran Ashan as "Viplavathinte Sukra Nakshathram"?
(A) Mannathu Padmanabhan
(B) Dr. Palpu
(C) Joseph Mundasseri
(D) Mahatma Gandhiji

95. Who wrote the work "Anandasutram"?
(A) Brahmananda Yogi
(B) Chattambi Swamikal
(C) Sree Narayana Guru
(D) Ayyankali

96. The famous football player Johan Cruyff, who died on 24th March 2016 belonged to which country?
(A) Holand
(B) England
(C) Brazil
(D) Netherland

97. In which State Bharath Heavy Electricals Limited started 600 Jaipur Thermal power plant?
(A) Rajasthan
(B) Telengana
(C) Gujarath
(D) Tamilnadu

98. Whom among the following Lok Saba speaker wrote "Indian Parliamentary Diplomacy – Speaker's – Perspective"?
(A) Sumithra Mahajan
(B) J.B. Mavlankar
(C) P.A. Sangma
(D) Mira Kumar

99. In which state India's First River linking Project named 'Pattiseema Lift Irrigation Project' Situated?
(A) Karnataka
(B) Andhra Pradesh
(C) Gujarath
(D) Maharashtra

100. Which day is observed as 'International Day of Remembrance of the Victims of Slavery and the Transatlantic Slave Trade'?
(A) March 10
(B) March 15
(C) March 20
(D) March 25