

# SUB ENGINEER (KSEB) EXAM CONDUCTED ON 20-07-2013

QUESTION PAPER CODE : 95/2013 ALPHA CODE : A

95/2013

- Which of the following quantities are the same in all parts of the series circuits ?  
(A) Current ✓ (B) Voltage (C) Power (D) Resistance
- Flow of how many electrons per second will produce current of one ampere ?  
(A)  $6.25 \times 10^{18}$  ✓ (B)  $1.602 \times 10^{19}$  (C)  $6.25 \times 10^8$  (D)  $6.25 \times 10^{19}$
- In which of the following substances, the resistance decrease with the increase in temperature ?  
(A) Copper (B) Silver (C) Constantan (D) Carbon ✓
- A 200 W bulb and 100 W bulb both connected in series across a 220 V supply. The power consumed by them will be .  
(A) 22 W (B) 100 W (C) 66 W ✓ (D) 300 W
- The Fuse wire is made of :  
(A) Nichrome (B) Copper (C) Tungsten (D) Lead-tin alloy ✓
- If  $v$ ,  $w$ ,  $q$  stands for voltage, energy and charge, the voltage can be expressed as :  
(A)  $v = \frac{dq}{dw}$  (B)  $v = \frac{dw}{dq}$  ✓ (C)  $dv = \frac{dw}{dq}$  (D)  $dv = \frac{dq}{dw}$
- Two identical capacitors are connected in parallel and charged to potential of  $V$  volts. They are separated and then connected in series. The p.d across the combination is :  
(A) 1 V (B) 2 V (C) 3 V (D) 4 V ✓
- Retentivity is maximum for :  
(A) soft iron (B) copper (C) brass (D) steel ✓
- Tesla is the unit of :  
(A) magnetic flux (B) magnetic moment  
(C) magnetic flux density ✓ (D) none of these

10. Two coils of inductance  $L_1$  and  $L_2$  are placed close together such that magnetic flux in one coil is completely links the other. The mutual inductance between the coils is :

- (A)  $\frac{L_1 + L_2}{2}$  (B)  $L_1 L_2$  (C)  $\frac{L_1}{L_2}$  (D)  $\sqrt{L_1 L_2}$  ✓

11. The period of 1 KHz ac is :

- (A) 1 ms ✓ (B) 1 s (C) 0.05 ms (D) none of these

12. The peak-to-peak value of a 40 V sine wave is :

- (A) 80 V (B) 120 V (C) 113 V ✓ (D) 100 V

13. When the two quantities are in quadrature the phase angle between them will be :

- (A)  $45^\circ$  (B)  $120^\circ$  (C)  $90^\circ$  ✓ (D)  $60^\circ$

14. In R.L series circuit the power factor is :

- (A) leading (B) lagging (C) more than unity (D) less than unity ✓

15. The phasor form of capacitive reactance is :

- (A)  $X_C < 90^\circ$  (B)  $X_C < -90^\circ$  ✓ (C)  $X_C < 0^\circ$  (D)  $X_C < -180^\circ$

16. The algebraic sum of the instantaneous phase voltage in a 3 phase circuit is :

- (A) Phase voltage (B) Twice the phase voltage  
(C) Zero ✓ (D) None of these

17. The relationship between the line and phase voltages of a delta-connected circuit is given by :

- (A)  $V_L = V_P$  ✓ (B)  $V_L = 3/V_P$  (C)  $V_L = V_P/\sqrt{3}$  (D)  $V_L = 2/V_P$

18. The line current in a balanced delta system is 17.3A. What is the phase current ?

- (A) 5A (B) 10A ✓ (C) 34.6A (D) 17.3A

19. A wattmeter indicates :

- (A) apparent power (B) voltage  
(C) current (D) true power ✓

20. Candela is the unit of \_\_\_\_\_  
 (A) flux (B) luminous intensity ✓  
 (C) illumination (D) luminance
21. The M S C P of a lamp which gives out a total luminous flux of  $400\pi$  lumen is \_\_\_\_\_  
 candela.  
 (A) 200 ✓ (B) 100 (C) 50 (D) 400
22. Magnetic materials are heated with the help of :  
 (A) hysteresis loss ✓ (B) electric arc (C) electric current (D) radiation
23. The electrode of a direct arc furnace is made of \_\_\_\_\_  
 (A) tungsten (B) silver (C) graphite ✓ (D) copper ✓
24. Induction heating process is based on which of the following principle :  
 (A) Thermal iron release principle (B) Nuclear heating principle  
 (C) Resistance heating principle (D) Electromagnetic induction principle ✓
25. The basic electrical requirements in arc welding is that there should be .  
 (A) coated electrode (B) high-open circuit voltage ✓  
 (C) no arc blow (D) d.c powersupply ✓
26. The speed-time curve for city service has no \_\_\_\_\_ period.  
 (A) coasting (B) breaking (C) acceleration (D) free running ✓
27. A train weights 500 tone has a mass of \_\_\_\_\_  
 (A) 450 tone (B) 600 tone ✓ (C) 550 tone ✓ (D) 500 tone
28. Commutator in a d.c machine can converts :  
 (A) ac to dc (B) dc to ac  
 (C) both (A) and (B) ✓ (D) none of these
29. The polarity of d.c generator is reversed by reversing the direction of :  
 (A) field current as well as rotation (B) rotation ✓  
 (C) field current (D) none of these

30. A 4-pole generator with 16 coils has a two layer lap winding. The pole pitch is \_\_\_\_\_.  
 (A) 32 (B) 16 (C) 8 ✓ (D) 4
31. The relationship between back emf and applied voltage in case of a d.c motor is given as :  
 (A)  $E_b = V + I_a R_a$  ✓ (B)  $E_b = V - I_a R_a$  (C)  $E_b = V$  (D) none of these
32. The speed of a 4 pole d.c series motor at no load will be :  
 (A) zero (B) 3000 rpm (C) infinite ✓ (D) 1500 rpm
33. For a simplex lap winding the winding pitch is equal to :  
 (A) +2 (B) 2 (C) ±1 (D) ±2 ✓
34. In swinburnes method of testing of d.c machine, the shunt machines is run as a :  
 (A) motor at full load (B) generator at full load  
 (C) motor at no load ✓ (D) generator at no load
35. The voltage equation for along shunt compound motor is given by :  
 (A)  $V = E_b + I_a R_a$  (B)  $V = E_b + I_a (R_a + R_{se})$  ✓  
 (C)  $V = E_b - I_a R_a$  (D)  $V = E_b + I_a R_a + I_f R_a$  ✓
36. D.C series motors are best suited for \_\_\_\_\_.  
 (A) traction ✓ (B) Pumps (C) Fan (D) None of these
37. The only advantage of corona is that it :  
 (A) works as a safety valve for surges ✓  
 (B) makes line current non - sinusoidal  
 (C) betrays its presence by hissing sound  
 (D) produces a pleasing luminous glow
38. The phenomenon of rise in voltage at the receiving end of the open circuited or lighting loaded line called :  
 (A) See back effect (B) Ferranti effect ✓  
 (C) Raman effect (D) None of these

39. The insulation of modern EHV lines is designed based on \_\_\_\_\_  
 (A) Lightning voltage (B) Corona  
 (C) Radio interference (D) Switching voltage ✓
40. In circuit breaker the contact space is ionized by :  
 (A) Field emission from the contact surface  
 (B) Thermal emission from the contact surface  
 (C) Thermal ionization of gases  
 (D) Any of the above ✓
41. IS code of practice for earthing is \_\_\_\_\_  
 (A) IS 732 (B) IS 2041 (C) IS 8081 (D) IS 3043 ✓
42. AMF panel means \_\_\_\_\_  
 (A) Automatically Metered Feeding (B) Auto Manual Function  
 (C) Auto Mains Failure ✓ (D) None of these
43. Which of the following area is preferred for solar plants ?  
 (A) Coastal area (B) Hot arid zones ✓  
 (C) Mountain tops (D) High rain fall zones
44. The disadvantageous of renewable source of energy is :  
 (A) intermittency (B) availability in low energy densities  
 (C) lack of dependability (D) all of above ✓
45. The iron core in a transformer provides \_\_\_\_\_ path to the main flux.  
 (A) low reluctance ✓ (B) high reluctance  
 (C) low resistance (D) high conductivity
46. The negative voltage regulation of a transformer is possible only with \_\_\_\_\_ load.  
 (A) inductive (B) capacitive ✓ (C) resistive (D) any load

47. A 2 KVA transformer has an iron loss of 150 W and full load copper loss of 250 W. The maximum efficiency of the transformer would occur when the total loss is :  
 (A) 500W (B) 400W (C) 300W ✓ (D) 275W ✓
48. An alternator driven by steam turbine is called \_\_\_\_\_ generator  
 (A) Turbo ✓ (B) Hydro (C) Steam (D) None of these
49. In a single phase induction motor, the starting torque is \_\_\_\_\_  
 (A) zero ✓ (B) low (C) high (D) uniform
50. A universal motor is one which has :  
 (A) constant speed  
 (B) constant torque  
 (C) capability of operating both on AC and DC ✓  
 (D) maximum efficiency
51. A dynamo meter type wattmeter can measure :  
 (A) d.c power (B) a.c power  
 (C) d.c. as well as a.c ✓ (D) none of these
52. A 400/200 V transformer has its L.V resistance of 0.02 per unit. The resistance when referred to H.V side is :  
 (A) 0.02 p.u ✓ (B) 0.04 p.u ✓ (C) 0.01 p.u (D) 0.08 p.u
53. Speed control by the variation of field flux results in :  
 (A) constant power drive ✓ (B) variable power drive  
 (C) constant torque drive (D) variable torque drive
54. In a 3 phase cylindrical rotor synchronous machine, the effect of armature reaction is taken care of by :  
 (A) synchronous reactance ✓ (B) magnetic reactance  
 (C) self reactance (D) mutual reactance
55. If the rotor of 3 phase induction motor is fed from balanced 3 phase supply with the stator short circuited, then frequency of stator currents would be :  
 (A)  $sf$  ✓ (B)  $(2-s)f$  (C)  $(1-s)f$  (D)  $(s-1)f$

56. In a 3 phase induction motor, the mechanical power developed in terms of air gap power  $P_g$  is :
- (A)  $(s-1) P_g$  (B)  $P_g/1-s$  (C)  $1/s P_g$  (D)  $(1-s) P_g$  ✓
57. The hunting in synchronous machines can be guarded by :
- (A) using fly wheel (B) slip rings (C) by damper bars (D) all of above ✓
58. The power in a 3 phase circuit is measured with the help of 2 wattmeters. The reading of one wattmeter is positive and that of the other is negative. The magnitude of reading is different. It can be concluded that the power factor of the circuit is \_\_\_\_\_.
- (A) unity (B) zero (C) 0.5 lagging (D) less than 0.5 lagging ✓
59. An aquadag is used in C.R.O to collect: \_\_\_\_\_.
- (A) primary electrons (B) secondary emission electrons ✓ (C) both primary and secondary emission electrons (D) none of these
60. S.C test on a transformer is conducted to obtain :
- (A) core loss (B) copper loss ✓ (C) hysteresis loss (D) both core losses and ohmic losses
61. At initial condition  $t=0$ , the inductor acts as :
- (A) an open circuit ✓ (B) closed circuit ✓ (C) sometimes open, sometimes closed (D) none of these
62. To address 1MB memory, how many address lines are needed ?
- (A) 10 ✓ (B) 20 ✓ (C) 16 (D) 32
63.  $(A+B)(A+C) -$
- (A) A (B)  $A+BC$  ✓ (C)  $A+B$  (D)  $A+B-BC$

64. In the conducting state, the current flowing through the SCR is limited by .  
 (A) firing angle (B) input voltage ✓ (C) external load ✓ (D) none of the above
65. Fastest logic family is :  
 (A) DTL (B) CMOS (C) TTL (D) ECL ✓
66. The leakage current in the semiconductor diode is caused by :  
 (A) Chemical energy (B) Barrier voltage  
 (C) Barrier impurity ✓ (D) Heat energy ✓
67. \_\_\_\_\_ is defined as the time required to complete the operation of accessing either memory or I/O.  
 (A) 1 state (B) Machine cycle ✓  
 (C) Instruction cycle (D) Programming cycle
68. Which one is the non resonant antenna ?  
 (A) End fire array (B) Folded dipole  
 (C) Rhombic antenna ✓ (D) Broad side array
69. A carrier is simultaneously modulated by two sine waves with modulation indices 0.5 and 0.4. The total modulation index is :  
 (A) 0.5 ✓ (B) 1 (C) 0.35 ✓ (D) 0.7
70. Channels responsible for initiating mobile calls are  
 (A) Forward voice channel and Forward control channel  
 (B) Forward voice channel and Reverse voice channel  
 (C) Forward control channel and Reverse control channel ✓  
 (D) Forward control channel and Reverse voice channel ✓
71. Which one is not the advantage of negative feedback ?  
 (A) Increased stability (B) Reduced harmonic distortion  
 (C) Reduction in Noise (D) Reducing Bandwidth ✓
72. In fiber optic communication the light signals are sent from one end to the other by :  
 (A) Refraction (B) Total Internal Reflection ✓  
 (C) Diffraction (D) Absorption



73. LM 723 is used as \_\_\_\_\_ .  
 (A) Voltage Regulator (B) Phase Lock Loop  
 (C) Op Amp (D) Voltage Controlled Oscillator
74. Find  $\beta_{dc}$  of a transistor having  $\alpha_{dc} = 0.98$   
 (A) 49 ✓ (B) 95 (C) 0.49 (D) 0.02
75. In PIC, this type of timers has 2 control lines - count and reset. This type of timer may be started, stopped and restarted without resetting. This is :  
 (A) Non Retentive Timer (B) Standard Timer  
 (C) Retentive Timer ✓ (D) None of the above
76. A circuit that converts ac to ac having different frequency level is called :  
 (A) Chopper (B) Rectifier (C) Inverter (D) Cycloconverter ✓
77. A Superheterodyne receiver with an IF 450 KHz is tuned to a signal at 1200 kHz. The image frequency is :  
 (A) 750 kHz ✓ (B) 1500 kHz (C) 1650 kHz (D) 2100 kHz ✓
78. In 8051 microcontroller executing SETB PSW. 3 Which bit will be set ?  
 (A) CY (B) RS1 (C) RS0 ✓ (D) OV ✓
79. In 8051 microcontroller, assume RAM location 40H has a value 97H. Find its content after the following instructions :  
 MOV A, #12H  
 MOV R1, #40H  
 XCHD A, @R1  
 (A) A = 17H, @40H = 92H (B) A = 92H, @40H = 17H  
 (C) A = 72H, @40H = 91H (D) A = 21H, @40H = 79H
80. The connector used for connecting keyboard :  
 (A) DB9 (B) PS/2 ✓ (C) DB25 (D) COM
81. Delhi is situated on the bank of :  
 (A) Indus (B) Yamuna ✓ (C) Ganga (D) Brahmaputra

82. One among the following rivers flows through Punjab :
- (A) Narmada (B) Brahmaputra (C) Sutlej ✓ (D) Champa
83. The transfer of Indian Administration from the East India Company to the British Crown was the result of :
- (A) Quit India Movement (B) The extremist activities ✓  
 (C) The Revolt of 1857 ✓✓ (D) The First World War
84. Local Self Governments were introduced in India by :
- (A) Lord Rippon (B) Lord Lytton (C) Lord Curzon (D) Lord Dufferin
85. The first President of Indian National Congress was :
- (A) A.O. Hume (B) W.C. Banerjee ✓  
 (C) Surendranath Banerjee (D) Dadabhai Naoroji
86. Boycott and Swadeshi movements were launched in India first in connection with :
- (A) Revolt of 1857 (B) Agitation against partition of Bengal ✓  
 (C) Non Cooperation movement (D) Civil disobedience movement ✓
87. Non Cooperation movement was suspended consequent on :
- (A) Death of B.G. Tilak  
 (B) Jalian Wallah Bagh Tragedy  
 (C) Chauri Chaura incident ✓  
 (D) Difference of opinion between Hindus and Muslims ✓
88. Dyarchy was introduced in Indian Administration by :
- (A) The Act of 1909 ✓ (B) The Act of 1919 ✓  
 (C) The Act of 1935 (D) The Act of 1947
89. The Salt Satyagraha was launched in connection with :
- (A) Non Cooperation movement  
 (B) Khilafat movement  
 (C) Civil disobedience movement ✓  
 (D) Quit India movement

90. The Planning Commission Chairman of India is :
- (A) The President (B) The Vice President  
(C) The Cabinet Secretary (D) The Prime Minister ✓
91. "One Caste, One Religion and One God for men" was the message of \_\_\_\_\_
- (A) Mahatma Ayyankali (B) Chattampi Swamikal  
(C) Sree Narayana Guru ✓ (D) Mannathu Padmanabhan
92. Who is the founder of Prathiksha Reksha Daiva Sabha ?
- (A) Pampady John Joseph ✓ (B) Poikayil Yohannan ✓  
(C) Sadhu Kochukunju Upadesi (D) K.P. Yohannan
93. Where Chattampi Swamikal met Swami Vivekanda ?
- (A) Palakkad (B) Kollam ✓  
(C) Thiruvananthapuram (D) Ernakulam ✓
94. A Social and Religious reformer of Kerala who introduced Pallikudam or a school along with every church.
- (A) Louis Pazhayaparambil (B) Nidhirikkal Marikathanar  
(C) Kuriakose Elias Chavara ✓ (D) Mar Ivanios
95. Who is considered as the "Father of Muslim Renaissance in Kerala ?
- (A) Vakkom Maulavi ✓ (B) Ali Brothers  
(C) Vaikom Mohammed Basheer (D) Maulana Azad ✓
96. Who is the founder of Ananda Maha Sabha ?
- (A) Brahmananda Swami Sivayogi ✓ (B) Sahodaran Aiyappan  
(C) V.T. Bhattathiripad (D) C. Kesavan
97. Who called Ayyankali 'Palaya Raja' ?
- (A) Jawaharlal Nehru (B) R. Sankar  
(C) Dr. Palpu (D) Mahatma Gandhi ✓

98. In which year Thycaud Ayya Guru was born :  
(A) 1813 ✓ (B) 1814 ✓ (C) 1812 (D) 1815

99. A social reformer in Kerala who was honoured with the title "Bharatha Kesari" by the President of India.

(A) J.M. Varghese (B) T.V. Thomas  
(C) C. Kesavan ✓ (D) Mannathu Padmanabhan ✓

100. Who was called the "Lincoln of Kerala" ?

(A) Mahatma Ayyankali (B) Pandit Karuppan ✓  
(C) Thycaud Ayya (D) Kunara Guru Devan

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## ANSWERS

1. A 2. A 3. D 4. C 5. D 6. B 7. D 8. D 9. C 10. D  
11. A 12. C 13. C 14. D 15. B 16. C 17. A 18. B 19. D 20. B  
21. A 22. A 23. C 24. D 25. B / D 26. D 27. No answer 28. C 29. B 30. C  
31. A 32. C 33. D 34. C 35. B 36. A 37. A 38. B 39. D 40. D  
41. D 42. C 43. B 44. D 45. A 46. B 47. C 48. A 49. A 50. C  
51. C 52. A 53. A 54. A 55. A 56. D 57. C 58. D 59. B 60. B  
61. B 62. B 63. B 64. B/C 65. D 66. D 67. B 68. C 69. A 70. C  
71. D 72. B 73. A 74. A 75. C 76. D 77. D 78. C 79. --- 80. B  
81. B 82. C 83. C 84. A 85. B 86. B 87. C 88. B 89. C 90. D  
91. C 92. B 93. D 94. C 95. A 96. A 97. D 98. B 99. D 100. B

Expecting cutt-off mark : Between 45 and 50

If any clarification contact mob : 9447430001