RESEARCH METHODOLOGY FOR ENGINEERING

1. A pot is fully filled (upto brims) with water. A cube of ice floating in it is partially submerged and partially seen above the water level. As the ice cube fully melts, what will happen to the level of water ?

(A) The water spills over

(B) The water level decreases

(C) The water level remains the same

(D) The water level increases

2. Suppose a 2-dimensional graph is to be plotted, with '*s*' as independent variable, '*p*' as dependent variable and also showing the impact of a 3rd variable, '*q*', on the '*p*' variable, then :

(A) independent variable, '*s*', is plotted along the *x*-axis; dependent variable, '*p*', is plotted along *y*-axis holding '*q*' constant, then other plots of '*s*' *vs.* '*p*' are done, each for a different value of '*q*' held constant.

(B) '*p*' is plotted along *x*-axis; '*s*' is plotted along *y*-axis holding '*q*' constant, then other plots of '*s*' *vs.* '*p*' are done, each for a different value of '*q*' held constant.

(C) '*s*' is plotted along *x*-axis; '*q*' is plotted along *y*-axis holding '*p*' constant, then other plots of '*q*' *vs.* '*s*' are done, each for a different value of '*p*' held constant.

(D) '*p*' is plotted along the *x*-axis; '*q*' is plotted along the *y*-axis holding '*s*' constant, then other plots of '*q*' *vs.* '*p*' are done, each for a different value of '*s*' held constant.

3. In a laboratory experiment, while plotting a graph,

(A) generally, 10 readings are taken, and a graph is plotted by connecting all the points plotted, even if it results in a zig-zag line.

(B) generally, 25 readings are taken, and a graph is plotted by connecting all the points plotted, even if it results in a zig-zag line.

(C) generally, 6 to 8 readings are taken, and a graph is plotted by connecting all the points plotted, even if it results in a zig-zag line.

(D) generally, 6 to 8 readings are taken, and a graph is plotted by drawing a smooth curve passing close to all points but may not touch all/several points.

4. The distinction between parameter and variable is :

(A) Parameter is an intrinsic property of the system and exists even if no input is applied to a system, while variable shows up only in response to applied input(s).

(B) Parameter is a fixed property of the system and exists even if no input is applied to a system, while variable is a variable quantity that shows up only in response to applied input(s).

(C) Parameter is a variable property of the system, while variable is a fixed property of the system.

(D) Parameter is a fixed property of the system and exists only if input is applied to a system, while variable is a variable property that shows up even if no input(s) is (are) applied.

5. In a class, the ratio of number of boys to girls is 5 : 3. What percentage of the students in the class are girls ?

(A) 37.5 %

(B) 50 %

(C) 60 %

(D) 62.5 %

6. If 25% of 260 equals 6.5% of P, what is P ?

(A) 65 (B) 100

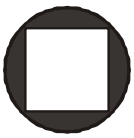
(C) 130 (D) 1000

7. How many different arrangements are there of the letters A, B, C and D ?

(A) 6 (B) 12

(C) 24 (D) 18

8. In the figure below, a square of perimeter 24 is inscribed in a circle. What is the area of shaded region ?



(A) $18\pi - 24$ (B) $18\pi - 36$

(C) $12\pi - 36$ (D) $9\pi - 36$

9. MULTAN : OUOTEN :: PURIFY: _____

(A) RUUIJY (B) OQTVQS

(C) QVSJEZ (D) None of these

10. If word PLAYER is coded as AELPRY, then word MANAGER is coded as :

(A) AEAGMNR (B) AAGEMNR

(C) AAEGMNR (D) AAEGNMR

11. In the sequence below, some letters are missing. From the choices, select the choice that gives the letters that can fill the blanks in the sequence :

a _ b _ _ _ a a _ b c _.

(A) abcabc (B) abccba

(C) abccbc (D) ababcc

12. The entropy of the universe is :

(A) decreasing

(B) increasing

(C) constant

(D) getting halved every year

13. How many 9's are there in the following sequence which are either immediately followed by 9 or immediately preceded by 9 :

793992896793579975

(A) Four (B) Two

(C) Three (D) One

14. What is the next letter in the series ?

B, D, G, K, P, __

(A) S (B) V

(C) W (D) X

15. True value of a quantity can be practically obtained by :

(A) mean of squares of a number of readings taken under no bias conditions such that positive deviations cancel out negative deviations.

(B) mean of a large number of readings taken under no bias conditions such that positive deviations cancel out negative deviations.

(C) whatever is measured by a laboratory or industrial meter.

(D) the actual value obtained after removing parallax error.

16. The sum, s, of probabilities of all outcomes of an event or a statistical experiment is :

(A) zero (B) $0 < s < 1$

(C) $0 \leq s \leq 1$ (D) 1

17. If '+' stands for '–', '–' stands for '×', '×' stands for '÷', and '÷' stands for '+', then evaluate :

$56 \times 7 \div 13 - 11 + 15 - 8 \div 2 - 7$

(A) 30 (B) 45

(C) 60 (D) 90

18. An engineer starts from home and travels 10 m towards West, then turns right and travels 40 m. He then travels 25 m East followed by 50 m towards the South to reach his factory. What is the approximate distance between his home and factory ?

(A) 18 m (B) 125 m

(C) 25 m (D) 105 m

19. A compass was damaged and its needle twisted / turned in such a manner that the pointer which was showing East, now showed North. A man went towards West as per the above mentioned compass. In which direction did he actually go ?

(A) South-West (B) South

(C) North-East (D) North

20. One evening, a person was facing a pole. The shadow of the pole fell to his right. Which direction he was facing ?

(A) East (B) West

(C) North (D) South

21. When a watch shows 3 : 45, the minute hand points towards East. When the watch shows 6 O'clock, in what direction will the hour hand point ?

(A) North (B) South

(C) East (D) West

22. A is the husband of B. E is the daughter of C. A is the father of C. How is B related to E ?

(A) Mother (B) Grandmother

(C) Aunt (D) Cousin

23. If we take the union and intersection respectively of a crisp/classical set with its compliment, what is the resultant in each case ?

(A) 1 and 0 respectively.

(B) 0 and 1 respectively.

(C) Universal set, X, and Null set, ø, respectively.

(D) Null set, ø, and Universal set, X, respectively.

24. If P, Q and R are matrices, and if PQ = PR, then it :

(A) does not imply that Q = R, except if P is non-singular.

(B) always implies that Q = R.

(C) never implies that Q = R.

(D) implies that Q and R are commutative under multiplication.

25. If P and Q are matrices, then :

(A) order of PQ is always the same as that of QP

(B) PQ = QP provided that matrices are conformable for multiplication in both cases

(C) in general, PQ may or may not be equal to QP

(D) both "A" and "B"

26. How many negative integers satisfy $|x+4|+|x-7|<13$?

(A) 2 (B) 3

(C) 4 (D) 5

27. If $x \in R$, the greatest value that $x^4 / (1 + x^8)$ attains is :

(A) 2/5 (B) 1/3

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

28. Researcher S's teaching experience (in years) is twice that of researcher M. But 2 years back, S's teaching experience was thrice that of M. How many years S has been teaching ?

(A) 8 years (B) 10 years

(C) 12 years (D) 16 years

29. If you add three quarters of the number of Labs I have, to three quarters of a Lab., you will get the number of Labs I have. How many labs do I have ?

(A) 3 (B) 4

(C) 6 (D) 9

30. A Ph.D. entrance test had 60 questions. A student scores 1 mark for a correct answer, –1/2 for a wrong answer and –1/4 for not attempting a question. A candidate attempted 48 questions and got a net score of 33 marks. How many questions did he attempt wrongly ?

(A) 8 (B) 12

(C) 14 (D) 10

31. Among the visitors to a Lab., the ratio of the number of Professors to B.Tech. students was the same as that of B.Tech. students to Research Scholars. Greater number of visitors were Research Scholars who were attracted by research facilities in the Lab. One day, 7 B.Tech. students visited the said Lab. How many Research Scholars visited the Lab. that day ?

(A) 44 (B) 49

(C) 52 (D) 57

32. A dealer bought an equipment at 30% discount on the list price. He then sold it at a price which is 160% of the list price, thereby making a profit of Rs. 81. What is the list price of the equipment ?

(A) 100 (B) 90

(C) 80 (D) 240

33. A researcher found that for the 1007 pages of his thesis, there were on an average 2 mistakes per page, while in the first 612 pages, there were only 434 mistakes, they seemed to increase for the latter pages. Find the average number of mistakes per page for the remaining pages :

(A) 6 (B) 4

(C) 2 (D) 3

34. After enjoying a feast at my college canteen with 12 friends, I paid Rs. 145 but my each friend paid an equal amount, say X. Later we found that the average sum paid by all of us was Rs. 5 more than what was originally paid by each of my friends. What amount did each friend pay ?

(A) Rs. 120 (B) Rs. 100

(C) Rs. 95 (D) Rs. 80

35. A tank of 60000 litres capacity has three inlet taps P, Q and R which can individually fill the tank in 20, 15 and 12 hours respectively. It has an outlet pipe S which can supply water to 100 houses. If all the pipes are opened simultaneously, how much water enters the tank every hour ?

(A) 8000 litres (B) 9600 litres

(C) 11400 litres (D) 12000 litres

36. In domestic installations, we get phase to ……. voltage which is about …… V while in industrial installations, we usually get phase to …… voltage which is about ……. V:

(A) neutral, 440, phase, 230 (B) neutral, 230, phase, 440

(C) neutral, 230, phase, 400 (D) phase, 230, neutral, 400

37. P, Q, R and S are motor wiremen. Working alone, wireman P can wire 1 motor in 12 hours. Q is 20% faster P. R is 50% faster than P. S is twice as fast as P. In how much time R alone can do wiring of 90 motors ?

(A) 720 hours (B) 600 hours

(C) 320 hours (D) 480 hours

38. P and Q run a closed circuit race. Besides leading just after start, P overtakes Q twice per round. What is P's speed compared to Q's ?

(A) 4 times (B) 3 times

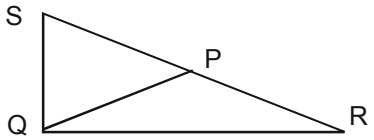
(C) 2 times (D) 5 times

39. An upstream journey of 18 km takes a motor boat 3 hours more than the same distance downstream. If the motor boat speed in still water is twice the speed of the stream, find the speed of the stream :

(A) 7.2 km/hr (B) 6 km/hr

(C) 4.5 km/hr (D) 4 km/hr

40. In the figure below, PQ = PR = PS and angle QRP = 30°. Find angle QSP.



(A) 30° (B) 40°

(C) 45° (D) 60°

41. In the table below, Types of Research are given on left hand side. A few Characteristics are given on the right hand side. Then in the further underneath Table, possible matches are given; select the best choice :

Research Types	**Characteristics**
(a) Fundamental research	(i) Finding out the extent of perceived impact of an intervention.
(b) Applied research	(ii) Developing an effective foundation through theory building.
(c) Action research	(iii) Improving an existing situation through the use of apt interventions.
(d) Evaluative research	(iv) Exploring the possibility of a theory for use in various situations.

	(a)	(b)	(c)	(d)
(A)	(i)	(ii)	(iii)	(iv)
(B)	(ii)	(iii)	(iv)	(i)
(C)	(iii)	(iv)	(i)	(ii)
(D)	(ii)	(iv)	(iii)	(i)

42. A researcher is asked, "What is the probability of finding an apple in the refrigerator ?" The researcher had no idea, neither knowledge nor prior information about an apple having been kept in the refrigerator. Yet he answers, without bias or inclination, as follows; what is his best answer ?

(A) 1.0 (B) 0.75

(C) 0.5 (D) 0

43. While writing a research paper, which one of the following statements is most *true* ?

(A) The 'Abstract' contains a gist of the entire paper but has no citation of references.

(B) The 'Abstract' contains a gist of the entire paper and has citation of references cited in the 'Abstract' part alone.

(C) The 'Future Directions' section must cite the possible offshoots which the authors perceive themselves as well as those perceived by previous researchers.

(D) The 'Materials and Methods' section, if detailed in the paper, must carry out a comprehensive analysis of results.

44. A chain has five links in it, each of which can individually carry a maximum weight of 2.3 Kg, 1.7 Kg, 5.3 Kg, 2.7 Kg and 0.7 Kg. Then which statement is most apt for this chain ?

(A) The strength of this chain is that of the strongest link in it

(B) The strength of this chain is that of the weakest link in it

(C) The strength of this chain is 12.7 Kg

(D) The strength of this chain is the average of the individual link strengths

45. What type of reasoning is used in the following statement ?

"Superiority of intellect depends on its power of concentration on one theme in the same way as a convex lens collects all the rays that strike upon it, into one point" :

(A) Psychological (B) Mathematical

(C) Deductive (D) Analogical

46. In the context of publications, which statement is *true* for SCI ?

(A) Scientific Citation Index is a citation index originally produced by the Institute for Scientific Information and created by Eugene Garfield.

(B) Super Citation Index is a citation index originally produced by the Institute for Scientist's Information and created by Bill Gates.

(C) Science Citation Index is a citation index originally produced by the Institute for Scientific Information and created by Eugene Garfield.

(D) Science Common Index is a citation index originally produced by the Institute for Scientific Information and created by Clarivate Analytics.

47. The term ICT usually refers to :

(A) An acronym that stands for Indian Classical Technologies

(B) Convergence of audio-visual and telephone networks with computer networks through a single cabling or link system

(C) Unified communications and integration of telecommunications, computers, enterprise software, middleware, audio-visual systems and storage

(D) Both "B" and "C"

48. With reference to a fixed frame of reference, your competitor moves forward with a velocity of 9.8 m/second while you too move forward a velocity of 5.2 m/sec with reference to the same frame. What is your velocity vis-à-vis that of your competitor ?

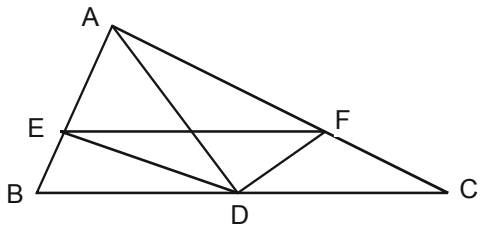
(A) 15 m/sec in forward direction

(B) 4.6 m/sec in forward direction

(C) 7.5 m/sec in forward direction

(D) 4.6 m/sec in backward direction

49. In the following figure (not drawn to scale), angle DEF = 35°. Find the other two angles of triangle DEF if DE and DF are the angle bisectors of angles ADB and ADC respectively :



(A) 30° and 120°

(B) 65° and 80°

(C) 55° and 90°

(D) 70° and 75°

50. A publisher publishes journals in two modes – Subscription mode, and Open access mode. Which choice is most correct in the context of an open access journal :

(A) It is a journal of which the subscription cost is borne by the subscriber.

(B) It is a journal of which the contents are freely accessible by anybody in the world.

(C) It is a journal of which the subscription cost per paper is borne by the respective author.

(D) "B" and "C"

51. If Thevenin equivalent is given, can Norton equivalent be deduced therefrom without resorting to ab-initio calculations? If yes, what is the Norton Equivalent if for any circuit, V_{th} = 96 V & R_{th} = 12 Ω ?

(A) Yes; I_N = 8.17 A & R_N = 12 Ω

(B) Yes; I_N = 8 A & R_N = 10 Ω.

(C) Yes; I_N = 8 A & R_N = 12 Ω

(D) No, Norton equivalent cannot be directly found

52. For a series RLC resonant circuit, which statement is **true** ?

(A) it has the maximum impedance

(B) it does current magnification

(C) the voltages across individual elements (L or C) can be more than the total supply voltage

(D) the susceptance of the circuit is minimum

53. A 230 V a.c. source has internal impedance of 3 + j 4 Ω. What load can draw and dissipate the maximum power from this source ?

(A) 3 – j 4 Ω resistive-capacitive load

(B) j4 Ω inductor

(C) 230/5 Ω resistor

(D) $\sqrt{4^2+3^2}$ Ω resistor

54. Which statement is *true* for Superposition Theorem when applied to A.C. circuits ?

(A) it applies to linear as well as non-linear circuits

(B) it applies to non-causal circuits

(C) it applies to linear circuits but algebraic sums of partial responses has to be considered

(D) it applies to linear circuits only and phasor sums of partial responses has to be considered

55. Which statement is *true* for Time Constant (T secs.) of an R-L series circuit subjected to a step input and showing current as the output variable ?

(A) the step response (current) reaches 99% after elapse of one time constant

(B) the step response reaches the final value in T secs., if the initial rate of response is maintained

(C) the step response reaches 60% of final value in T secs at the actual rate of rise

(D) the time constant for R-L circuit is R/L seconds

56. If Laplace transform of a signal $y(t)$ is $Y(s) = A / \{s(s-1)\}$, then its final value is :

(A) 1 (B) ∞

(C) 0 (D) $-A$

57. The shift operation takes the input sequence $x(n)$ and gives $x(n+N)$. If $N>0$, it is :

(A) an advancing operation (B) a delaying operation

(C) a scaling operation (D) a sampling operation

58. If full load on a three-phase transformer is suddenly thrown off, what happens to the level of flux in the core ?

(A) It is also increased (B) It is decreased

(C) It remains the same (D) The core saturates

59. The purpose of commutator in a D.C. motor is :

(A) To convert A.C. into D.C., else without commutator, it would give A.C.

(B) To convert D.C. into A.C., else without commutator, it would give D.C.

(C) To give a high starting torque

(D) To convert alternating torque into unidirectional torque, as without commutator in place, the armature would develop alternating torque

60. Transposed long transmission line has :

(A) inductances for phases Y and B as same but different from that of R phase

(B) inductances of all phases as same and similarly, capacitances of all phases as same

(C) capacitances for phases Y and B are same but different from that of R phase

(D) inductances and capacitances of all phases are different

61. Which method is generally employed for three-phase feeder line protection ?

(A) differential protection method

(B) time grade protection

(C) interlock protection method

(D) parallel feeder

62. Which is *true* out of the following ?

(A) corona takes place at a voltage lower than break down voltage

(B) corona takes place at a voltage higher than break down voltage

(C) corona is a phenomenon related to excessive current flow through the conductor

(D) corona increases the efficiency of the transmission line

63. Zero sequence component in three-phase voltage of delta is :

(A) line voltage/$\sqrt{3}$ (B) line voltage/3

(C) ∞ (D) 0

64. The HVDC transmission involves the use of :

(A) D.C. generation and A.C. transmission

(B) A.C. generation and A.C. transmission

(C) convertor and inverter apparatus

(D) power factor correction apparatus

65. Transfer Function is defined as :

(A) ratio of output to input, given that the initial conditions are zero

(B) ratio of change of output to change in input, given that the initial conditions are zero

(C) ratio of Laplace transform of output to Laplace transform of input, given that the system is relaxed LTI system

(D) ratio of Laplace transform of output to Laplace transform of input, given that the system is LTI system

66. The essential difference in the time response (to a step input) of a first order system and that of an overdamped second order system is :

(A) The initial slope of first order system time response is maximum while that of second order overdamped system time response is zero.

(B) The initial slope of first order system time response is zero while that of second order overdamped system time response is maximum.

(C) The final slope of first order system time response is maximum while that of second order overdamped system time response is zero.

(D) The final slope of first order system time response is zero while that of second order overdamped system time response is maximum.

67. The first column elements in a Routh-Hurwitz array are : 1, 1, ε, $2 - (4/\varepsilon)$, and 4. How many roots have positive real parts ? (Here, ε is a small positive number replacing 0 in first column to overcome R-H test break down) :

(A) 2 (B) 1

(C) nil (D) 3

68. Each branch of the root locus …….. from an open loop pole (with K=0) and …….. either on open loop zero or on infinity (with K= infinity), but Root Locus is a plot of.....

(A) starts, terminates, open loop poles.

(B) starts, terminates, open loop zeroes.

(C) starts, terminates, closed loop poles.

(D) terminates, starts, closed loop zeroes.

69. For drawing Nyquist plot, use is made of :

(A) characteristic equation.

(B) loop transfer function or open loop transfer function.

(C) closed loop transfer function.

(D) pole-zero plot

70. State Transition Matrix for a continuous time system is defined as (where L means Laplace Transform) :

(A) $L^{-1}(sI - A)^{-1}$ (B) $L(sI - A)^{-1}$

(C) $(sI - A)^{-1}$ (D) $L^{-1}(sI - A)$

71. A full state-transition equation is defined as :

(A) $d^2x(t)/dt^2 = Ax(t) + Bu(t)$ (B) $dx(t)/dt = Ax(t) + Bu(t)$

(C) $dx(t)/dt = Ax(t)$ (D) $dx(t)/dt = Bu(t)$

72. Relative limiting errors add in :

(A) case of sum of two quantities

(B) case of difference of two quantities

(C) case of division of two quantities

(D) both the cases "A" and "B"

73. The principle of operation of an induction type instrument is :

(A) One flux interacts with eddy currents produced by other flux and produces torque. Similarly, other flux, upon interaction with eddy currents produced by first flux produces another torque. Difference of two instantaneous torques is net torque.

(B) One flux interacts with eddy currents produced by same flux and produces torque. Similarly, other flux, upon interaction with eddy currents produced by this flux produces another torque. Difference of two instantaneous torques is net torque.

(C) One flux interacts with eddy currents produced by same flux and produces torque. Similarly, other flux, upon interaction with eddy currents produced by this flux produces another torque. Sum of two instantaneous torques is net torque.

(D) Same as that of an electrodynamic instrument.

74. A Potentiometer is inadequate to measure …… in a single measurement.

(A) current (B) voltage

(C) power (D) current and power

75. Spot the instrument in which deflection depends upon average value :

(A) hot wire instrument

(B) moving iron instrument

(C) electrostatic instrument

(D) rectifier instrument

76. By changing the time base, what is changed in a C.R.O. ?

(A) amplitude of saw tooth voltage

(B) gain of the waveform

(C) frequency of saw tooth waveform

(D) change the frequency of vertical amplifier

77. To avoid creep in energy meter :

(A) friction-compensation is provided at light loads

(B) two holes are provided in the rotating disc of energy meter

(C) eddy current path is made highly resistive

(D) the frictional force is increased

78. A Schering bridge is generally used for measurement of :

(A) inductance of a coil

(B) dielectric loss of a capacitor

(C) frequency of an A.C. supply source

(D) very low to medium resistance

79. Why the secondary of a C.T. is not open-circuited while its primary is energized ?

(A) it will generate dangerously high current

(B) it will generate dangerously high voltage, as its primary is connected in series with the load, thus its primary current is not a reflection of its secondary current

(C) it will generate dangerously high voltage, as its primary is connected in parallel with the load, so its primary current is not a reflection of its secondary current

(D) it will generate dangerously high voltage, as its primary current is a reflection of its secondary current

80. In zener diode working, the predominant contributor is …… ; rather than …….

(A) direct rupture of bonds; collisions

(B) collisions; direct rupture of bonds

(C) presence of impurities; collisions

(D) low resistance in reverse biased region; impurities

81. The CC configuration of BJT is characterized by :

(A) Very low input impedance and low output impedance

(B) very low input impedance and high output impedance

(C) very high input impedance and low output impedance

(D) very high input impedance and high output impedance

82. Name the four main stages, in proper sequence, of an OPAMP :

(A) differential amplifier, intermediate stage, level shifter, push-pull complementary amplifier

(B) differential amplifier, intermediate stage, push-pull complementary amplifier, level shifter

(C) level shifter, differential amplifier, intermediate stage, push-pull complementary amplifier

(D) differential amplifier, oscillator stage, level shifter, push-pull complementary amplifier

83. Which of the following is the most correct for an OPAMP ?

(A) High voltage gain, high input impedance, low output impedance, low CMRR.

(B) High voltage gain, high input impedance, low output impedance, high CMRR.

(C) High voltage gain, low input impedance, high output impedance, low CMRR.

(D) High voltage gain, low input impedance, low output impedance, high CMRR.

84. Stack pointer contents are ……..……. after a PUSH instruction execution for 8085 microprocessor.

(A) incremented by 1 (B) decremented by 1

(C) decremented by 2 (D) incremented by 2

85. What is typical about the BSR control word for 8255 PPI chip ?

(A) It also affects the I/O operations of ports A and B

(B) It does not affect the I/O operations of ports A and B

(C) It affects more than one bits of port C

(D) It sets or resets one bit in port C and control word is also written onto port C

86. Can a MOSFET be connected into or disconnected from the circuit when power is on and why ?

(A) No, because lightening voltages may spoil the MOSFET

(B) No, because transient voltages caused by inductive kickback and other effects may exceed $V_{GS(max)}$ and thus wipe out the MOSFET

(C) No, because steady state voltages may spoil the MOSFET

(D) Yes, it is advisable to connect or disconnect MOSFET in the circuit when power is on

87. In the case of thyristor, firing angle α and conduction angle β are related by the expression :

(A) $\alpha + \beta = 0^o$ (B) $\alpha - \beta = 0^o$

(C) $\alpha + \beta = 90^o$ (D) $\alpha + \beta = 180^o$

88. A chopper can :

(A) raise or lower the D.C. voltage

(B) raise the D.C. voltage

(C) lower the D.C. voltage

(D) raise or lower the A.C. voltage

89. When 'CALL 16-bit address' instruction is read/accessed, then :

(A) the address of next instruction (contents of PC) is pushed on to the stack

(B) the address of CALL instruction is pushed on to the stack

(C) the address of next instruction is popped from the stack

(D) all flags are affected

90. Program Status Word (PSW) for 8085 refers to :

(A) contents of flag register and accumulator; flag register being the high-order.

(B) contents of accumulator and flag register; ACC being the high-order.

(C) a word for programming the status of the flags.

(D) a word for programming the status of different registers in 8085.

91. Shifting binary data to the left by one bit position using shift registers amounts to :

(A) division by 2 (B) subtraction of 2

(C) addition of 2 (D) multiplication by 2

92. D-flip-flop can be used as a :

(A) Differentiator (B) divider circuit

(C) delay switch (D) integrator

93. Any logical expression can be realized by using only :

(A) AND gates (B) AND & NOT gates

(C) OR & NOT gates (D) AND, OR & NOT gates

94. Final Value Theorem gives :

(A) final value of frequency-domain solution F(s) without having to determine F(s) formally

(B) final value of time-domain solution $f(t)$ without having to determine $f(t)$ formally

(C) initial value of time-domain solution $f(t)$ without having to determine $f(t)$ formally

(D) none of the above

95. A dot is placed at the terminals which are :

(A) instantaneously of the opposite polarity on the basis of self inductance.

(B) instantaneously of the opposite polarity on the basis of mutual inductance alone.

(C) instantaneously of the same polarity on the basis of self inductance alone.

(D) instantaneously of the same polarity on the basis of mutual inductance alone.

96. The poles and zeroes of a network function :

(A) are factors of the network function numerator and denominator respectively.

(B) both participate in determining its stability.

(C) are critical complex frequencies of the network.

(D) are the scale factors of the network.

97. If pole flux of a dc shunt generator and the speed are both doubled, the generated emf will be :

(A) reduced to half (B) unchanged

(C) doubled (D) four times

98. For induction motor, by making the number of rotor slots prime to the number of stator slots, the chances of which of the following are reduced :

(A) crawling (B) magnetic locking

(C) jerky starting (D) creeping

99. Negative feedback in an amplifier results in :

(A) decreased bandwidth

(B) increased voltage gain

(C) increased distortion and noise factor

(D) decreased voltage gain

100. A single-phase full-wave controlled rectifier can be made using :

(A) four diodes in a bridge

(B) two diodes and two SCRs in a bridge

(C) two SCRs and a centre-tapped transformer

(D) both "(B)" and "(C)"