Part-I (Q1-Q60)
General Aptitude

Q1. A farmer sold two of his cows for 210/-. He sold one cow at a profit of 10% and other for a loss of 10%. Totally he gained 5% on selling both the cows. What is the original cost of each cow?

(a) 130 and 70
(b) 120 and 80
(c) 150 and 50
(d) 115 and 85

Q2. If a man were to sell his cooler for Rs. 720/- , he would lose 25%, In what price he should sell it to gain 25%?

(a) Rs. 960/-
(b) Rs. 1080/-
(c) Rs 1000/-
(d) Rs. 1200/-

Q3. Find the loss percentage if the selling price of 18 oranges is equal to the cost price of 16 oranges

(a) 10%
(b) 50%
(c) $11\ ^{1}/_{9}$ %
(d) $22\ ^{2}/_{9}$ %

Q4. A defective chair costing Rs. 800/- is being sold at a loss of 8%. If the price is further reduced by 5%, then the selling price is

(a) Rs. 701.80
(b) Rs.696
(c) Rs.699.20
(d) Rs.704

Q5. Find the next number in the series

0,1,8,15,__

(a) 22
(b) 24
(c) 25
(d) 23

Q6. A train travels a certain distance taking 7 hrs in forward journey, during the return journey increased speed 12km/hr takes the times 5 hrs. What is the distance traveled

(a) 210kms
(b) 90kms
(c) 60kms
(d) 30kms

Q7. Find the next number in the series

1,-3,3,-1,5,1,7,__

(a) 3
(b) 1
(c) 4
(d) -2

Q8. By selling 90 ball pens for Rs. 160/- a person loses 20% . How many ball pens should be sold for Rs. 96/- to have a profit of 20%?

(a) 36
(b) 45
(c) 30
(d) 35

Q9. What price should be marked on the market price (MRP) of an item which costs Rs. 1200/- so as to gain 12% even after allowing a discount of 16%

(a) Rs. 800/-
(b) Rs. 1400/-
(c) Rs. 1600/-
(d) Rs. 1440/-

Q10. Square root of (99) * square root of (396) =
(a) 66
(b) 198
(c) 132
(d) 99

Q11. The probability of getting either a black card or a king from a shuffled card pack (of 52 cards) at random is

(a) 15/26
(b) 1/2
(c) 7/13
(d) 3/13

Q12. If Chitra ranks 18th in a class of 38 students, what will be her rank from the last?

(a) 22
(b) 21
(c) 20
(d) 23

Inst. Q13-16 . These questions are based on the following information

'P@Q' means 'P is mother of Q'
'P$Q' means ' P is husband of Q'
'P#Q' means 'P is sister of Q'
'P*Q' means 'P is son of Q'

Q13. Which of the following indicates the relations ship 'R is daughter of T'

(a) R#F*B@T
(b) R#F*B$T
(c) T@B#R*F
(d) T@B#F*R

Q14. 'M*H@D$K' represents what relation of H with K?
(a) Mother
(b) Father
(c) Mother in Law
(d) Grand father

Q15. If 'F#J*T$R@L'
(a) L is brother of F
(b) L is brother of J
(c) F is brother of J
(d) F is sister of L

Q16. 'A@B#Z*M' represents what can be the relationship between A and M?
(a) Grand mother
(b) Husband
(c) Gradfather
(d) Father

Q17. In a certain code 'DEAF' is written as 3587 and 'FILE' is written as 7465. How IDEAL can be written?
(a) 48536
(b) 43568
(c) 63548
(d) 43586

Q18.In a certain code 'CENTRAL' is written as 'EEPTTAN' then how 'SEMINAR' can be written?
(a) SGMKNCR
(b) UEOKPAT
(c) SGPKNCR
(d) UEOIPAT

Q19. If ' EARTHQUATE' is coded as 'MODGPENJOSM' then 'EQUATE' will be coded as
(a) MNJOPM
(b) MENOPM
(c) NJOGPM
(d) MENOMP

Q20. If 'THOUSAND' is coded as 'SGNTRZMC' then 'FUMING' will be coded as
(a) GVNJOH
(b) ETHLMF
(c) ETLHMF
(d) EVLJMH

Q21. Y catches 5 times more fishes than X. If total number of fishes caught by X and Y is 48, then number of fishes caught by X?
(a) 10
(b) 9
(c) 8
(d) 7

Q22 Two pipes A& B can fill a tank in 36 hours and 45 hours respectively. If both the pipes are opened simultaneously, how much time will be taken to fill the tank?

(a) 10
(b) 20
(c) 30
(d) 40

Q23. In a simultaneous throw of two dice, what is the probability of getting a total of 10 or 11?

(a) 5/36
(b) 8/36
(c) 7/36
(d) 5/36

Q24. In certain code language 'dugo hui mul zo' stands for 'work is very hard', 'hui dugo ba ki' for 'Bingo is very smart' ; 'nano mul dugo' for 'cake is hard' and 'mul ki gu' for 'smart and hard'.
Which of the following word stands for Bingo?

(a) Dugo
(b) Ki
(c) Ba
(d) Mul

Q25. In certain language 'FOR' stands for 'old is Gold' , 'ROT' stands for 'Gold is pure' and 'ROM' stands for 'Gold is costly' then how will 'Pure old gold is costly' to be written?

(a) FOTRM
(b) TFROM
(c) FTROM
(d) TOFRM

Q26. In a certain code '4 1 5' means 'milk is hot' ; '1 8' means 'hot soup'; and '8 9 5' means 'soup is tasty'. Then what is the code for tasty?

(a) 9
(b) 8
(c) 5
(d) 4

Q27.In a certain code '@ + ?' means, 'I met Sudha', '+ *' means 'Sudha and Harish' and '* ? A' means ' Harish met Ram' then which of the following is the meaninbg of the code '@'?

(a) Ram
(b) met
(c) Sudha
(d) I

Q28. If 'rain' is called 'water', 'water' is called 'air', 'air' is called 'cloud','cloud' is called 'sky', 'sky' is called 'sea', 'sea' is called 'road', where do aeroplanes fly?

(a) Water
(b) Road
(c) Sea
(d) Cloud

Q29. If 'orange' is called 'Lemon', 'Lemon' is called 'Flower' , 'Flower is called 'Fish', 'Fish' is called 'Tail', 'Tail' is called 'Pen', what is a 'Rose'?

(a) Pen
(b) Fish
(c) Flower
(d) Lemon

Q30. If 'Sun' is called 'Hen', 'Hen' is called 'Pond', 'Pond is called 'Joy', 'Joy' is called 'mute','mute' is called noise',then what raises in the East?

(a) Hen
(b) Joy
(c) Mute
(d) Pond

Q31. Wood is to polish as iron is to _____

(a) Industry
(b) Rust
(c) Galvanisation
(d) strength

Q32.A lady runs 12 Km from North, then 6 km towards South and then 8 km East. How far is she from her starting point and in which direction?

(a) 5Km North-East
(b) 5Km East
(c) 10 Km North-East
(d) 10Km West

Q33. Ria travels in North Direction and then turn left. After travelling for some time she turn left, again left and right. Later in the journey She turns left and left once again. What is the direction she is facing now?

(a) North
(b) West
(c) East
(d) South

Q34.Rana journeys 10 KM to East then 10 Km to southwest. He turn again and journeys 10km towards North-west. Which direction is he from the starting point?

(a) South
(b) North
(c) East
(d) West

Q35-36 Fill in the banks with the most appropriate option.

Q35. 13.243 + 5.409 + _____ = 24.71

(a) 5.818
(b) 4.718
(c) 6.048
(d) 6.058

Q36. (841.952 * 1.999) / 7.014 = _____

(a) 240
(b) 304
(c) 214
(d) 250

Q37. Naveen is taller than Pushpa but not as tall as Manish. Rama is taller than Mamta but not tall as Puspa. Who among them is the tallest?

(a) Manish
(b) Naveen
(c) Mamta
(d) Pushpa

Q38. Pointing to a photograph of a girl , Rajan said "She has no sister or Daughters but her mother is the only daughter of my mother". How is the girl in the photograph related with Rajan's mother?

(a) Sister in Law
(b) Grand Daughter
(c) Daughter in law
(c) Grand mother

Q39.Pointing to a gentleman, Deepak said, "His only brother is the father of my daughter's father'. How is the gentleman related to Deepak?

(a) Father
(b) Grand father
(c) Uncle
(d) Brother in law

Q40. In a row of boys Sam is 8th from the right and Chand is 12th from the left. When Sam and Chand interchange their position Chand becomes 21st from the left. Which of the following position will be Sam's position from the right?

(a) 8th
(b) 21st
(c) 17th
(d) 7th

Q41. A sum of Rs. 817 is divided among A,B and C such that 'A' receives 25% more than 'B' and 'B' receives 25 % less than 'C'. What is the 'A's share in the amount?

(a) Rs. 285/-
(b) Rs. 247/-
(c) Rs. 228/ -
(d) Rs. 304/-

Instructions: Q42-Q43 study the following information and answer the questions below

I. Seven books are placed one above the other in a particular way
II History book is placed exactly above civics book
III. Geography book is fourth from the bottom and English book is fifth from the top
IV. There are two books between Civics and Economics books

Q42. How many books are there between Civics and Science books? To answer this question, which other extra information is required, if any select from the following.

(a)There are 2 books between mathematics And geometry
(b) There are 2 books between geography and science books
(c) The civics book is before 2 books above Economics book
(d) There is one book between English and Science

Q43. Out of the following, with three books are kept above English book?. To answer this question, which of the other information, if any is required?

(a) There are 2 books between English And History

(b) The Economics books is between English and Science books

(c) The Science book is placed at the top

(d) The Geography book is above English Book

Instructions : Q44-46 study the following information and answer the questions below.

I. Satish, Khan, Rudra, Mohan and Tapan are five friends who stay in one building

II. Each one own a separate garage i, ii, iii, iv and v and a different coloured car viz. Red, Yellow, White, Black and Blue

III. Khan does not own either garage 'iv' and 'v'. His car is of red colour

IV. Mohan owns yellow coloured car and garage 'iii'

V Tapan who own garage 'i' does not own black or white coloured car

Q44. who owns a blue coloured car?

(a) Sathish

(b) Rudra

(c) Tapan

(d) data inadequate

Q45. Who owns garage 'iv'?

(a) either sathish or Rudra

(b) Rudra

(c) Sathish

(d) owner of Blue car

Q46. which of the following combination of colour of car and garage is correct?

(a) white-iv

(b) Red-'v'

(c) Black-'iv'

(d) Blue-'i'

Instructions Q47-Q49. More than statements are given. Based on this resolve a most appropriate conclusion given as options.

Q47. The Rajya Sabha opposition made a hue and cry over the discretionary decision of the government relating to quota allotment of petrol pumps and LPG agencies. They also pointed out the irregularities in this case and compelled the petroleum state Minister to issue a complete list of allotments.

(a). The opposition intends raising this issue in the Lok Sabha also

(b) Besides the discretionary quota allotment, the LPG agencies had petrol pumps have been allotted on the basis of day-to-day requirements

(c) Such irregularities were never committed in the past

(d) Whenever such an allotment takes place , this type of irregularities are often committed.

Q48. Every man should have his identity card with him. That card should mention his blood group, complete address and telephone number for contact, in case some serious accidents take place.
(a) In case of emergency, he may forget his address and may need the card to contact his house
(b) The police/helping hand needs this information specially when the accident is fatal
(c) None is supposed to forget his phone number under any circumstances
(d) Blood can not be transfused unless its group is mentioned in the card

Q49. Because of the high level differences in the ruling party, the nine month old government is on the verge of collapse. The dissidents will be able to prove their majority

(a) The ruling party also has the support of some of the dissidents.
(b) If the party is divide, then there will be a cabinet reshuffle
(c) If the party is divided, then the present C.M's political career will come to an end
(d) The mid term elections are expected soon

Q50. During 1930s, there were very few poultry farms and now the number has increased substantially, Each of the following statements, if true , could explain this , Except

(a) More and more people are turning to vegetarianism
(b) There are many vocational courses on poultry
(c) The demand for poultry products has been increase
(d) Banks provide loans for setting up poultry farms

Instructions Q51-Q53. In the questions an assumption is given followed by three statement. The assumption is something taken for granted. You have to find out whether statements are based on the given assumption or not accordingly choose your answer from the choices given below the statements

Q51. Assumption:

Madav's birthday was known to his friends

Statements

I. Madav arranges birthday party only for his family members
II. On his B'day, Madav received a bouquet and greeting card from his friend through courier
III. Madav received blessings from his mother and best wishes from family members

(a) Only III
(b) Only II and I
(c) Only I and III
(d) only II

Q52. **Assumption:**
After weekend holidays, a person should be fresh and active
Statements

I. Look, today is Monday. Ask Ravindra to take up the new project and execute it by Wednesday evening
II. Since it is Monday, office atmosphere is relaxed. After lunch some work will begin.
III. It's Friday afternoon. Can you give it to me on Monday morning. I will finish it by lunch

(a). Only I and II
(b) Only II
(c) Only I and III
(d) only III

Q53 **Assumption:**
Dogs are trainable
Statements

I. Dogs prefer human contact
II. Most household dogs are emotionally stable
III. Dog show is an important item in any circus

(a) Only III
(b) only II
(c) Only I
(d) Both I and III

Q.54-58: Study the following table carefully and answer the questions given below:
The Annual income of 6 persons over the year (in lacs)

Years	Persons					
	Hary	Indira	Jayram	Kiran	Lalita	Manish
2002	1.44	1.45	2.00	1.68	1.80	2.50
2003	1.50	1.56	2.12	1.74	1.92	2.61
2004	1.56	1.64	2.25	1.92	2.00	2.68
2005	1.62	1.70	2.30	2.00	2.11	2.73
2006	1.68	1.84	2.33	2.05	2.18	2.80
2007	1.73	1.95	2.40	2.17	2.20	2.85

Q54. In the year 2002, who amongst the given people got the highest increase (in percentage) in their annual salary from the previous year?

(a) Manish
(b) Hary
(c) Lalita
(d) Indira

Q55.What is the approximate percentage increase in the annual income of Kiran in the year 2005 from that of the previous year?

(a) 5.5
(b) 6
(c) 4
(d) 7

Q56. What is the approximate average annual income of Hary over the given years?

(a) Rs. 1.588 lacs
(b) Rs. 1.88 lacs
(c) Rs. 2.588 lacs
(d) Rs. 1.562 lacs

Q57. The average annual income earned by Indira over the given years is approximately what percent of the average income earned by Jayram over the given years?

(a) 10.15
(b) 75.50
(c) 13.44
(d) 24.50

Q58. What is the respective ratio of the annual income of Indira and Manish in the year 2006?

(a) 23:35
(b) 23:37
(c) 32:35
(d) 43:70

Q59-60 Fill in the blanks with more appropriate pair of word combinations

Q59. People _____ to work hard if you _____certain conditions on them

(a) decide, negotiate
(b) try, thrust
(c) plan, invoke
(d) hesitate, impose

Q60. The sack was so _____ that Saleem _____ carry it.

(a) full, hardly
(b) hardly, full
(c) heavy, hardly
(d) light, easy

Part-II (Q61-Q90)
General Engineering

Q61. Which of the following transducer is used for measuring high temperatures?

(a) Thermo couple
(b) Thermometer
(c) Moving coil galvanometer
(d) U-tube

Q62. The length of a conductor (whose resistance was 'R')is doubled and the cross sectional diameter is decreased to half of its previous value. Now , the resistance of the conductor is

(a) 8R
(b) R/2
(c) R/4
(d) 4R

Q63. In which of the following medium sound waves can travel very fast

(a) vacuum
(b) air
(c) water
(d) stone

Q64. 32768 bytes are equal to

(a) 30 K Bytes
(b) 32 K bytes
(c) 31 K bytes
(d) 32.5 K bytes

Q65. Which of the following is the best insulator?

(a) Semiconductor
(b) porcelain
(c) petroleum gel
(d) Diamond

Q66. Metallic bonding is due to

(a) sharing of electrons between adjacent atoms
(b) attraction between ion cores and electrons
(c) overlapping of electron clods
(d) sharing electrons between energy levels

Q67. The type of bond in SO_2 is

(a) Vandawalls
(b) attractive
(c) ionic
(d) Co-valent

Q68. Eddy currents of core can be minimized by

(a) decreasing the flux density
(b) laminating the core
(c) reducing core volume
(d) decreasing the number of turns

Q69. In a capacitor circuit, the current leads the voltage by an angle ϕ. The load angle of the same capacitor will be

(a) ϕ
(b) $90 + \phi$
(c) $90 - \phi$
(d) $180 + \phi$

Q70. The effect of electric shock on human body depends on

(a) Voltage
(b) current
(c) period of contact
(d) all the above

Q71. FTP stands for

(a) Full Transmission Procedure
(b) File Transfer protocol
(c) Full Transmission Protocol
(d) File Transmission procedure

Q72. Which of the following is not released from burning of fossil fuel?

(a) Carbon-di-oxide
(b) Sulphur dioxide
(c) copper oxide
(d) Nitrogen oxide

Q73. Dissolved pollutant gases can form

(a) ozone
(b) Acid rain
(c) Alkali snow
(d) Neutral hail

Q74. Sulphur-di-oxide levels can be reduced by using

(a) catalytic converters
(b) static electricity to attract it in factory chimneys
(c) Low sulphur fuels
(d) more efficient car engines

Q75. Which of these atmospheric pollutant is not released by car exhausts?

(a) Magenesium oxide
(b) carbon di oxide
(c) carbon mono oxide
(d) lead – oxide

Q76. Carbon di oxide dissolved in the oceans can be used by

(a) fish
(b) phytoplankton
(c) volcanoes
(c) zooplankton

Q77. Solder is a mixture of

(a) Lead +tin
(b) lead +aluminium
(c) Lead +silver
(d) lead+copper

Q78. The common material used for insulating steam pipe line is

(a) cotton
(b) 85% magnesia and glass wool
(c) saw dust
(d) Asbestos

Q79. Insulating material used in spark plug is

(a) Rubber
(b) Porcelain
(c) Mica
(d) Polystyrene

Q80. The fins are provided on the heat transferring surface

(a) to increase temperature gradient
(b) to increase heat transfer surface area
(c) to increase heat transfer co-efficient
(d) All the above

Q81. 4.4 g of CO2 contains how many litres of CO2 at STP?

(a) 2.4 litre
(b) 2.24 litre
(c) 44 litre
(d) 22.4 litre

Q82. Silvering of mirror is done by

(a) AgNO3
(b) Ag2O3
(c) Fe2O3
(d) Al2O3

Q83. The most malleable metal is

(a) Sodium
(b) Lead
(c) Steel
(d) Gold

Q84. The heaviest naturally occurring element is

(a) Uranium
(b) Iron
(c) Silica
(d) Aluminium

Q85. Hydraulic press is based on

(a) Archimedes principle
(b) Bernouli's equation
(c) Pascal's law
(d) Reynold's law

Q86. A boat of mass 40 kg is at rest. A dog of mass 4 kg moves in the boat with a velocity of 10m/s. What is the velocity of boat?

(a) 4 m/s
(b) 2 m/s
(c) 8 m/s
(d) 1 m/s

Q87. Solar energy is mainly caused due to

(a) Burning of hydrogen in the oxygen
(b) Fission of uranium present in the sun
(c) Fusion of protons during synthesis of heavier elements
(d) Gravitational contraction

Q88. A laser beam is used for carrying out surgery because it

(a) Is highly monochromatic
(b) Is highly coherent
(c) Is highly directional
(d) Can be sharply focused

Q89. Spherical shape of a water drop is due to

(a) Surface tension
(b) Adhesion
(c) Gravity
(d) Density

Q90. To an astronaut in space the sky will appear to be

(a) Blue
(b) Black
(c) Violet
(d) Dark blue

Part-III (Q91-Q180)
Common for Electrical, Electrical &Instrumentation, Electrical &Electronics Engineering and Equivalent Engineering

Q91. Addition of zeroes in the transfer function causes compensation

(a) lag (b)lead

(c) lead-lag (d) none of these

Q92. A step function is applied to the input of a system and the output is of the form y=t, the system is

(a) stable (b)unstable

(c) conditionally stable (d) none of these

Q93. The phase shift of the second order system with transfer function 1/s is

(a) 90 degrees (b) 180 degrees

(c)-90 degrees (d)-180 degrees

Q94. Introduction of integral error changes a system from type

(a) one to two (b) two to three

(d) one to zero (d) two to one

Q95. The Laplace transform of ramp is

(a) 1/s (b) $1/s^2$

(c) 1 (d) 0

Q96. The steady state acceleration error of type -1 is

(a) zero (b) unity

(c)infinity (d) none of these

Q97. System response is best obtained with

(a) ramp signal (b) step signal

(c) parabolic (d) impulse

Q98. C.T is overloaded when

(a) its load is less than burden (b) terminals are short
(c) terminals are open circuit (d) primary current is more than 100%

Q99. For the case of a transmission line with sending end voltage same as receiving end and with Ps , Qs= sending end power and Pr, Qr=receiving end powers

(a) Ps =Pr=0 (b) Qs=Qr =0

(c) both a&b (d) Ps = Pr=50% & Qs =Qr=50%

Q100. A 3 ½ digit, 2 V full scale slope ADC has its integration time set to 300 ms . if the input to the ADC is (1+1sin 314t)V, then the ADC output will be

(a) 1.000 (b) 1.999 (c) 1.414 (d) 1.500

Q101. A Kelvin double bridge is best suited for the measurement of

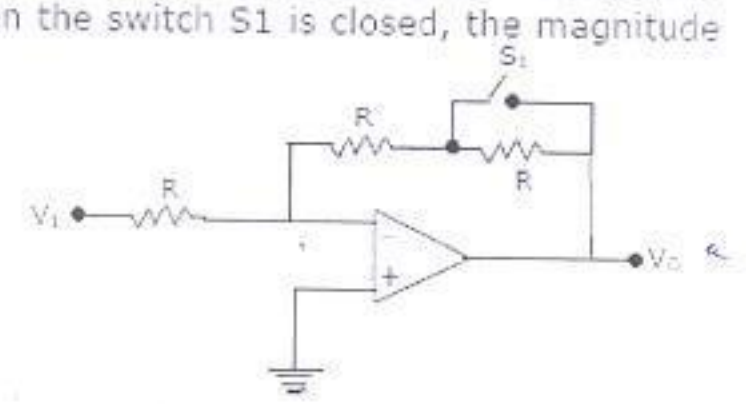
(a) inductance (b) capacitance

(b) low resistance (d) high resistance

Q102. Let the magnitude of the gain in the inverting Op-amp amplifier circuit shown in Fig.1.47 be x with switch S1 open. When the switch S1 is closed, the magnitude of gain becomes

(a) $\frac{x}{2}$ (b) -x

(c) 2x (d) -2x



Q103. A dynamometer type wattmeter responds to

(a) average value of active power (b) average value of reactive power

(c) peak value of active power (d) peak value of reactive power

Q104. A moving coil galvanometer is made into a d.c. ammeter by connecting

(a) a low resistance across the meter

(b) a high resistance in series with the meter

(c) a pure inductance across the meter

(d) a capacitor in series with the meter

Q105. If an energy meter disc makes 1o revoultion in 100 seconds when a load of 450 W is connected to it, the meter constant (in rev/KWh) is

(a) 1000 (b) 500 (c) 1600 (d) 800

Q106. Resistances R1 and Rs have respectively, nominal values of 10 Ω and 5 Ω and tolerances of ± 5% and ± 10%. The range of values for the parallel combination of R1 and Rs is

(a) 3.077 Ω to 3.636 Ω (b) 2.805 Ω to 3.371 Ω

(c) 3.237 Ω to 3.678 Ω (d) 3.192 Ω to 3.435 Ω

Q107.

A sample-and-hold (S/H) circuit, having a holding capacitor of 0.1 nF, is used at the input of an ADC (analog-to-digital converter). The conversion time of the ADC is 1μsec, and during this time, the capacitor should not lose more than 0.5% of the charge put across it during the sampling time. The maximum value of the input signal to the S/H circuit is 5V. The leakage current of the S/H circuit should be less than

(a) 2.5 mA (b) 0.25 mA (c) 25.0 μA (d) 2.5 μA

Q108. The current coil of a 200 V, 5 A, EDM type LPF wattmeter carries a current of $\sqrt{2}\cos(100\pi t)$A. The voltage across the pressure coil is $\sqrt{2}\,200\sin(100\pi t)$V. The meter will indicate

(A) 0 W (B) 100 W (C) 200 W (D) 400W

Q109. The instrument that does not have any restoring torque is

(A) D'Arsonval galvanometer (B) Flux meter

(C) Ballistic galvano meter (D) MI instrument

Q110. Three DC Voltmeters are connected in series across a 120 V DC supply. The voltmeters are specified as follow:

Voltmeter A : 100 V , 5 ma Voltmeter B: 100 V, 250 ohms/V

Voltmeter C: 10ma, 15000Ω

The voltages read by meters A,B and C are respectively

(a) 40, 50 and 30V (b) 40,40 and 40V (c) 60,30 and 30V (d) 30,60 and 30V

Q111. The coil of 300V MI voltmeter has a resistance of 500 Ω and an inductance of 0.8H. The meter reads correctly at 50Hz AC supplies and takes 100mA at full scale deflection. The reading of an instrument when it is connected to 200V DC supply is

(a) 200.6 (b) 199.4 (c) 200V (d) 0 Volts

Q112. The primary current in a current transformer is dictated by

(a) the secondary burden (b) the core of the transformer

(c) the load current (d) none of the above

Q113. A single channel digital storage oscilloscope uses a 10 bit, 10^7 samples per second Analog –to –digital converter. For a 100 KHz sine wave input, the number of samples taken per cycle of the input will be

(a) 10^7 (b) 10^4 (c) 10^3 (d) 10^2

Q114. In successive approximation AD converter, offset voltage equal to ½ LSB is added to the D/A converter's output. This is done to

(a) improve the speed of operation (b) reduce the maximum quantization error

(c) increase the number of bits at output (d) increase the range of o/p voltage that can be converted

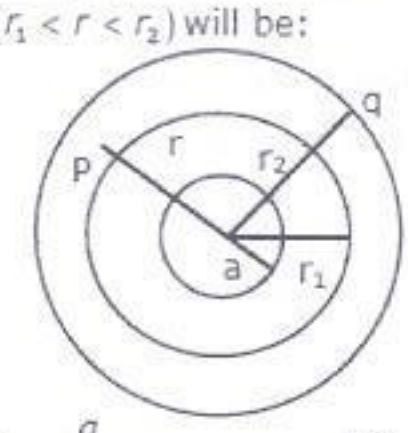
Q115. An op-amp, ahving a slew rate of 62.8 V/micro sec, is connected in a voltage follower configuration. If the maximum amplitude of the input sinusoidal is 10 V, then the minimum frequency at which the slew rate limited distotrtion would set in in at the output is

(a) 1.0 MHz (b) 6.28 MHz (c) 10.0 MHz (d)62.8 MHz

Q116. A charged particle enters at 30 degrees to the magnetic field .Its path becomes

a. Circular (b) helical (c) parabolic (d) straight line

Q117. A spherical conductor of radius 'a' with charge 'q' is placed concentrically inside an uncharged and unearthed spherical conducting shell of inner and outer radii r_1 and r_2 respectively. Taking potential to be zero at infinity, the potential at any point P within the shell $(r_1 < r < r_2)$ will be:



(a) $\frac{q}{4\pi\varepsilon_0 r}$ (b) $\frac{q}{4\pi\varepsilon_0 a}$ (c) $\frac{q}{4\pi\varepsilon_0 r_2}$ (d) $\frac{q}{4\pi\varepsilon_0 r_1}$

A capacitor with initial charge q at $t=0^+$ acts as

Q118. (a) short circuit (b) open circuit

(c) current source (d) voltage source

Q119. An inductor at t= infinity with zero initial condition acts as

(a) short circuit (b) open circuit

(c) current source (d) voltage source

Q120. Laplace transform analysis gives

(a) time domain (b) frequency domain

(c) both a & b (d) none of these

Q121. The laplace transform of a unit impulse in time is

(a)∞ (b) 0

(c) 1 (d) undefined

Q122. The v-i characteristic as seen from the terminal-pair (A, B) of the network of Fig.1.9(a) is shown in Fig.1.9 (b). If an inductance of value 6 mH is connected across the terminal pair (A, B), the time constant of the system will be

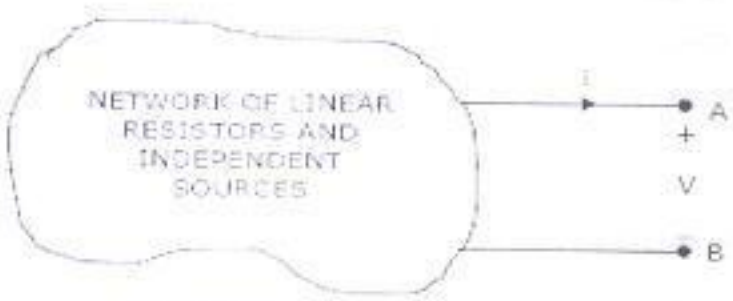


Fig.1.9(a)

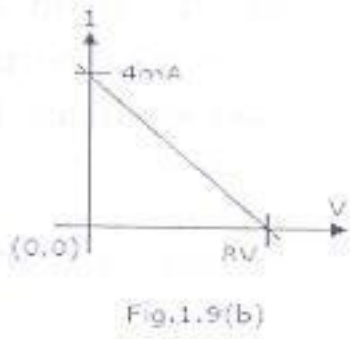


Fig.1.9(b)

(a) 3 u sec
(b) 12 sec
(c) 32 sec
(d) unknown, unless the actual network is specified

Q123. A practical current source is usually represented by

(a) a resistance in series with an ideal current source

(b) a resistance in parallel with an ideal current source

(c) a resistance in parallel with an ideal Voltage source

(d) None of the above

Q124. If the length of the wire of resitance R is uniformly stretched to n times its original value, the resistance of the wire now is

(a) nR (b) R/n (c) n^2R (d) R/n^2

Q125.

The Laplace transform of $(t^2-2t)u(t-1)$ is:

(a) $\frac{2}{s^3}e^{-s}-\frac{2}{s^2}e^{-s}$ (b) $\frac{2}{s^3}e^{-2s}-\frac{2}{s^2}e^{-s}$

(c) $\frac{2}{s^3}e^{-s}-\frac{2}{s}e^{-s}$ (d) None of the above

Q126. When the plate area of a parallel plate capacitor is increased keeping the capacitor volatge constant , the force between the plates

(a) increases (b) decreases (c) remains constant

(d) may increase or decrease depending upon the metal makin up the plates

Q127. A unit step voltage is applied at t = 0 to a series RL circuit with zero initial conditions.

(a) It is possible for the current to be oscillatory.

(b) The voltage across the resistor at $t = 0^+$ is zero.

(c) The energy stored in the inductor in the steady state is zero.

(d) The resistor current eventually falls to zero.

Q128. Given two coupled inductors L_1 and L_2, their mutual inductance M satisfies

(a) $M = \sqrt{L_1^2 + L_2^2}$ (b) $M > \frac{(L_1 + L_2)}{2}$

(c) $M > \sqrt{L_1 L_2}$ (d) $M \leq \sqrt{L_1 L_2}$

Q129. Time constant for R-C circuit is

(a) 1/RC (b) R/C

(c) C/R (d) RC

Q130. A current impulse, $5\delta(t)$, is forced through a capacitor C. The voltage, $V_c(t)$, across the capacitor is given by

(a) 5t (b) 5u(t) - C (c) $\frac{5}{C}t$ (d) $\frac{5u(t)}{C}$

Q131. The graph of an electrical network has N nodes and B branches. The number of links L, with respect to the coice of a tree, is given by

(a) B-N +1 (b) B + N

(c) N-B+1 (d) N-2B -1

Q132. In an 8085 microporcessor, after the execution of XRA A instruction

(a) the carry flag is set (b) the accumulator contains FF_H

(c) the zero flag is set (d) the accumulator contents are shifted left by

one bit

Q133. In a microprocessor, the address of the next instruction to be excuted, is stored in

(a) stack pointer (b) address pitch

(c) program counter (d) general purpose register

Q134. Which semicondcutor power device out of the following is not a current triggered device

(a) thyrister (b) G.T.O (c) Triac (d) MOSFET

Q135. Which material is used in controlling chain reaction in a nuclear reactor?

(a) Thorium (b) heavy Water (c) Boron (d) Beryllium

Q136. A PWM switching scheme is used in three phase inverter to

(a) reduce the total hormonic distortion with modest filtering

(b) minimise the load on the DC Side

(c) increase the life of the batteries

(d) reduce low order hormonics and increase high order hormonics

Q137. The main reason for connecting a pulse transformer at the output stage of a thyristor triggering circuit is to

(a) amplify the power of the triggering tube

(b) provide electrical isolation

(c) reduce the turn on time of the thyristor

(d) avoid spurious triggering of the thyrsitor due to noise

Q138. A step down chopper is operated in the continuous conduction mode in steady state with a constant duty ratio D. If V_0 is the magnitude of the dc output voltage and if V_s is the magnitude of the dc input voltage, the ratio $\frac{V_0}{V_s}$ is given by

(a) D (b) 1 - D (c) $\frac{1}{1-D}$ (d) $\frac{D}{1-D}$

Q139.

A sinusoidal source of voltage V and frequency f is connected to a series circuit of variable resistance, R and a fixed reactance, X. The locus of the tip of the current-phasor, I, as R is varied from 0 to ∞ is:

(a) a semicircle with a diameter of $\frac{V}{X}$.

(b) a straight line with a slop of $\frac{R}{X}$

(c) an ellipse with $\frac{V}{R}$ as major axis.

(d) a circle of radius $\frac{R}{X}$ and origin at $\left(0,\frac{V}{2}\right)$.

Q140. When a 400 Hz transformer is operated at 50 Hz its kVA rating is

(a) reduced to 1/8 (b)increased to 8 times

(c) unaffected (d) none of these

Q141. ON-OFF controller is

(a) P-Controller (b) I- controller

(c) Non-linear (d)PID controller

Q142. Lead compensation

(a) speeds-up transient response
(b) increases stability margin
(c) increases system error constant
(d) all of these

Q143. The torque spped characteristics of a repulsion motor assembles which of the following dc motor characteristic?

(a) Seperately excited (b) shunt (c) series (d)compound

Q144. A 10Kw, 50Hz, 0.8 pf, 3-phase induction motor runs at 980 rpm at no load and at 960 rpm at full load . Windage, friction loses are 320 W, armature resistance is 1.5 ohms per phase. What is the frequency of rotor currents?

(a) 50 Hz (b) 0 Hz (c) 100Hz (d) none of these

Q145.

A voltage v = 400 sin 314.16 t is applied to a 1-phase transformer on no-load. If the no load current of the transformer is 2 sin(314 16t – 85°), the magnetization branch impedance will be approximately equal to

(a) $141\angle 90°$ (b) $200\angle -85°$ (c) $200\angle 85°$ (d) $282\angle -80°$

Q146. A synchronous generator connected to an infinite bus is overexcited.Considering only the reactive power, from the point of view of the system, the machine act as

(a) a capacitor (b) an inductor

(c) a resistor (d) None of the above

Q147. The magentizing current in a transormer is rich in

(a) 3rd Hormonic (b) 5th Hormonic (c) 7th Hormonic (d) 13th Hormonic

Q148. The maximum efficiency of a 100 KVA, 1 phase transformer is 98% and occurs at 80% of the full load at 0.8 p.f (Power factor). If the leakage impedance is 5% , the minimum regulation is

(a) 5% (b) 4.89 % (c) 1.022 % (d) 3.75%

Q149. In a medium (or) high hydro power station, a surge tank is provided to

(a) reduce the length of the penstock pipes

(b) augment water at the fore bay

(c) control the pressure variation in the penstock pipes due to sudden load changes

(d) control the water flow trough the turbines

Q150. The colour of moist Silicagel is

(a) Red (b) Brown

(c) Blue (d) Yellow

Q151. A transformer can have zero voltage regulation at

(a)Zero Power Factor (b) Leading Power Factor

(c) Lagging Power Factor (d) Unity Power Factor

Q152. Transformer cores are laminated to

(a) reduce material weight (b)reduce cost

(c)reduce eddy current loss (d) reduce hysterisis loss

Q153. Which of the following conditions should be fulfilled for the parallel operation of two transformers?

(a) Percentage impedance should be same (b) polarities of both winding should be same

(c) voltage rating should be same (d) All the above

Q154. A DC series motor is connected to an AC supply, the motor will

(a) not start poorly (b) over speed (c) perform better (d) start and run

Q155. A 3 phase , 4 pole 50 Hz induction motor runs at a speed of 1440 r.p.m, the slip is

(a) 0.03 (b) 0.1. (c) 0.04 (d) 0.05

Q156. The rotor slots in an induction motor are skewed so as to

(a) increase strength (b) increase rotor length

(c) reduce noise and locking (d) reduce losses

Q157. The air gap in the ac rotatory machines is of the order of

(a) 1 cm (b) .1 inch (c) .05 inch. (d) 5 cm

Q158. In the case of DC machines the brushes must be placed on a line

(a) perpendicular to the field axis (b)along the field axis

(c) at any axis (d)none of these

Q159. A transformer is rated as 50 kVA, 2400/120-V, open circuit test readings as wattmeter=396 watts, ammeter =9.65 A, voltmeter = 120 V on low voltage side and Short circuit test readings as, wattmeter = 810W, ammeter = 20.8 A, Voltmeter = 92 V on high voltage side.Then the magnetizing reactance referred to low voltage side is

(a) 14.6 ohms (b) 12.8 ohms (c) 13.2 ohms (d) none of these

Q160. For the transformer in above question, the core loss component of the current is

(a)9.07 A (b) 6 A (c) 3.3 A (d) 9.65 A

Q161. The efficiency of the transformer for a 0.8 power factor lagging load at rated kVA

(a) 50% (b) 95.2% (c)98.3 % (d)97.1%

Q162. Tesla is the same as

(a) 1 Weber (b) 1 Henry

(c) 1 Weber / m^2 (d) 100 Weber / m^2

Q163. A current transformer can be used with which of the following instruments?

(a) Ammeter (b) Wattmeter

(c) Watt-hour meter (d) Any of the above.

Q164. steady state stabilty of a power system is the abilty of power system to

(a) maintain volatge at the rated voltage level

(b) maintain frequency exactly at 50 Hz

(c) maintaln a spinning reserve margin at all times

(d) maintain synchronism between machines and on external tie lines

Q165. In case of HVDC system there is

(a) charging current but no skin effect (b) no charging current but skin effect

(d) neither charging current nor skin effect (d) both charging current and skin effect

Q166. The surge impedance of a 400Km long overhead transmission line is 400 ohms. For a 200 Km length of the same line, the surge impedance will be

(a) 200 ohms (b) 800 ohms (c) 400 ohms (d) 100 ohms

Q167. The insulation level of a 400 KV EHV overhead transmission line is decided on the basis of

(a) lightning over voltage (b) switching over voltage

(c) corona inception voltage (d) radio and TV interfence

Q168. In order to have a lower cost of electrical energy generation,

(a) the load factor and diversity factor should be low

(b) the load factor should be low, but the diversity factor should be high

(c) the load factor should be high, but the diversity factor should be low

(d) the load factor and diversity factor should be high

Q169. The inuslation resistance of a cable length 10 Km is 1 MΩ. For a length of 100 km of the same cable, the insulation resistance will be

(a) 1 MΩ (b) 10 MΩ (c) 0.1 MΩ (d)0.01MΩ

Q170. Bulk power transmission over long HVDC lines are preferred, on account of

(a) low cost of HVDC terminals (b) no hormonic problems

(c) minimum power line losses (d) simple protection

Q171. Consider the following quantities ;

1. Real power
2. Reactive power
3. Input current
4. Power factor
5. Bus voltage magnitude
6. Bus voltage phase-angle

For the purpose of the load flow studies of a power system, each bus or node is associated with which one of the combinations of the above four quantities

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

Q172. Hollow conductors are used in transmission lines to

(a) increase bult transmission over very long distances

(b) improve stability (c) reduce corona

(d) reduce sag

Q173. Three sections of a feeder are provided with circuit breakers CB1, CB2, CB3, CB4, CB5 and CB6. For a fault F as indicated in Fig.1.19.

(a) CB5 must be set to trip after CB1 trips

(b) CB5 must be set to trip after CB3 and CB4 trips

(c) CB5 must be set to trip after CB2 trip

(d) CB5 must be set to trip before CB1, CB2, CB3 and CB4 trips

Q174. Computation time for which of the following method for solving load flow is independent of the number of buses

(a)Gauss-seidel

(b)Newton Raphson

(c) Fast Decoupled

(d)All

Q175. Which of the following is also referred to as the P-Q bus in load flow problems

(a)Load bus

(b) generator bus

(c)Slack bus

(d) both a & b

Q176. supply to one terminal of a delta-wye connected three phase core type transformer which is on no-load, fails. Assuming magnetic circuit symmetry, voltages on the secondary side will be:

(a) 230,230,115

(b) 230,115,115

(b) 345,115,115

(d) 345,0,345

Q177. A synchronous motor on load draws a current at a leading power factor angle Φ, If the internal power factor angle – which is the phase angle between the excitation e.m.f and the current in the time phasor diagram is Ω, then the air gap of the excitation m.m.f lags the armature m.m.f by

(a) Ψ (b) $\Pi/2+\Psi$ (c) $\Pi/2-\Psi$ (d) $\Psi+\Phi$

Q.178. A 4-pole generator with 16 coil has a two layer winding. The pole pitch is

(a) 32 (b) 16 (c) 8 (d) 4

Q179. A 4-pole dynamo with wave wound armature has 51 slots containing 20 conductors in each slot. The induced emf is 357 volts and the speed is 8500 rpm. The flux per pole will be

(a) 3.5mWb (b) 1.2mWb (c) 14mWb (d) 21mWb

Q180. An induction motor having full load of 60 Nm when delta-connected develops a starting torque of 120 Nm. For the same supply voltage, if the motor is changed to star-connection, the starting torque developed will be.

(a) 40Nm (b) 60Nm (c) 90 Nm (d) 120 Nm