**Interview Questions Of T V & Radar Engineering**

Q. 1.How much bandwidth requires for the transmission of the colour television

Transmission?

Ans. - 6 MHZ.

Q. 2. What is aspect ratio. What should be the value of aspect ratio in TV

receiver?

Ans - It is the ratio of width to hieight & for TV receiver it is 4/3.

Q. 3. In case of TV transmission. What is the different b / w audio & video

Carrier?

Ans - 5.5 MHZ.

Q. 4 Why interlocking is used in television?

Ans - Jo audio interference.

Q. 5 Why show comes in the television picture?

Ans - Because of random noise signal.

Q. 6. What is the O / P stage of TV transmitter ?

Ans - Grid modulated class-c amplifier.

Q. 7. Why colour brust is used in TV signal?

Ans - Jo ensure that I & Q phase correctly.

Q. 8. How the resolution of TV picture is determined?

Ans - From the number of frame scanned.

Q. 9. Which colour TV system is adopted in India.

Ans - PAL system.

Q. 10 At reciver to spate horizontal & vertical sync pulse which ckt is used?

Ans - Sync separator it contains iuledrator & differntiatos.

Q 11. What is blanking pulse- In CCIR system where blanking pulse is placed?

Ans - During retrace interval of each line.

Q 12. What is the function of diplexer bridge in TV transmitter?

Ans - To prevent the loading of several transmitter by video transmitter.

Q. 13. How many picture frame displayed per second in TV as per CCIR-13

System?

Ans - 25.

Q. 14. What is composite video signal?

Q. 15. Give the name of the pulses used in TV signal?

Ans - Horizontal & vertical sync pulse equalizing pulse (pre & post).

Q. 16. What is ghost image in TV & their type?

Ans - Leading ghost & trailing ghost.

Q. 17. How is ghost eliminated in picture?

Ans - By changing the orientation & location of the antenna.

Q. 18. What is co-channel interface?

Ans -

Q. 19.

Ans -

Q. 20. How contranst of TV system is controlled?

Ans - By ac voltage in the video signal.

Q. 21. On which principle plumbicon operators?

Ans - Photo conduction.

Q. 22. On which principle image orithicon operator?

Ans - Photo emission or secondary emission.

Q. 23. What are the primary colours in the TV transmission?

Ans - Red, blue & green.

Q. 24. What are the secondary or the complementary colour?

Ans - Cyarr, yellow & magenta.

Q. 25. What is luminance signal? How it can be represented or expressed?

Ans - Y = 0.59 R + 0.30g + 0.11 b.

Q. 26 For 51 cm picture tube what will be the width & lighting the picture tube?

Ans - 41 cm & 31 cm.

Q. 27. According to CCIR-B system in the interlaced scanning paturn, how many

Numbers of lines are scanned in one field?

Ans - 321½.

Q. 28. According to CCIR-B system frequency standard the frequency of

Horizontal & vertical blanking pulse will be?

Ans - 15625 & 50 H2

Q. 29. Which type of modulation is used in TV transmission?

Ans - Vesligial side band amplitude modulation.

Q. 30. What is the function of serration in the composite video signal?

Ans - To help in horizontal synchronization.

Q. 31. The CKT that separates sync pulse from the composite video signal?.

Ans - A clipper.

Q 32. Why shadow mask is used in colour picture tube?

Ans. - To increase the screen brightness.

Q 33. Which type of cable or wire is used in TV receiver from the antenna.

Ans - A twin wire that ribbon of 300-2 .

Q 34. When colour signal fed in monochrome receiver in primary colour that

produces grey shade is?

Ans - Green.

Q 35. Another name of the horizontal retrace in TV receiver?

Ans - Fly back.

Q 36. During which part of the composite video signal equaling pulses are sent?

Ans - During vertical balnking pulse.

Q 37. In which band most of the aireraft surveillance radar operated?

Ans - L. band.

Q 38. Which instrument or radar is used in aeroplane to measure the its height

Ans - Radar altimeter.

Q 39. What is radar & why it is used.

Ans -

Q 40. What is blind speed. What is solution for the blind speed problem?

Ans - At the blind speed target appears slationary it can be eliminated by using

Varying PRF.

Q. 41. What will happen if in radar return echo arrives after the allowed pulse

interval?

Ans - The target will appear closed than it really is.

Q 42. At which frequency COHO operats in MTI radar?

Ans - At intermediate frequency.

Q 43. Which type of diode in used as a delector in RADAR?

Ans - IMPATT diode.

Q 44. For what purose quartz delay line is used in MTI RADAR?

Ans - It in used to subtract the complete scan from the previous scan.

Q 45. After acquiring target by line RADAR which is the best scaning system for

tracking?

Ans - conical.

Q 46. Which RADAR is used to eliminate clutter in navigational application?

Ans - MIT RADAR.

Q 47. How the resolution of pulsed RADAR can be improved?

Ans - By decreasing pulse width.

Q 48 On which factor maximum onambiuous range depends on pulse

repelection rate of the transmitted signal.

Q 49. What is Doppler effect. What is the expression for Doppler shift & in which

radar Doppler shift is employed?

Ans Doppler shift - 2vrf

C

Is MTI, FM 7 CW radar.

Q 50. If the target cross section is keep changing which is the best scanning &

tracking system?

Ans - Mono pulse is best tracking system.

Communication system (50 Ques)

Q.1. State and prove frequency convolution theorem.

Q.2. state and explain the principle of superposition of spectra for noise signals.

Q.3. Define amplitude modulation;

Q.4. show that an AM system using synchronous defection does not suffer from threshold effect

Q.5. show that figure of merit Y for an AM system using synchronous defection is identical to envelope defector

.Q.6. Draw FM & pal waveforms.

Q.7. An FM signal modulated to a depth of 8 , generates a bandwidth of 180Khz. Calculate the frequency deviation.

Q.8. explain spike generation and threshold effect in FM.

Q.9. Show that low pass filter can be used as discriminator .

Q.10. What is entropy.

Q.11. Pulse modulation system are not digital where as pulse code modulation is “justify”.

Q.12. What is difference between cross talk and inter symbol interference .

Q.13. What is quantization error ? How does it defend upon step size ?

Q.14. Explain synchronous and asynchronous time division multiplexing of PCM signals.

Q.15. Describe delta modulation system ? what are its limitation ? how can they be overcome.

Q.16. Explain delta modulation ?

Q.17. Explain DPCM ?

Q.18. Compare between PCM and DM ?

Q.19. Explain generation method of frequency division multiplexing.

Q.20. Show that a normalized Gaussian pulse is its own Fourier transform.

Q.21. Show why image frequency rejection is not a major problem for standard AM broadcast band.

Q.22. The L.O. frequency of super aerodyne AM broadcast receiver ( MW )is kept above the signal frequency by an amount equal to inter mediate frequency ( 455 KHz ) why.

Q.23. How would the message signal can be recovered from an over modulated AM.

Q.24. What is sampling?

Q.25. Explain Quantization ?

Q.26. Explain commanding ?

Q.27. Explain PCM transmitter and receiver ?

Q.28. What is super heterodyne receiver ?

Q.29. Explain tuned radio frequency receiver ?

Q.30. What is pre emphasis and de-emphasis ?

Q.31. What is modulation and de modulation ?

Q.32. Explain digital modulation techniques ?

Q.33. Compare Shannon fanon coding and Huff man coding.

Q.34. Where do we AM and FM ?

Q.35. What is COMA , TOMA and FOMA ?

Q.36. Explain types of sampling ?

Q.37. What is QPSK ?

Q.38. What is DPSK ?

Q.39. What is BPSK ?

Q.40. Explain SyQuest theorem ?

Q.41. Explain properties of Fourier transform ?

Q.42. Explain power spectral densities.

Q.43. Explain cumulative distribution function.

Q.44 What are the limitation of communication system.

Q.45. What is need of modulation.

Q.46. What is the relation between probability and portability density.

Q.47. What is convolution ?

Q.48. what is correlation.

Q.49. What is auto correlation.

Q.50. Explain Gaussian probability Density ?

A.50. Gaussian portability Density : this is most important continuous portability distribution as most of the natural phenomenon are characterized by random variables with normal distribution , the importance of normal distribution is further enhanced because of centre limit theorem , the density function for normal ( or Gaussian ) distribution is given by.

  -∞<x<∞

Where µ and 6 are mean and standard deviation respectively the properties of normal distribution are

Mean =µ, variance = 

A.49. Auto correlation is special form of cross correlation if is defined as correlation of

A function with itself.

Thus if f1 (f) = f2 (f) = f (f) then expression for autocorrect option is given as

T/2

R (t) =  

Which is equivalent to

R(t) =  

1-1 is obvious that auto correction function is measure of similarity of a function with its delayed replica.

A.48. The correlations or more precisely cross-correlations between two waveform is measure of similarity between one waveform and time delayed version of other waveform.













A.47. convolution is mathematical operation and is useful for describing the input /

Output relationship in a linear time invariant systems. It is an important analytical

Tool for the communication engineer. The convolution f(t) of 2time functions f1/(t)

And f2(t) is defined by following integral.







A.46. Portability is study of random experiments in any random experiment there is

Always an uncertainty as to whether & particular event will occur or not.

Portability density :-

Let there be a function  such that

(1) 

(2) 





Here the function is known as portability function or portability distribution for a continuous random variable but it is more known as (POF) or portability density function.

ANTENNA(Theoretical Questions)

Q. 1. Explain poynting ‘s vector.

Q. 2. What is ment by displacement current .

Q. 3. Drive wave question from troxwell equation.

Q. 4. What is called hertzian dipole.

Q. 5. Indroduce the concept of retarded vector potential.

Q. 6. Radiation resistance of antenna.

Q. 7. Establish the relationship b/w directive gain and power gain.

Q. 8. Define propafetion constant, attenustion constant, phase constant, wave impedance, phase velocity.

Q.9. what is broad side array.

Q.10. what is end fire array.

Q.11. what is colinesr array.

Q.12. explain the working of folded dipole antenna.

Q.13. what are parasitic elements.

Q.14. define beamwidth of antenna.

Q.15. define transmission bandwidth of an antenna.

Q.16. what is skip distance.

Q.17. what is critical frequency.

Q.18 what is maximum usable frequency.

Q.19. distinguish between

(a) galantic noise and atmospheric noise.

Q.20. distinguish between

(a) E – layer and sporadic E – layer.

Q.21. distinguish between

(a) ground wave propafstion and ionospheric propasstion.

Q.22. explain (i) virtual height

(ii) layers

(iii) gyro frequency.

Q.23. what is ducting.

Q.24. what is helical antenna.

Q.25. what is effective length of liner antenna.

Q.26. what is rhom tric antenna.

Q.27. describe cassgrain method of fading a parabdic of lector.

Q.28. what is horn antenna.

Q.29. what is yagi – vda antenna.

Q.30. why are paratrolic reflectors wreel for line of sight transmission at microwave frequency.

**Antenna ( 50 questions )**

Q.1 .Calculate the length of half wave dipole antenna to be used to receive a 10 Mhz radio original assume that the velocity of electromagnetic waves or antenna is 3×  m/s

Solution : 15 meters.

Q.2 Determine the incensed frequency of operation of a dipole antenna cut be a length of 3.5 m. assume a velocity of 3x10 m/s for electromagnetic waves on the antenna.

Solution : F = 42.857

Q.3. A short vertical grounded antenna is designed be radiate at 1Mhz calculate the radiation resistance , if the effective height of antenna is 30 meters.

Solution : 15.8Ω.

Q.4. The current at base of an earthed antenna 30 meters high is 20 amps at a frequency of 1 Mhz calculate the field strength at a distance of 10 km.

Solution : 4.8 µ v/m.

Q.5. A transmittion antenna having an effective height of 61.4 meters takes a current of 50 amp ( rms ) at a wave length of 625 meters. Final

( a ) Radiation resistance of antenna

Qr = 15.26Ω

( b ) power radiated W = 38.15 kw

( c ) Antenna efficiency for a totel antenna resistance of 50Ω

N = 30.52 %

Q.6. A verticel wire 2 m long arries a current of 6 Amps at a frep of 1 Mhz. assuming that wire is in reff space , calculate the strength of radiated field produced at a distance of 30 km in a direction at right angle to axis of wire.

Erms = 0.32 m v/m .

Q.7. A transmitting antenna having an effective height of 100 meters has a current at base 100 A at frequency of 300 Khz . calculate ( i ) the field strength at a distance of 100 km . E = 37.68m v/m

( ii ) The value of radiation resistence

Rr = 15.78Ω

( iii ) The power radiated

N = 157.75 kw

Q.8. A grounded verticel anteena fed at bottem with an Rf current of 32 Amperes at 1 Mhz , produces a field strength of 9 milli – volts / metre at a distance of 100 km . calculate the effective height of antenna in metres .

Solution : 22.5 m.

Q.9. A grounded verticel antenna of height 75 ms is fed at its base with a current of , 10 Amps rms at 1 Mhz . calculate the field strength at a distance of 100 km an surface of earth.

Erms = 6m V/m .

Q.10. At what distance from 50 cycle circuit is the radiation field approximately equal be induction field.

Solution : r = 0.954×m

C = 6×m

Q.11. Show that an istrotric radiater radiation 1 kw lays a field of 173 milli – volts / metre at a distance of 1 km from it .

Solution : 173m V / m.

Q.12. final the velocity of a plane wave in a loselers medium having a relative permitility at 5 and relative permetrility of unity.

Solution : 1.34× 10 m / sec.

Q.13. The radiation resistance of an antenna is 72Ω and loss resistance is 8Ω what is its directivity , if power gain is 16 ,

N = 0.9

D = 17.78 Ans

Q.14. A thin dipole antenna is A /15 long , if its loss resistance is 1.5Ω find radiation resistance and its efficiency. Rr = 3.5Ω n = 70%

Q.15. Find out the Q of an antenna if it has bandwidth of 600 Khz and is cut be a frequency of 30 Mhz .

Solution : Q = 50.

Q.16. Find out Q of an antenna cut for frequency of 14 Mhz having bandwidth of 4 Mhz.

Solution : Q = 3.5

Q.17. An antenna is desied be operate on a frequency of 30 Mhz whose Q is 40 , calculate its bandwidth

Solution : 75 Khz.

Q.18. calculate the bandwidth of an antenna out for 110 Mhz having Q = 70.

Solution : ∆f = 1.571

Q.19. calculate the radiation resistance of an antenna which is drawing 15 amprs current and radiating 5 kw.

Solution : 22.22Ω

Q.20. calculate the power being radiated by an antenna which is having radiation resistance of 50Ω and is drawing current of 8 amps.

Solution : 3200 watts.

Q.21. How much power does a 50Ω antenna radiate when feel current of 5 amp.

Solution : 1250 watts

Q.22. Calculate radiation resistance of an antenna which is radiating 1000 watts and drawing a current of 5 amp

Solution : 50Ω

Q.23. How much current does an antenna draw when radiating 1000 watts and is having radiation resistance of 300Ω

Solution : 1.8 amp.

Q.24. Determine the radiation resistance of antenna which is radiating 10 kw and is feel at 12 amp.

Solution : 69.4Ω

Q.25. Calculate the front be back (FBR) ratio of an antenna in db which rediats 3 kw in its most optimum direction and 500 watts in opposite direction.

Solution : Gdb = 7.782 (FBR).

Q.26. calculate the gain receving antenna in db which delivers a 50µ V signal to transmission line over that of an antenna which delivers 25µ V signal under identical condition.

Q.27. The radiation resistance of an antenna is 72Ω and loss resistance is 8Ω . what is directivity in db if power gain is 16.

Solution : D = 12.49 .

Q.28. An antenna has loss resistance 10Ωms , power gain of 20 and directivity 22 , calculate its radiation resistance.

Solution : Rr = 100Ω ms.

Q.29. An antenna has radiation resistance of 72Ω , a loss resistance of 8Ω ms and power gain of 12 db. Determine antenna efficiency and its directivity.

Solution : Gd = 12.45 db.

Q.30. Define radiation resistance of an antenna calculate the radiation resistance of d /10 wire dipole in free space.

Solution : Rr = 7.88Ω.

Q.31. calculate the approximate gain and beam width of a paraboliclal reflector antenna at aperating free 4 Ghz , diameter 20 meters and illumination efficiency 55%.

Solution : G= 385619.9

BW (-3db ) = 70 /D

BW = .260

Q.32. The noise figure of an amp at room temp T (=  K) is 0.2 db , find eqvivalent temp.

Solution : te = k.

Q.33. The eqvivalent noise temp of cooled paranutric amp is k. final noise factor.

F = 1.069.

Q.34. Is noise figure is given by 1.1 db what is effective noise temperature.

Solution : te = k.

Q.35. calculate the directivity of a broadride array of height 10 and length 20 in db.

Solution : D db = 34 db.

Q.36. calculate the directivity of given liner broadside , uniform array of 10 is olropic elements with sepratim of √/Ω b/w elements.

Solution : D db = 6.9 .

Q.37. calculate the directivity of given liver end fire , uniform array of 10 elements with sepration of √/Ω b/w elements.

Q.38. calculate directivity of given liver end five with improved directivity Hansen woodyard uniform array of 10 elements with sepration of √/Ω b/w the elements.

Solution : D = 12.5 db

Q.39. A certain baratrolic reflector has an aperture no of 0.6 and a focal length 4.8 ft. if frep of operation is 10Ghz , find its beam width b/w first nou.

Bwfn = .

Q.40. calculate the gain of antenna with circuler operture of diameter 2ms at a frep of 6Ghz

Gp = 9600

Q.41. final basic path loss for communication form to moon the earth operating at 3000Mhz. Assum distamce b/w moon and earth is 3.84000 km.

Q.42. calculate the attanustion at a freq of 600Mhz when distance b/w transmitting and receving anteena is 40 km and gains are 20 db.

Solution :  db = - 80.056

( (-) shows attenustion)

Q.43. Find the maximum range of tropospheric transmission for which the transmitting anteena height is 100 ft and receving antenna height is 50 ft.

Q.44. calculate the maximum radio range for tropospheric transmission b/w anteenas of height 100 ft and 60 ft respectirely.

Solution : d = 25.096 miles.

Q.45. Final electric field strength at 10 km from 1.5Mhz transuitter having Eo = 2500m V/m over a ground path with 6 = 3m S/m and Cr = 7.

Eg = 46.5m V/m

Q.46. A pulse of a given freq transmitted upward is received bach after a period of 5 milli seconds. Final the virtuel height of reflector layer.

Solution : h = 750 km.

Q.47. A pulse of given rfeq transmitted vertically upward is recived bach after a period of 2 milli seconds . final virtuel height of reflecting layer.

Solution : h = 300km.

Q.48. A liner broadride array consists of 4 equel isofrobic inphax bant sources with √/3 spacing. Calculate and ploy the field battern . finel directivity and beam width.

Solution : D = 2. Hpbw = 57.30.

Q.49 calculate depth of penetration for copper at 1Mhz . the connectivity for copper is 58 M Ω/M and permeatrility is 1.26MH/m

Solution : S = 6.6× ms.

Q.50. calculate the refractive index of copper at 10MHz assuming that condectivity of copper is 5.8×mho/m and its relefire permertrility and permittivity unity.

Solution : Vp = 1.472 m/s

N = 20.38×.

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Direction : In of the following questions, five words have been given, out of which four

One alike in same manner and the fifth word is different. Choose out the odd one.

1. A. Sial B. Mantle C. Core

D. Sima E. Pengia

2. A. Turtle B. Lamb C. Colt

D. Bitch E. Farrow

3. A. Phi B. Delta C. Gama

D. Beta E. Peso

4. A. Bars B. Gorges C. Meanders

D. Rapids E. Canyons

5. A. Hindi B. Urdu C. Sanskrit

D. Sindhi E. Gujrati

6. A. Akbar B. Shahjahan C. Jahangir

D. Aurangzeb E. Vikramaditya

7. A. Nun B. Knight C. Monk

D. Priest E. Podre

8. A. Dal B. Sambhar C. Chilka

D. Siachen E. Baikal

9. A. Heart B. Brick C. Bridge

D. Club E. Spade

10. A. Lgloo B. Canoe C. Yacht

D. Raft E. Dinghy

11. A. Rigveda B. Atharvaveda C. Samveda

D. Ayurveda E. Yajurveda

12. A. Wordsworth B. Keats C. Tolstoy

D. Tagore E. Ghalib

13. A. Pampas B. Downs C. Grasslands

D. Savanna E. Prairies

14. A. Bardoli B. Porbandar C. Sabamati

D. Bhadravati E. Champaran

15. A. Lapies B. Cliffs C. Stalactities

D. Stalagmites E. Sinkholes

16. A. Missile B. Arrow C. Sword

D. Spear E. Bullet

17. A. Eagle B. Kivi C. Emu

D. Ostrich E. Penguin

18. A. Jaipur B. Mussoorie C. Manali

D. Dargeeling E. Pahalgam

19. A. Cricket B. Football C. Baseball

D. Badminton E. Billiards

20. A. Thorium B. Radium C. Sodium

D. Uranium E. Polonium

21. A. Bully B. Corner C. Bunker

D. Scoop E. Drivvle

22. A. Mangolia B. Burma C. China

D. Bangladesh E. Afghanistan

23. A. Dispur B. Shimla C. Panaji

D. Aizawal E. Leh

24. A. Konark B. Ellora D. Dilwara

D. Khajuraho E. Madurai

25. A. Indigo B. Yellow C. Green

D. Pink E. Orange

26. A. Dolphin B. Whale C. Shark

D. Starfish E. Cod

27. A. Tortoise B. Turtle C. Oyster

D. Snail E. Spider

28. A. Nerves B. Artery C.Auricle

D. Aorta E. Valve

29. A. Methane B. Gasoline C. Diesel

D. Asphatt E. Paraffinwax

30. A. Sikkim B. Manipur C. Haryana

D. Maharashtra E. Lakshadweep.

**ANSWER**

.

1 2 3 4 5 6 7 8 9 10

E D E A B E B D B A

11 12 13 14 15 16 17 18 19 20

D C C D B C A A E C

21 22 23 24 25 26 27 28 29 30

C A E D D B E A A E.

**V**

Direction: In each of the following question there are two sets of numbers. The question is: the number similar ? right ‘Yes’ or ‘No’.

1. 29572541 = 29572541 [Yes] [No]

2. 69578125 = 69578215 [Yes] [No]

3. 87924796 = 87924769 [Yes] [No]

4. 95628456 = 95628456 [Yes] [No]

5. 19635986 = 19635869 [Yes] [No]

6. 75618469 = 75618469 [Yes] [No]

7 98725059 = 98725057 [Yes] [No]

8. 725691879 = 725691877 [Yes] [No]

9. 6798156256 = 6798156256 [Yes] [No]

10. 869529612 = 869529162 [Yes] [No]

11. 726159805 = 726159804 [Yes] [No]

12. 972562921 = 972562924 [Yes] [No]

13. 325619296 = 325619296 [Yes] [No]

14. 699982787 = 699982778 [Yes] [No]

15. 871658241 = 871658241 [Yes] [No]

16. 2859678105 = 2859678015 [Yes] [No]

17. 486924182 = 486924182 [Yes] [No]

18. 8543892514 = 8543892514 [Yes] [No]

19. 298479256 = 298479526 [Yes] [No]

20. 596927925 = 596927925 [Yes] [No]

21. 487928642 = 847928642 [Yes] [No]

22. 898275431 = 898275413 [Yes] [No]

23. 475618523 = 475618532 [Yes] [No]

24. 295861059 = 295861059 [Yes] [No]

25. 679153265 = 679153264 [Yes] [No]

26. 42980590509 = 42980590509 [Yes] [No]

27. 1854907921 = 1854907921 [Yes] [No]

28. 28430590543 = 28430590543 [Yes] [No]

29. 81792563405 = 81792564305 [Yes] [No]

30. 73253635215 = 73253635215 [Yes] [No]

31. 1693467815 = 1693467851 [Yes] [No]

32. 6832005605 = 6832005605 [Yes] [No]

33. 75629815601 = 75629815501 [Yes] [No]

34. 761843956 = 671843965 [Yes] [No]

35. 58156905123 = 58156905123 [Yes] [No]

36. 8615972163 = 8615972163 [Yes] [No]

37. 73892156871 = 73892156872 [Yes] [No]

38. 625986205 = 925986205 [Yes] [No]

39. 869827987 = 869827987 [Yes] [No]

40. 215983215 = 215983251 [Yes] [No]

41. 186258231 = 186258231 [Yes] [No]

42. 7815563215 = 781563251 [Yes] [No]

43. 87192315 = 87192315 [Yes] [No]

44. 8869623515 = 886962315 [Yes] [No]

45. 781926851 = 781926851 [Yes] [No]

46. 28759801 = 28759801 [Yes] [No]

47. 41232506 = 41232506 [Yes] [No]

48. 7529000526 = 752900526 [Yes] [No]

49. 47689726 = 47689728 [Yes] [No]

50. 629729985 = 62972958 [Yes] [No]

51. 725982715 = 725982715 [Yes] [No]

52. 1059050505 = 1059050550 [Yes] [No]

53. 798825625 = 798825652 [Yes] [No]

54. 682590759 = 982590597 [Yes] [No]

55. 1679261659 = 1679261659 [Yes] [No]

56. 289051592 = 289051529 [Yes] [No]

57. 35298789 = 35298789 [Yes] [No]

58. 871690509 = 871690590 [Yes] [No]

59. 238715962 = 238715962 [Yes] [No]

60. 792862972 = 792862972 [Yes] [No]

61. 28156287156 = 28156281756 [Yes] [No]

62. 1562159816 = 1562159861 [Yes] [No]

63. 842615612 = 842615612 [Yes] [No]

64. 6289215621 = 6289215621 [Yes] [No]

65. 562962159 = 562962159 [Yes] [No]

66. 759291625 = 759291652 [Yes] [No]

67. 1595279927 = 1595279927 [Yes] [No]

68. 8752915612 = 8752915621 [Yes] [No]

69. 727779277 = 727779727 [Yes] [No]

70. 89271256 = 89271256 [Yes] [No]

71. 632956159 = 632956159 [Yes] [No]

72. 461592805 = 461592085 [Yes] [No]

73. 1596142913 = 1596142913 [Yes] [No]

74. 2156159727 = 2156159727 [Yes] [No]

75. 862952987 = 862952978 [Yes] [No]

76. 1596287921 = 1596287921 [Yes] [No]

77. 1461972871 = 1461972874 [Yes] [No]

78. 2871569159 = 2871569519 [Yes] [No]

79. 45679050501 = 45679050501 [Yes] [No]

80. 14691596 = 14691569 [Yes] [No]

81. 49561596 = 49561596 [Yes] [No]

82. 196156959 = 196156959 [Yes] [No]

83. 591205906 = 591205960 [Yes] [No]

84. 743159632 = 743159632 [Yes] [No]

85. 816596124 = 816596123 [Yes] [No]

86. 3596159123 = 3596159128 [Yes] [No]

87. 8715962756 = 8715962756 [Yes] [No]

88. 4979279156 = 4979279153 [Yes] [No]

89. 1269559915 = 1269559915 [Yes] [No]

90. 48159623165 = 48159623165 [Yes] [No]

91. 7819256305 = 7819256304 [Yes] [No]

92. 8719271561 = 8719271564 [Yes] [No]

93. 519632597 = 519632597 [Yes] [No]

94. 195962315 = 195962314 [Yes] [No]

95. 862591561 = 862591561 [Yes] [No]

96. 7259615943 = 7259615934 [Yes] [No]

97. 596192795 = 596192759 [Yes] [No]

98. 1235615923 = 1235615923 [Yes] [No]

99. 456159516 = 456159546 [Yes] [No]

100. 591625059 = 591625059 [Yes] [No]

**ANSWERS**

**1 2 3 4 5 6 7 8 9 10**

**Yes No No Yes No Yes No No Yes No**

**11 12 13 14 15 16 17 18 19 20**

**No No Yes No Yes No Yes Yes No Yes**

**21 22 23 24 25 26 27 28 29 30**

**No No No Yes No Yes Yes No No Yes**

**31 32 33 34 35 36 37 38 39 40**

**No Yes No No Yes Yes No No Yes No**

**41 42 43 44 45 46 47 48 49 50**

**Yes No Yes No Yes Yes Yes No Yes No**

**51 52 53 54 55 56 57 58 59 60**

**Yes No No No Yes No Yes No Yes Yes**

**61 62 63 64 65 66 67 68 69 70**

**No No Yes Yes Yes No Yes No No Yes**

**71 72 73 74 75 76 77 78 79 80**

**Yes No Yes Yes No Yes No No Yes No**

**81 82 83 84 85 86 87 88 89 90**

**Yes Yes No Yes No No Yes No Yes Yes**

**91 92 93 94 95 96 97 98 99 100**

**No No Yes No Yes No No Yes No Yes.**

**“Medical instrumentation”**

Que. 1. what should be the range of resperation flow measurement-

Ans - 250 – to – 3000 ml/ sec.

Que. 2. How much frequency response is required for perspiration volume –

Ans - 0 – to – 10 Hz

Que. 3. What do you mean by vibro-cardiogram –

Ans - A measure of the movement of the chest due to the heartbeat.

Que. 4. By which instrument, the heart sounds should picked up-

Ans - Microphone or stethoscope.

Que. 5. How much frequency response is required for pulse pressure measurement-

Ans - 0.1 - to – 40 Hz.

Que. 6. Phonocardiogram used to measure-

Ans - Heart sounds.

Que. 7. Ballistocardiogram is used-

Ans To detect certain heart abnormalities.

Que. 8. In blood flow measurements, what are methods of measurement-

Ans Electromagnetic & ultrasonic principles.

Que. 9. Systemic volume means-

Ans in the system.

Que. 10. What should be measured by plethysonograph-

Ans Local blood volume changes in limbs / digits.

Que. 11. What is pH value of blood-

Ans 7.5

Que. 12. pH is directly related to –

Ans The H2 ion concertration in a fluid.

Que. 13. The branch of science that includes the measurement of physiological

Variables & parameters is called-

Ans Biometrics.

Que. 14. Cardivascular system are related to-

Ans The heart & blood vessels.

Que. 15. 4- chamber peemp in a heart is acts as-

Ans a 2-synchronized but functionally isolated 2-stage pump.

Que. 16. Respiratory system is of which type-

Ans Pneumatic.

Que. 17. What is the basic unit of the nervous system-

Ans neuron.

Que. 18. One or more input febers are called-

Ans Dendrites.

Que. 19. A long transmitting fiber are called-

Ans axon.

Que. 20. How many lobes are present in the left lung-

Ans 2-lobes (upper & lower).

Que. 21. Right lung consists of how many lobes-

Ans 3-lobes (upper,middle & lower).

Que. 22. A devices used to interface ionic potentials & currents are called-

Ans Electrode.

Que. 23. Give the Nernst eq n-

Ans E= -   

Que 24 In which traniducer both membrane barriers &metal –electrolyte interfaier

are used -------

Ans. Biochemical

Que 25 How many typs of Biiopotential electrodes

ANS Three(Micro,Slansurface & needle)

Que 26 A thin layer of tissue that couirs a serface is called-----

Ans Membran.

Que 27 If the 2 electrodes are different they may produce a

Ans signification dc vottage.

Que 28 The dc vottage due to the difference in electrode potential is collect .

Ans electrode offset vattage.

Que 29 is stable or unstable the silver –silver chloride electrod.

Ans Very stable.

Que 30 Which can represent the impedance of electrodes as fined values of R & C.

Ans R-C network.

Que 31 Boyh the electrode potential & impedance are varied by an effect calld

Ans polarization.

Que 32 What should be the input impedance of an Amplifire (electrode )

Ans Highly.

Que 33 At which range , the impedance of surface electrode belongs-

Ans 2-to-10 kΩ

Que 34 which in should be block in the membrance of encetable alls-

Ans sodium (  )

Que 35 A cell in the resting state is said to be

Ans polarized.

Que 36 ECG is used to

Ans Messure biopotentiols generated by the muscles of the heart.

Que 37 left & right ventricles are stay at which side of the heart-

Ans two- cower chamber

Que 38 The 2 upper chambeeers of the heart consists of-

Ans Left & right aria.

Que 39 How many types of micro electrodes-

Ans two ( metal & micropipette )

Que 40 The great trunk artery that carriers blood from the heart to be distributed by branch arteries through the body is called-

Ans A orta.

Que 41 How many electrodes are required for ECG operation-

Ans 5- electrodes

Que 42 The 3- bipolar linb bad selection first introduced by-

Ans Einthoven.

Que 43 lead- ii connected between which two sides of Einthoven triangle-

Ans Left leg & right arm.

Que 44 an ECG recorder principles the pre- amplifier is followed by a dc amplifiers is called-

Ans PEN AMPLIFIER.

Que 45 How many seconds are required for 3 – channel recorder-

Ans 10 seconds.

Que 46 A rhythmically recurrent explainsion occered is called-

Ans Diastole

Que 47 The contraction of the heart , especially that of the ventricles called-

Ans Systole.

Que 48 Osullatoe operates at a frequency range b/w –

Ans 60 & 400 HZ.

Que 49 The lungs are electric bags located in a closed cavity called –

Ans Thorex.

Que 50 The measurement of biological parameters over a distance called –

Ans Biotelemetry.

Microwave Enggnier.

Que. 1. Standing wave ratio (SWR) of unity is observed when load importance is

equal to ……….

Ans - Characteristic impedance.

Que. 2. Range of SWR lies between…

Ans - 1 to ∞

Que. 3. Two transmission line dections (x) & (y) cut from the dame transmission

line are 10m & 20m long respectively assuming that characteristic

impedance of () is 50 r  the same for (y) would be.

Ans - 50 since characteristic impedance is independent of length.

Que. 4. The co-axial cable belongs to which kind of mode of prepogation.

Ans - TEM class of transmission lines.

Que. 5. What is the Heaviside condition for distortion less transmission line.

Ans - RC = LG.

Que. 6. The distance between adjacent minima and maxima of a standing wave

on a transmission line in terms of is.

Ans -  / 4.

Que. 7. Waveguide acts as which type of filter.

Ans - high pass filter.

Que. 8. Does waveguide support TEM mode.

Ans - No TEM mode is observed only in channels, which has both forward and

return path. W. G. only have forward path.

Que. 9. Which is the dominant mode in rectangular waveguide.

Ans - TE 10.

Que. 10. Which microwave component can be used for transmission and reception

Of microwave signal.

Ans - circulater magic tee etc.

Que. 11. A microshif line is analogous to which type of transmission line.

Ans - a parallel wire line.

Que. 12. A strip line is analogous to which type of transmission line.

Ans - Co-oscial line.

Que. 13. MMIC stands for.

Ans - Monolithic y w integrated circuits.

Que. 14. TWT is an oscillaer or an amplifier.

Ans - Amplifier.

Que. 15. Name any one cross-field device.

Ans - magnetron.

Que. 16. Which type of modulation is obsourd in two cavity kleystron.

Ans - velocity modulation and current modulation.

Que .17. Explain velocity modulation.

Ans - In velocity modulation the velocity of dectron beam change according to

the amplitude of the R.F. signal in certain y w tubs velocity modulation is

used to from electron buneing.

Que. 18. Name any one slow wave structure.

Ans - Hdix, it is used in TWT.

Que. 19. What is the need of slow wave structure.

Ans - Slow wave structure are used to bring down the velocity R.F wave to the

velocity of electron brom this increases the interaction time bcturen

election fram and R.F. wave which is an essential condition for

amplification in case of TWT.

Que. 20. Which y w device is based on the transfored electron effect.

Ans - Gunn diods.

Que. 21. Why guenn diode is called gunn diode.

Ans - It is inrnted by J.B. gunn in 1921. And gunn diode is named after him.

Que. 22. Dos gunn diode have PN junction.

Ans - No, it consists of belk –demicordr having no junctions.

Que. 23. What is the mode of propogation in free space.

Ans - TEM.

Que. 24. Why magic tee is magic tee.

Ans - It does not allow the transfer of power from the collinear arms.

Que. 25. Ferritc devise are magnetic in nature or not.

Ans - Yes they are magnetic in nature.

Que. 26. Are they metallic.

Ans - No they exitbit dectrate properties.

Que. 27. A wave travelling through the ferricte from A to B, which gives a rotation of

Q. when the dame wave travels from B to A the total rotation from A to B &

B to A will be.

Ans - 2Q, line foradef rotation is independent of the direction of propogation.

Que. 28. MAGNETRON? Where it is used at hoe.

Ans - Microwave oven.

Que. 29. Why cant you put a metal bowl in a microwave oven.

Ans - The walls of microwave oven are designed for some boundary condition

And will cause a speak which can damage your magnetron in microwave

oven.

Que. 30. What is circulater? Can it be used as an isolater?

Ans - Yes it can be. The wave go from 1 to 2 but does not go from 2 to 1 so it is

An isolater.

Que. 31. Have you ever seen any such implementation.

Ans - Yes, in microwave practicals.

Que. 32. How do you implement impedance matching in transmission lines.

Ans - Using stub matching.

Que. 33. How do you implement impedance matching is waveguides.

Ans - Using windows posts screw etc. these acts as reactive components and

Are used to cancel out imaginary port.

Que. 34. Does velocity of deectro magnetic wave depends on the medium they

Fravd through.

Ans - Yes it depends.

Vr

Que. 35. The microwave buch at your college operates in which band.

Ans - X band . 8.4 to 12 GHZ.

Que. 36 DRF stands for.

Ans- Direct reading freq meter.

Que. 37. Name the microwave components used in a general bneh at your college.

Ans - Klefshon tube isolater variable alternator DRF, slotted line crystal director.

Gunn diode with him diode used as a replacement of keyston tube.

Que. 38. How impedance can be measured using magic tee.

Ans - 4

**New deter**

(4)

**Z2**

**Z1**

(1) (2) Unknown

**Y w source**

standard variable known Impedance. Impedance. (3)

Que. 39. IMPATT diode is disadvantage because of.

Ans - High noise.

Que. 40. A diode with no in which is used with a cavity resonater to form a

microwave oscilloter is an.

Ans - Green diode.

Que. 41. The major application of microwave is.

Ans - Space propogation is possible because of microwave.

Que. 42. The propogating mode that is xcited in mocrostrip transmission line is

quasi.

Ans - TEM mode.

Que. 43. In waveguides which are is greater group velocity & phase velocity.

Ans - Phase velocity.

Que. 44. Relation between group and phase velocity.

Ans - VpVg = C2.

Que. 45. What is the optimum transist time for quflese klystron?

Ans - 45.

Que. 46. What is mode jumping & it is associated with.

Ans - 46 it is associated with magnetron, since the anode cavities are not

Idenfical therefore different freq components are present & the oscillating

freq jumps from one to another and this is called mode jumping.

Que. 47. How current modulation is implemented in two cavity klysbron.

Ans - 47.

Que. 48. When we move from generator to load in smith chart & travel half

circumstances how much wave length is covored.

Ans -  / 4. When we travel from gen r to load & then load to gen r. the total

Wavelength coverd is  /2.

Que. 49. What is the diff. b/w transmission line & waveguide.

Ans - 1. W .G. is single conductor whereas co-axial line is dual “cand”.

2. W.G. is H.P.F. & co-axial cabe is all pass filter.

3. Dominent mode in W.G. is TE1oor Tm11 whereas in co-axial cabe it is

TEM.

Que. 50. Which band is recently used in satellite communication and why?

Ans - by band since other band became crowded.

**CNTL**

Que. 1. Define electrical network.

Ans - combination of number of electrical elements connected in any

manner.

Que. 2. What is active or passive network.

Ans - A network is said to be passive if it contains no sources of

Energy & active when it contains source of energy.

Que. 3. What is symmetrical & asymmetrical network.

Ans - A symmetrical network is one in which the electrical properties

Are unaffected by interchanging the input & output terminal

Otherwise it is asymmetrical.

Que. 4. What is lumped & distributed parameters.

Ans - Physically separate network element like R.L & C are known as

Lumped elements. A xmiision line or a cable on the other hand

is an example of distributed parameters.

Que. 5. Define characteristic impedance of a symmetrical two part

Network.

Ans - If an infinito number of identical symmetrical network are

connected one after another then impedance measured at the

input terminal of first network called characteristic impedance.

Que. 6. Define propagation constant of a symmetrical two port network.

Ans - The current leaving a symmetrical network will have a definite

proportion to entering the network.

**Network**

 

 , p=loge 

P is called propogation constant.

Que. 7. Defied image impedance of asymmetrical network.

Ans - It is defined as that impedance which when connected across

The appropriake pair of terminal of network the same is

presented by other pair of terminals.

Que. 8. Define iterative impedance of osymmtrical network.

Ans - Iterative impedance is the value of impedance measured at one

Pair of terminals of the network when other pair of terminals is

Terminated with an impedance of same value.

Que. 9. Define the term insertion loss.

Ans - If a network or a line is inserted between a generation and its

Load, there will be reduction in power recived in load and load

current will be decreased, The loss produced by insertion of

network or line is referred to as insertion loss.

Que. 10. What are the matching networks.

Ans - If an asymmetrical network is connected between a source and

A load, the impedance measured at input terminal equal to

terminal impedance of generator and output impedance be

arranged to be equal to terminal load impedance. The networks

used in this manner are called matching networks.

Que. 11. Distiuish between active & passive filters.

Ans - Active filter contains active elements such as operational

amplifiers that introduces some gain into the signal passive

filter contain passive elements.

Active filters eliminate inductor which are bulky & are very much

expansive at lower frequencies. In addition it is easy to tune

active filters as compared to passive filters.

Que. 12. What are the units of attenuation.

Ans - Units of attenuation is decibels or nepers.

Que. 13. Define the term decibels.

Ans - Decibels is defined as ten times of common logarithms of ratio

Of input power to output power.

D = 10  

In terms of voltage & current decibels in defined as.

D = 20   = 20  

Que. 14. Define the term neper?

Ans - Neper Is defined as natural logarithm of ratio of input voltage or

Current to output voltage or current.

N (number of neper)

=  

Neper can also be expressed in terms of input output power as

N =  

Que. 15. What is relationship between neper and decibel.

Ans - Attenuation in neper = 0.115 

Attenuation in db = 8.686 

Que. 16 What are different types of filters.

Ans - According to frequency characteristic the filters are classified as

I) LPF

II) HPF

III) BPF

IV) BSF

Depending upon the relation between arm impedances filters

are categorized as.

I) constant K filter

II) m derived filter

Que. 17. Define cinstant K filter.

Ans - A constant – K filter is a network in which series & shunt

Impedances  are connected by relationship.



Where Rk is a real constant that is independent of frequency.Que. 18. Define m derived filter

Ans In this type of filter services or quant arm of constant k filter

modified by some constant in to keep the characteristic

impedance constant other arm is also modified.

Que. 19. What are advantages of m derived filter over constant K filter.

Ans - Following are disadvantages of constant K filters.

I) The attenuation does not increase rapidly beyond cut off

Frequencies.

II) Characteristic impedances varies widely in transmission or

Pass band.

These two disadvantages are removed by m derived filters.

Que. 20. Define COMPOSITE filter?

Ans - constant K filter has attenuation close to fc but higher attenuation farther away in stop band. While m derived filter has

a very high attenuation close to fc but lower as it goes farther to

remove both disadvantage composite filters are used.

Que. 21. How radiation loss in xmission lines can be refused.

Ans By reducing spacing between conductors.

Que. 22. In coaxial cables radiation loss in higher or lower as compare to

open wire lie & why?

Ans - In coaxial cable radiation loss is lower due to closed field

Configuration is employed in coaxial cable by surrounding the

Inner conductor with an c outer cylindrical hollow conductor.

Que. 23. What are primary constant of xmission line?

Ans - Primary constants are series resistance series inductance

shunt capacitance & shunt conductance.

Que. 24. What are secondary constants of xmission line & why they

called so.

Ans - Characteristic impedance & propagation constants are

Secondary constants because the depend opon the frequency

Not remain constant.

Que. 25. When reflection present in line.

Ans - Under the condition of mismatch load reflection occurs.

Que. 26. When reflection not present in xmission line.

Ans - When line is terminated by characteristic impedance.

Que. 27. What is condition of distortion loss line.

Ans - LG = CR.

Que. 28. Define group velocity.

Ans - Group velocity is defined as velocity of envelope of a complex

Signal containing different frequency component.

Que. 29. Which one is greoker group velocity or phase velocity.

Ans - Phase velocity.

Que. 30. What is skin effect.

Ans - When an alternating current flows in a conductor the alternating

Magnetic flux within the conductor induces an emf. This emf.

Causes current density to decrease in inter or of wire and to

Increase towards the outer surface. This is known as skin effect

Que. 31. How standing waves are formed.

Ans - The resultant graphical profile of both incident & reflected wave

is called standing waves.

Que. 32. What is SWR.

Ans - The ratio of maximum & minimum of current or voltage on a line

having standing waves called standing wave ratio (SWR).

Que. 33. What should be value of VSWR.

Ans - Value of VSWR always greater then one.

Que. 34. What is drawback of single stub matching.

Ans - Single stub matching system is useful for fixed frequency only.

Que. 35. What will be VSWR of a short circuited loss less line.

Ans - Zero.

Que. 36. Input impedance of a short c k t less line with length X/y will be.

Ans - infinity.

Que. 37. What approximations may be employed at ratio frequency on x

Mission line.

Ans - Approximaticens are.

I) very considerable skin effect, so current may be assumed

flowing on conductor surfaced.

II) WL>>R so R canbe neglected.

III) the lines are well enough constnucted the G considered as zero

Que. 38. What is application of half wave line.

Ans - It is used connecting load to a source in cases where load &

source can’t made adjacent.

Que. 39. What is application of quarter wave line.

Ans - Quarter wave line can be used to match both real as well as

compled load impedance to a transmission line.

Que. 40. Define positive real function.

Ans - A function whose real part is positive for all possible value of S

called PR function.

Que. 41. Define hurwitz polynomials.

Ans - A polynomial PCSJ is Hurwitz when.

I) PCSO is real S is real.

II) The rooks of polynomial PCSO have real parts which are either

zero or negative.

Que. 42. What are methods of network synthesis.

Ans - There are two methods.

I) Foster Form

II) Caver Form

Foster form again classified as foster I & foster II & caver Form

as caver I & caver II.

Que. 43. When we travel from generation to load then how much

distance covert on circumference.

Ans - 

Que. 44. What is difference b/w x mission line & waveguide .

Ans - transmission lines are used for operational frequencies equal to

or less than about 3 GHz but waveguides used operational

frequencies beyond 3 GHz.

Que. 45. What are main sources of losses in transmission line.

Ans I) Copper loss- due to resistance associated with the conductor.

II) Dielectric loss- due to leakage through dieledric.

III) radiation loss- due to radiation of RF power to free space.

Que. 46. Define return loss in a x mission line.

Ans - Defined as the ration of incident power to reflected power at

any point on x mission line.

Que. 47. What is stub.

Ans - A stub is basically a shorted or open section of a transmission x

Mission lines to provide impedance match & cancel out

reflections.

Que. 48. Higher radius of constant SWR circle on smith chart indicate.

Ans - Higher the magnitude of reflection coefficient.

Que. 49. The distance between adjancent minima & maxima of a

Standing wave on a transmission is.

Ans - 

Que. 50. What is a loaded line.

Ans - Increasing inductance by inserting inductance in series with line

is termed as loading & such lines are called loaded line.

**Analytical industrial instrumentation**

Que. 1- What is the feell-scale range of hydrocarbons for gas chromatography

Technique.

Ans - 0-80 PPM.

Que. 2- In gas chromatography a narrow band optical filter selects which emission

band-

Ans - 394 NM.

Que. 3- What deltection liit is provided by coulometric method-

Ans - 0.01 PPM.

Que. 4- Give the general equation for representation of concentrations of gases-

Ans - Llg / m 3 = (PPM) \* pm / RT \* 103.

Que. 5- Conductometric method, is specially suitable for measuring-

Ans - Traces of H2S, SO2, MH3 & H2O IN THE PPB Range.

Que. 6- Polarographio cells are-

Ans - Temperature- sensitive, as the diffusion coefficient changes with

Temperature.

Que. 7- How much temp.- coefficient is required for polarographic cells-

Ans - 2 – 4 percent / 0 c.

Que. 8- The galvanic cell has 2-electrodes, which are made up of-

Ans. - One of which is made of noble metal such as silver & other of a base

metal such as lead.

Que. 9- Give the relation of current in the galvanic cell obeys faraday’s law-

Ans - I = 0.263 CFP (298 / T).

Que. 10- Which 2- gases are paramagnetic in nature-

Ans - Nitric oxide & nitrogen dioxide.

Que. 11- At which range of interact, the PH sensor deigns are based on dye

Moucelles-

Ans - 6.8 & 7.8 (PH is varied b / w).

Que. 12. At which voltage range, the blood Po2 measurement should be taken-

Ans - 0.6 to 0.9 V.

Que. 13. Which analytical signal is used for coulometer (instrument)-

Ans - Cell current.

Que. 14. What type of energy is converted by photovoltaic cell-

Ans - Light energy in to electrical energy.

Que. 15. What does the mass spectrometry-

Ans - Measure mass- to – charge ratio.

Que. 16. How many means of dispersing radiation for monochromators-

Ans - By refraction or by interference.

Que.17. In magnetic deflec . n mass spectrometer, what does the mass resolution

Should be obtained with sector type instrument-

Ans - 200- to – 600 mass units.

Que. 18. Resolution of time – of – flight mass spectrometer is given by-

Ans - Resolution = D/ M/M 2 DT/T.

Que. 19. In order to obtain a mass spectrum, the electric field is kept b/w-

Ans - 50 & 70 V.

Que. 20. Up to which velocities the ions gets accelerating system-

Ans - 150,000 mills / S.

Que. 21. How ion current is required for cxtoremely low magnitude ion detectors of

mass spectrograph.

Ans - 10 -6 – to – 10 – 10 A.

Que, 22. What are the two important parameters of a vaccum pump-

Ans - Its lowest attainable pressure & its pumping speed.

Que. 23. The turomolecular pump, has which typical use-

Ans - High – vaccum systems.

Que. 24. Peak shapes in quadrupole mass spectrometers are usually-

Ans - ‘Flat – shaped’.

Que. 25. At which mass range, a mass spectrometer would be capable of analyzing

gases.

Ans - 15 – to – 50.

Que. 26. Gas chromatography provides an excellent method for-

Ans - Separation of the components of a mixture.

Que. 27. Which type of technique is NMR spectroscopy (Nuclear Magnetic

Resonance).

Ans - Non- destructive.

Que. 28. NMR spectroscopy uses which type of radiation to induce transitions b / w

Different nuclear spin states of samples in a magnetic field-

Ans - Radio frequency.

Que. 29 The phenomenon of ESR (Electron Spin Resonance) should be based on-

Ans - Bohr magneton.

Que. 30. In ESR spectrometers, the S-freq. band has what wavelength (cm) –

Ans - 10 cm.

Que. 31. At 23 GHZ freq. which band operates for ESR spectrometers-

Ans - K – Band.

Que. 32. How many bands does have the ESR Spectrometers-

Ans - Five – bands (S,X,K,Q,W).

QUE. 33 By introducing which modulation the signal – to – noise ratio can be

improved in ESR Spectrometers-

Ans - Small amplitude field modulation.

Que. 34. An X-band cavity has dimensions of about-

Ans - 1\*2\*3 cm.

Que. 35. At how much modulation frequencies the typical ESR Spectrometer

operates-

Ans - Three (1000 KHZ, 270 HZ & 35 HZ)

Que 36. Diffraction is a wave property of –

Ans - Electromagnetic radiation.

Que. 37. Automation has enabled procedures to obtain-

Ans - For greater & more in – depth data analysis.

Que. 38. Which instrument carries the measurement of sodium & potassium for

clinical applications-

Ans - Flame Photometer.

Que. 39. Concentrations as low as .01 pp 6.

Que. 40. In chromatography the distribution of mixture components should occurred

B / w in which 2- phases-

Ans - One is stationary bed & another is fluid phase.

Que. 41. Adjusted Retention time (t’R) is given by-

Ans - T r’ = t r-tm.

Que. 42. Capacity factor (K) is given by-

Ans - K = tr –tm

Tm

Que. 43. Phase Ratio (b) is given by-

Ans - B = r / 2 df.

Que. 44. Distribution constant (K D)-

Ans - K D = K . B

Que. 45. Selectivity (or Separ “” Factor) ()-

Ans - = KA / KB.

Que. 46. Linear velocity ()

Ans - u = l / tm

Que. 47. When thermal conductivity detec is employed which gases are preferred

for it-

Ans - Helium & Hydrogen.

Que. 48. How much amount of gas sample should be Injected by a gas – light

syringe-

Ans - 0.1-10 ml. of sample.

Que. 49. Pyrolsis has been accepeted as a valuable technique for sample inject n

in-

Ans - Rubber, plastic & polymere

Que. 50. What the leating / cooling rates usually provide on the instruments-

Ans - 0-30 c /min.

**Micro Processor:**

1....... 25MHz processor , what is the time taken by the instruction which needs 3 clock cycles,(HCL)

a)120 nano secs b)120 micro secs

c)75 nano secs d)75 micro secs

2. For 1 MBmemory no of address lines required, (HCL)

a)11 b)16 c)22 d) 24

ans: 16

3.No given in HEX ---- write it in OCTAL (HCL)

**hughes**

4. Using which pin it's possible to address 16 bit addresses even though there

are only 8 address bits in 8085? Ans: ALE

5. resistance increases with temperature in a) Metal b) semiconductor

What is the O/P voltage wen i/p is 1 volt

6. Quality factor indicates a0 Quality of inductor b) quality of capacitor

c) both

7. Security functionality is provided by which layer of OSI

8. Frequency spectrums for AM, FM and PM (figure given, u'veto tell which

Kind of modulation it belongs to)

9. Among AM and FM which is better and why?

SR to JK flip flop conversion. Ans: S=JQ', R=KQ

10. LSB of a shift register is connected to its MSB, what is formed: Ans:

RING Counter

11. 2-3 Qns based on Demorgan's laws (identiies: (A+b)' = A'b', etc)

12. 2 qns on Logic gates (O/p of logic gates)

13 Qn on pipeline architecture

14. Main memory cache direct mapping

Ans : 64

15. Address lines and data lines for 4K x 16

Ans : Addr 12, Data 16

16. Difference between synchronous and asynchronous transmission

17. Vector intr mechanism. in 8085.

Ans. fixed locations in memory when an intr comes.

18. qn. on karnaugh map for simplifying Boolean expressions

- 1 1 -

1 - - 1

1 - - 1

- 1 1 -

karnaugh map

19 pc is incremented while executing ---------- instruction

ans:fetch instruction

20 this is gates (NAND)problem

It means some gate figure has given with all NAND gate we have write

equavalent gate

ans:OR gate

21) no.of filpflops for mod 11 counter

a.four

b.five

c.

22). no of comparators required for 4 bit parallel A/D comparator

a. 4

b. 16

c. 15

d. none

23) CPU have one interrupt pin and on to connect with external

devices with some priority?

which type of the following is used?

a. parallel priority interrupt

b. daisy chain

c. RS filpflop

d.

24) in 32 bit representation, the range of numbers in 2's complement

form

ans :-2 to the power of 31 to 2 to the power of 31 minus 1

# INTERGA

25) If a CPU has 20 address lines but MMU does'nt use two of them.

OS occupies 20K. No virtual memory is supported. What is the

maximum memory available for a user program

26) Using the following instructions and two registers , A&B.

find out A XOR B and put the result in A

PUSH <reg>

POP <reg>

NOR These instructions operates with A & B and puts the result in

AND A

(question basically to get XOR in terms of NOR and AND)

27) Mod K ring counter requres how many number of flipflops.Ans:K

28) diff between 8087,8086 (which is latest vers.)

29) 2's complement of a 2's complement number is

ans . same no.

30) If a channel has 2400 bauds what is the data rate it support.

check in data commn book stalins

31)if Band width is w what is data rate

ans 2w

32) A 12 address lines maps to the memory of

[a] 1k bytes [b] 0.5k bytes [c] 2k bytes [d] none

Ans: b

33) In a processor these are 120 instructions . Bits needed to impliment

this instructions

[a] 6 [b] 7 [c] 10 [d] none

Ans: b

34) In 8085 microprocessor READY signal does.which of the following

is incorrect statements

[a]It is input to the microprocessor

[b] It sequences the instructions

Ans : b

36) Return address will be returned by function to

[a] Pushes to the stack by call

Ans : a

37) In a compiler there is 36 bit for a word and to store a character 8bits are needed. IN this to store

a character two words are appended .Then for storing a K characters string, How many words are needed.

[a] 2k/9 [b] (2k+8)/9 [c] (k+8)/9 [d] 2\*(k+8)/9 [e] none

37) .for a given CMOS the voltage is halved

freqency doubled

capacitance halved

38)what is the present CMOS power

ans (b)---- dynamic power is 1/2 \*C\*f\*V^2

instructions respectively then no. of cycles will be

a. 5 and 12

b. 6 and 13

c. 9 and 16

d.none

39) k-map

ab

----------

c 1 x 0 0

1 x 0 x

solve it

a. A.B

B. ~A

C. ~B

D. A+B

40) int a[10[15];

char b[10[15];

(a) location g a[3][4], if base location g a[0][0] is ox1000

(b) location g b[3][4], if base location g b[0][0] is ox2000

int taken 32 bits and char taken 8 bits.

Ans : (a) ox10C4 (b) ox2031

41) Implement OR gate function with 2\*1 MUX

Ans : A \_\_\_\_\_\_\_\_\_\_\_

--------|2\*1 MUX |

B | |--------o/p

--------| |

| -----------

|\_\_\_\_\_\_\_|C

B=C

42) 1.A logic ckt is given and asked to identify the configuration.

ANS: XOR.

43)multi vibrator with nor gates is given

ANS: astable multi sqr wave opt.

44) 4 stage ripple counter with delay(f/f) 10msec. How much time it takes

for a state to change.

ANS:4\*10=40.

45)impedence of a parallell resonant circiut at resonance:

ANS:R.

46)serial to parellel conversion is done by :

ANS:shift register.

47) if the address bus is 20bits.then the memory space is :

ANS:1MB.

48) filtering can be done with:

i)capacitor,ii)inductor,iii)both,iv)none.

ANS:both.

49) two progs are given. one satrts counting frm 0 to MAX and the other

stars frm MAX to 0. which one executes fast.

ANS:may be Max to 0.Think of it.

50)problem using three registers.

ANS: register A is multiplied by 11.

51) the config that is worst effected by low CMMR

ANS:Non inverting amplifier.

52) What is the binary equivalent of dicimal 269?

a) 100001100

b) 100001010

c) 101001011

\* d) 100001101

53) EE-ROM is

\* a) electricity erasable

b) easily &quot;

c) non &quot;

d) effective &quot;

54) microprocessors can be used to make

a. computers

b.calculators

c.digital systems

\*d.all the above

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68)A Circuit with nand gates. (ans. may be XOR)

69) CMRR. relates to (options not in order)

voltage follower

non invering amplifier

inverting amplifier

integrator

70)Given a circuit , give the ouput.

(ans. may be triangular wave.)

71) o/p of an assembly code.

mulitply by 11.

72) how to handle asynchronous events.

a) polling

b) interrrupt

etc.

73) 2.Truth table of a logic function

ans: displays all its input output possibilities

74) The process of varying one signal according to the pattern

provided by another signal is

ans:modulation

75) The octal equivalant of hexa number 123 is

ans:443

.Determine how many times the given loop

76) An 8kb computer will bave addresses -----

ans:8191

Microwave Enggnier.

Que. 1. Standing wave ratio (SWR) of unity is observed when load importance is

equal to ……….

Ans - Characteristic impedance.

Que. 2. Range of SWR lies between…

Ans - 1 to ∞

Que. 3. Two transmission line dections (x) & (y) cut from the dame transmission

line are 10m & 20m long respectively assuming that characteristic

impedance of () is 50 r  the same for (y) would be.

Ans - 50 since characteristic impedance is independent of length.

Que. 4. The co-axial cable belongs to which kind of mode of prepogation.

Ans - TEM class of transmission lines.

Que. 5. What is the Heaviside condition for distortion less transmission line.

Ans - RC = LG.

Que. 6. The distance between adjacent minima and maxima of a standing wave

on a transmission line in terms of is.

Ans -  / 4.

Que. 7. Waveguide acts as which type of filter.

Ans - high pass filter.

Que. 8. Does waveguide support TEM mode.

Ans - No TEM mode is observed only in channels, which has both forward and

return path. W. G. only have forward path.

Que. 9. Which is the dominant mode in rectangular waveguide.

Ans - TE 10.

Que. 10. Which microwave component can be used for transmission and reception

Of microwave signal.

Ans - circulater magic tee etc.

Que. 11. A microshif line is analogous to which type of transmission line.

Ans - a parallel wire line.

Que. 12. A strip line is analogous to which type of transmission line.

Ans - Co-oscial line.

Que. 13. MMIC stands for.

Ans - Monolithic y w integrated circuits.

Que. 14. TWT is an oscillaer or an amplifier.

Ans - Amplifier.

Que. 15. Name any one cross-field device.

Ans - magnetron.

Que. 16. Which type of modulation is obsourd in two cavity kleystron.

Ans - velocity modulation and current modulation.

Que .17. Explain velocity modulation.

Ans - In velocity modulation the velocity of dectron beam change according to

the amplitude of the R.F. signal in certain y w tubs velocity modulation is

used to from electron buneing.

Que. 18. Name any one slow wave structure.

Ans - Hdix, it is used in TWT.

Que. 19. What is the need of slow wave structure.

Ans - Slow wave structure are used to bring down the velocity R.F wave to the

velocity of electron brom this increases the interaction time bcturen

election fram and R.F. wave which is an essential condition for

amplification in case of TWT.

Que. 20. Which y w device is based on the transfored electron effect.

Ans - Gunn diods.

Que. 21. Why guenn diode is called gunn diode.

Ans - It is inrnted by J.B. gunn in 1921. And gunn diode is named after him.

Que. 22. Dos gunn diode have PN junction.

Ans - No, it consists of belk –demicordr having no junctions.

Que. 23. What is the mode of propogation in free space.

Ans - TEM.

Que. 24. Why magic tee is magic tee.

Ans - It does not allow the transfer of power from the collinear arms.

Que. 25. Ferritc devise are magnetic in nature or not.

Ans - Yes they are magnetic in nature.

Que. 26. Are they metallic.

Ans - No they exitbit dectrate properties.

Que. 27. A wave travelling through the ferricte from A to B, which gives a rotation of

Q. when the dame wave travels from B to A the total rotation from A to B &

B to A will be.

Ans - 2Q, line foradef rotation is independent of the direction of propogation.

Que. 28. MAGNETRON? Where it is used at hoe.

Ans - Microwave oven.

Que. 29. Why cant you put a metal bowl in a microwave oven.

Ans - The walls of microwave oven are designed for some boundary condition

And will cause a speak which can damage your magnetron in microwave

oven.

Que. 30. What is circulater? Can it be used as an isolater?

Ans - Yes it can be. The wave go from 1 to 2 but does not go from 2 to 1 so it is

An isolater.

Que. 31. Have you ever seen any such implementation.

Ans - Yes, in microwave practicals.

Que. 32. How do you implement impedance matching in transmission lines.

Ans - Using stub matching.

Que. 33. How do you implement impedance matching is waveguides.

Ans - Using windows posts screw etc. these acts as reactive components and

Are used to cancel out imaginary port.

Que. 34. Does velocity of deectro magnetic wave depends on the medium they

Fravd through.

Ans - Yes it depends.

Vr

Que. 35. The microwave buch at your college operates in which band.

Ans - X band . 8.4 to 12 GHZ.

Que. 36 DRF stands for.

Ans- Direct reading freq meter.

Que. 37. Name the microwave components used in a general bneh at your college.

Ans - Klefshon tube isolater variable alternator DRF, slotted line crystal director.

Gunn diode with him diode used as a replacement of keyston tube.

Que. 38. How impedance can be measured using magic tee.

Ans - 4

**New deter**

(4)

**Z2**

**Z1**

(1) (2) Unknown

**Y w source**

standard variable known Impedance. Impedance. (3)

Que. 39. IMPATT diode is disadvantage because of.

Ans - High noise.

Que. 40. A diode with no in which is used with a cavity resonater to form a

microwave oscilloter is an.

Ans - Green diode.

Que. 41. The major application of microwave is.

Ans - Space propogation is possible because of microwave.

Que. 42. The propogating mode that is xcited in mocrostrip transmission line is

quasi.

Ans - TEM mode.

Que. 43. In waveguides which are is greater group velocity & phase velocity.

Ans - Phase velocity.

Que. 44. Relation between group and phase velocity.

Ans - VpVg = C2.

Que. 45. What is the optimum transist time for quflese klystron?

Ans - 45.

Que. 46. What is mode jumping & it is associated with.

Ans - 46 it is associated with magnetron, since the anode cavities are not

Idenfical therefore different freq components are present & the oscillating

freq jumps from one to another and this is called mode jumping.

Que. 47. How current modulation is implemented in two cavity klysbron.

Ans - 47.

Que. 48. When we move from generator to load in smith chart & travel half

circumstances how much wave length is covored.

Ans -  / 4. When we travel from gen r to load & then load to gen r. the total

Wavelength coverd is  /2.

Que. 49. What is the diff. b/w transmission line & waveguide.

Ans - 1. W .G. is single conductor whereas co-axial line is dual “cand”.

2. W.G. is H.P.F. & co-axial cabe is all pass filter.

3. Dominent mode in W.G. is TE1oor Tm11 whereas in co-axial cabe it is

TEM.

Que. 50. Which band is recently used in satellite communication and why?

Ans - by band since other band became crowded.