BSNL JTO Exam Sample Papers with Paper Pattern

What is JTO Exam?

BSNL Take JTO EXam For Direct Recruitment of "Junior Telecom Officers". This exam has an objective type questions of 3 hours. It includes three subjects. Below are the details for the same. Exam will be held on 21st June 2009.

JTO Exam Papers

Paper - I - Engineering Stream
Paper - II - Engineering Stream
Paper - III - General Ability Test

Syllabus for the above papers :

Paper - I - Engineering Stream
Materials and components
Physical Electronics, Electron Devices and ICs
Network theory
Electromagnetic Theory
Electronic Measurements and instrumentation
Power Electronics

Paper - II - Engineering Stream

Analog Electronic Circuits
Digital Electronic Circuits
Control Systems

Paper - III - General Ability Test
This would be on common sense and general knowledge.

Important Note :

Date of Examination : 21.06.2009

Qualification : B. E/B.Tech as on 31.12.2009

Engineering Disciplines eligible are: Telecommunication, Electronics, Radio ,Computer ,Electrical ,Information Technology

Examination Fee : Rs 750 [DD] in favor of Senior Accounts Officer/Accounts Officer payable at the respective stations NO FEE for SC/ST/PH
Candidates appearing in the final year degree examination can apply?: Yes

Syllabus for Paper I
Materials and components

Structure and properties of Electronic Engineering materials, Conductors, Semiconductors and Insulators, Magnetic,
Ferroelectric, Piezoelectric, Ceramic, Optical and Superconducting materials. Passive components and characteristics,
Resistors, Capacitors and Inductors; Ferrites, Quartz crystal, Ceramic resonators, Electromagnetic and Electromechanical
components.

Physical Electronics, Electron Devices and ICs

Electrons and holes in semiconductors, Carrier Statistics, Mechanics of current flow in a semi-conductor, Hall effect; Junction
theory; Different types of diodes and their characteristics; Bipolar Junction transistor; Field effect transistors; Power switching
devices like SCRs, CTOs, power MOSFETs; Basics of ICs-bipolar, MOS and CMOS types; Basics of Opto Electronics.

Network theory

Network analysis techniques: Network theorem, transcient and steady state sinusoidal response, Transmission criteria: delay
and rise time Elmore's and other definition, effect of cascading. Elements of network synthesis.

Electromagnetic Theory

Transmission lines: basic theory, standing waves, matching applications, microstrip lines; Basics of waveguides and resonators;
Elements of antenna theory.

Electronic Measurements and instrumentation

Basic concepts, standards and error analysis; Measurements of basic electrical quantities and parameters;
Electronic measuring instruments and their principles of working: analog and digital, comparison, characteristics,
applications. Transducers; Electronic measurements of non-electrical quantities like temperature, pressure, humidity etc.

Basics of telemetry for industrial use.

Power Electronics

Power Semiconductor devices, Thyristor, Power transistor, MOSFETs, Characteristics and operation. AC to DC convertors;
1-Phase and 3-phase DC to DC Convertors. AC regulators. Thyristor controlled reactors, switched capacitor networks.
Inverters: Single-phase and 3-phase. Pulse width modulation. Sinusoidal modulation with uniform sampling. Switched mode
power supplies.

Syllabus for Paper II

Analog Electronic Circuits

Transistor biasing and stabilization, Small Signal analysis. Power amplifiers. Frequency response, Wide band techniques,
Feedback amplifiers. Tuned amplifiers. Oscillators. Rectifiers and power supplies. Operational Amplifier, other linear
integrated circuits and applications. Pulse shaping circuits and waveform generators.

Digital Electronic Circuits

Transistor as a switching element; Boolean algebra, simplification of Boolean functions, Karnaugh Map and applications;
IC Logic gates and their characteristics; IC logic families: DTL, TTL, ECL, NMOS, PMOS and CMOS gates and their
comparison; Combinational logic circuits; Half adder, full adder; Digital Compartor; Multiplexer Demultiplexer; ROM and
their applications. Flip-flops, R-S, J-K, D and T flip-flops; Different types of counters and registers; waveform generators.
A/D and D/A convertors. Semiconductor memories.

Control Systems

Transient and steady state response of control systems; Effect of feedback on stability and sensitivity, Root locus techniques;
Frequency response analysis. Concepts of gain and phase margins; Constant-M and Constant-N Nichol's Chart;
Approximation of transient response from Constant-N Nichol's Chart; Approximation of transient response from closed
loop frequency response; Design of Control Systems, Compensators; Industrial controllers.

Communication systems

Basic information theory: Modulation and detection in analogue and digital systems; Sampling and data reconstruction.
Quantization & Coding; Time division and frequency division multiplexing; Equalisation; Optical Communication: in free space
& fibre optic; Propagation of signals at HF, VHF, UHF and microwave frequency; Satellite communication.

Microwave Engineering

Microwave Tubes and solid state devices, Microwave generation and amplifiers, Waveguides and other Microwave
Components and Circuits, Microstrip circuits, Microwave antennas, Microwave Measurements, MASERS LASERS;
Microwave Propogation. Microwave Communication Systems-terrestrial and satellite based.

Computer Engineering

Number Systems; Data representation; Programming; Elements of a high level programming language PASCAL/C; use of
basic data structures; Fundamentals of computer architecture processor design; Control unit design; Memory organization.
I/O System Organization. Personal computers and their typical uses.

Microprocessors

Microprocessor architecture - Instruction set and simple assembly language programming. Interfacing for memory and I/O.
Applications of Microprocessors in Telecommunications and power system.

Syllabus for Paper-III

The candidate's comprehension and understanding of General English shall be tested through simple exercises.
Questions on knowledge of current events and of such matter of everyday observation and experience in their scientific aspects as may be expected of an educated person.
Questions will also be included on events and developments in Telecommunications, History of India and Geography. These will be of a nature, which can be answered without special study by an educated person.

Paper of 11th January 2009.

GENERAL ABILITY PAPER-III

1) Operation Flood is Related To
ANS: Production of MilK

2) Capital of DaDra Nagar Haveli
ANS: Silvasa

3) Suger Bowl Of India
ANS: Uttar Pradesh

4) Minimum Age To Became President of India
ANS: 35 year

5) BANKER OF BANK
ANS: RBI

6) Oldest Mountain In India
ANS: Araavali

7) Monsoon affected State
ANS: Orrisa

8) Vidya Sagar Setu
ANS: Hoogly river

9) Peroid of RajyaSabha
ANS: 6 year

10) Our Indian Constitution pass By RAJYA SABHA
ANS: 26 NOVEMBER 1949

BASIC ENGINEERING PAPER-II

1) A+A(BAR)
ANS: 1

2) A+AB
ANS:A

3) FIND THE GATE

ANS:
A B Y
0 1 1
1 0 1
1 1 0

4) (3AB)16 =2979

5) O/P of EXNOR Gate
ANS :
A B Y
0 0 1
0 1 0
1 0 0
1 1 1

6) ASCII is a
ANS: 7 unit Code

7) In LASER " S" Stands for
ANS: STIMULATED

8) Energy Band GAp of Silicon
ANS: 1.1 ev

9) Wave Guide act as
ANS: High Pass Filter

10) Bode Plot Is applicable to
ANS: Minimum Phase Network

11) Efficiancy of CLASS B PUSH PULL Amplifier
ANS: 78.5%

12) Ideal Voltage Controlled Current sourse has
ANS: Ri = infinity R0= ZERO

13) Break Down Voltage of SILICON
ANS: 0.6

14) A Darling Pair Consist of
ANS: Both Collector

15) Sampling Theorm Fibd application In
ANS: PCM

16) Poynting Vector
ANS: P=E*H

17) The Speaker used in Telephone RX is
ANS: Fixed Coil Type

18) Measurment of High Q Inductence
AND: HAYS BRIDGE

19) Measurment of Very High Resistance
ANS: MEGGER

Paper of Year 2005 :

1. For a parallel plate capacitor which is being charged out of the following the incorrect statement is –

a). Energy stored in the capacitor does not enter it through the connecting wire through the space around the wires and plates of capacitor.
b.) Rate at which energy flows into this volume is equal to the integration of the poynting vector over the boundary of the volume between the plates.
c.) The poynting vector points everywhere radially outward of the volume between plates.
d.) The poynting vector points everywhere radially into the volume between the plates.

2. The presence of alkali oxides in alumino silicate ceramics is likely to result in dielectric breakdown due to –
a.)Polarization
b.)Conductivity
c.)Structural homogeneties
d) Ionization

3. Which of the following will serve as a donor impurity in silicon –

a.)Boron
b) Indium
c) Germanium
d) Antimony

4. Electrical contact materials used in switches, brushes and relays must possess –

a)High thermal conductivity and high melting point

b) Low thermal conductivity and low melting point
c) High thermal conductivity and low melting point.
d) Low thermal conductivity and high melting point.

5. The Maximum spectral response of the germanium and silicon is in the –

a) infrared region
b) ultraviolet region
c) visible region
d) x-ray region

6. For an insulating material, dielectric strength and dielectric loss should be respectively –
a) high and high
b) low and high
c.) high and low
d.) low and low

7. In a distortion factor meter, the filter at the front end is used to suppress –

a.) odd harmonics
b.) even harmonics
c.) fundamental component
d.) dc component

8. The coefficient of coupling between two air core coils depends on –

a). mutual inductance between two coils only
b). self inductances of the two coils only
c). mutual inductance and self inductances of the two coils
d.) none

9. Modern capacitors which have high capacitance in small size use a dielectric of –

a.) paper
b.) rubber
c.) ceramic
d.) Mylar

10. In any atom the potential energy of an orbiting electron is –
a.) always positive
b.) always negative
c.) sometime positive, sometime negative
d.) numerically less than its kinetic energy

11. A DE MOSFET differs from a JFET in the sense that it has no –

a.) channel
b.) gate
c.) P-N junctions
d.) substrate

12. The advantage of a semiconductor strain gauge over the normal strain gauge is that –

a.) it is more sensitive
b.) it is more linear
c.) it is less temperature dependent
d.) it's cost is low

13. Barrier potential in a P-N junction is caused by –

a.) thermally generated electrons and holes
b.) diffusion of majority carriers across the junction
c.) migration of minority carriers across the junction
d.) flow of drift current

14. When an NPN transistor is properly biased then most of the electrons from the emitter –

a.) recombine with holes in the base
b.) recombine in the emitter itself
c.) pass through the base to the collector
d.) are stopped by the junction barrier

15. The value of r when a transistor is biased to cut off is –

a.) 0.5
b.) 0
c.) 1.0
d.) 0.8

16. A UJT can –

a.) be triggered by any one of it's three terminals
b.) not be triggered
c.) be triggered by two of its three terminal only
d.) be triggered by all of its terminals only

17. An SCR can only be turned off via it's –

a.) cathode

b.) anode
c.) gates
d) none

18. Gold is often diffused into silicon DN junction devices to –

a.) increase the recombination rate
b.) reduce the recombination rate
c.) make silicon a direct gap semiconductor
d.) make silicon semi-metal

19. With n nodes and b branches a network will have –

a.) (b + n) links
b.) b – n + 1 links
c.) b – n – 1 links
d.) b + n + 1 links

20. When a network has 10 nodes and 17 branches in all then the number of node pair voltages would be -

a.) 7
b.) 9
c.) 10
d.) 45

21. A two port network having a 6 dB loss will give –

a.) an output power which is one – quarter of the input power
b.) an output power which is one – half of the input power
c.) an output voltage which is 0.707 of the input voltage
d.) an output power which is 0.707 of the input power

22. While transporting a sensitive galvanometer –

a.) the terminals are kept shorted
b.) critical damping resistance is connected across the terminals
c.) the terminals are kept open circuited
d.) it does not matter as to what is connected across the terminals

23. A T type attenuator is designed for an attenuation of 40 dB and terminating resistance of 75 ohms. Which of the following values represent full series and R1 and shunt arm R2 ?

1. R1 = 147W 2. R1 = 153W

3. R2 = 1.5W 4. R2 = 3750W
a..) 1 and 3
b.). 1 and 4
c.). 2 and 3
d..) 2 and 4

24. For a transmission line, the characteristic impedance with inductance 0.294mH/m and capacitance 60pF/m is –

a..) 49w
b.). 60w
c..) 70w
d..) 140w

25. When the graph of a network has six branches with three tree branches then the minimum number of equations required for the solution of the network is –

a..) 2
b..) 3
c..) 4
d..) 5

26. Consider the following statement for a 2-port network

1. Z11 = Z22 2. h12 = h21
3. Y12 = -Y21 4. BC – AD = -1
then the network is reciprocal if and only if –

a..) 1 and 2 are correct
b.) 2 and 3 are correct
c.) 3 and 4 are correct
d.). 4 alone is correct

27. As a network contains only independent current sources and resistors then if the values of all resistors are doubled then the values of the node voltages are –

a.) will become half
b.) will remain uncha
c.). will become double
d.). cannot be determined unless the circuit configuration and the values of the resistors are known

28. The energy of electric field due to a spherical charge distribution of radius r and uniform charge density in vacuum is-

.

29.Maxwell's divergence equation for the magnetic field is given by

30. When a short grounded vertical antenna has a length L which is 0.05 l at frequency f and if it's radiation resistances at f is R Ohms, then it's radiation resistance at a frequency 2f will be –

a). R/2 ohms
b). R ohms
c). 2R ohms
d). 4R ohms

31. In a cylindrical cavity resonator, the two modes which are degenerate would include

a.) TE111 and TM111
b). TE011 and TM011
c). TE022 and TM111
d). TE111 and TM011

32. When an antenna of input resistance 73 ohm is connected to a 50-ohm line and if the losses are ignored then it's efficiency will be nearly

a). 0.19
b). 0.81
c). 0.97
d). 1.19

33. If an isolated conducting sphere in air has radius = 1/ 4pqe0 it capacitance will be

a). Zero
b). IF
c). 4pF
d). OF

34. When a dominant mode wave guide not terminated in it's characteristic impedance is excited with a 10 GHz signal then if 'd' is the distance between two successive minima of the standing wave in the guide then

a). d = 1.5 cm
b). d is less then 1.5 cm
c). d is greater than 1.5 cm
d). d = 3cm

35. When a dipole antenna of l/8 length has an equivalent total loss resistance of 1.5 W then the efficiency of the antenna is

a). 0.89159 %
b). 8.9159 %
c). 89.159 %
d). 891.59 %

36. In commercial FM broadcasting, the maximum frequency deviation is normally

a). 5 KHz
b). 15 KHz
c). 75 KHz
d). 200 KHz

37. Weins bridge is used for measurement of frequency in the applied voltage waveform is measurement of frequency in the applied voltage waveform is –

a). sinusoidal
b). square
c). rectangular
d). triangular

38. Strain gauge is –

a). not a transducer
b). an active transducer
c). not an electronic instrument
d). none

39. A high Q coil has –
a). large band width
b). high losses
c). low losses
d). flat response

40. In the case of an instrument reading of 8.3V with a 0 to 150 voltmeter having a guaranteed accuracy of 1% full scale reading, the percentage limiting error is –

a). 1.810%
b). 0.181%
c). 18.10%
d). 0.0018%

41. The 'h' parameter equivalent circuit of a junction transistor is valid for –

a). High frequency, large signal operation
b.) High frequency, small signal operation

c.) Low frequency, small signal operation
d). Low frequency, large signal operation

42. A system is causal if the output of any time depends only on –

a.) Values of input in the past and in the future
b). Values of input at that time and in the past
c). Values of input at that time and in the future
d). None

43. A iron cored choke is a –

a). Linear and active device
b). Non linear and passive device
c). Active device only
d). Linear device only

44. Poynting vector wattmeter uses –

a). Seebeck effect
b). Ferranti effect
c). Induction effect
d). Hall effect

45. Which one of the following is not a transducer in the true sense ?

a). Thermocouple
b). Piezoelectric pick – up
c). Photo voltaic cell
d). LCD

46. The term used to denote a static device that converts ac to dc, dc to ac, dc to dc or ac to ac is –

a). Converter system
b). Inverter
c). Chopper
d). Thyristor

47. It is an unidirectional device that blocks the current flow from cathode to anode –

a). SCR
b). PCR
c). VCR
d). DCR

48. An ideal constant current source is connected in series with an ideal constant voltage source. Considering together the combination will be a –

a). constant voltage source
b). constant current source
c). constant voltage and a constant current source or a constant power source
d). resistance

49. Anode current in an thyristor is made up of –

a). electrons only
b). electrons or holes
c). electrons and holes
d). holes only

50. For a pulse transformer, the material used for its core and the possible turn ratio from primary to secondary are respectively –

a). ferrite : 20 : 1
b). laminated iron : 1 : 1
c). ferrite : 1 : 1
d). powdered iron : 1 : 1

51. A converter which can operate in both 3 pulse and 6 pulse modes is a –

a.) 1 phase full converter
b). 3 phase half wave converter
c). 3 phase semi converter
d). 3 phase full converter

52. A single phase CSI has capacitor C as the load. For a constant source current, the voltage across the capacitor is –

a.) square wave
b.) triangular wave
c)step function
d.) pulsed wave

53. A single phase full wave midpoint thyristor converter uses a 230/200V transformer with centre tap on the secondary side. The P.I.V per thyristor is –

a). 100V
b). 141.4V
c). 200V
d). 282.8V

54. In dc choppers for chopping period T, the output voltage can be controlled by FM by varying –

a). T keeping Ton constant
b). Ton keeping T constant
c). Toff keeping T constant
d.) None of the above

55. From the hot metal surface electrons escape because

a). of change of state from metal to gas due to heat.
b). of change of stats from gas to metal.
c). the energy supplied is greater than the work function .
d). the energy is greater than Fermi level.

56. The most common device used for detection in radio receivers is –

a). amplifier
b). triode
c). diode
d). transistor

57. In a full wave rectifier the negative point in a circuit is

a). Either cathode
b). Either anode
c). The central tap on the high voltage secondary
d). Either plate

58. Negative feedback amplifier has a signal corrupted by noise as its input. The amplifier will-
a). Amplify the noise as much as the signal
b). Reduce the noise
c). Increase the noise
d). Not effect the noise

59. Match the given feedback circuit with it's proper nomenclatures

a). Current series feedback
b). Current shunt feedback
c). Voltage series feedback
d). Voltage shunt feedback

60. Class A amplifier is used when

a). No phase inversion is required

b). Highest voltage gain is required
c). dc voltages are to be amplified
d). Minimum distortion is desired

61. Identify the correct match for the given transistor

a). Enhancement type P channel MOSFET
b). Depletion type N channel MOSFET
c). Enhancement type N channel MOSFET
d). Depletion type P channel MOSFET

62. In case a signal band limited to fm is sampled at a rate less than 2fm, the constructed signal will be

a). Distortionless
b). Small in amplitude
c). Having higher frequencies suppressed
d). Distorted

63. Quad 2 input AND gates IC No is –

a). 7411
b). 7404
c). 7400
d). 7408

64. Registers in which data is entered or taken out in serial form are referred as –

a). left shift register
b). right shift register
c). shift registers
d). none of the above

65. The expression can be simplified to

b.) AB + BC + CA

66. An ideal power supply consist of –

a) . Very small output resistance
b) . Zero internal resistance
c) . Very large input resistance
d) . Very large output resistance

67. The linearity error for a digital input is indicated by –

68. Register and counters are similar in the sense that they both –

a). count pulses
b). store binary operation
c). shift registers
d). made from an array of flip flops and gates integrated on a single chip

69. In the 8421 BCD code the decimal number 125 is written as –

a). 1111101
b). 0001 0010 0101
c). 7D
d). None of the above

70. In D/A converter, the resolution required is 50mv and the total maximum input is 10v. The number of bits required is –

a). 7
b). 8
c). 9
d). 200

71. On differentiation unit impulse function results in --

a). Unit parabolic function.
b). Unit triplet.
c). Unit doublet.
d). Unit ramp function.

72. Read the following;

i. Routh Hermitz`s criterion is in time domain.
ii. Root locus plot is in time domain.
iii. Bode plot is in frequency domain.
iv. Nyquist criterion is in frequency domain.
a). 2, 3, and 4 are correct
b). 1, 2 and 3 are correct
c). 3 and 4 are correct
d). All four are correct.

73. The maximum phase shift that can be provided by a lead compensator with transfer function.
a). 150
b). 450
c). 300
d). 600

74. The correct sequence of steps required to improve system stability is –

a). Insert derivative action, use negative feedback, reduce gain.
b). Reduce gain, use negative feedback, insert derivative action.
c). Reduce gain, insert derivative action, use negative feedback.
d). Use negative feedback, reduce gain, insert derivative action.

75. Identity slope change at w = 10 of the magnitude v/s frequency characteristic of a unity feedback system with the following open-loop transfer function –

a). –40dB/dec to –20dB/dec
b). 40dB/dec to 20dB/dec
c). –20dB/dec to –40dB/dec
d). 40dB/dec to –20dB/dec

76. In the feedback control system the loop transfer function is given by –

Number of asymptotes of its root loci is
a). 1
b). 2
c). 3
d). 4

77. In a closed – loop transfer function

The imaginary axis intercepts of the root loci will be –

78. Considering the following statement :

In a magic tee
1. the collinear arms are isolated from each other
2. one of the collinear is isolated from the E-arm
3. one of the collinear arm is isolated from the H-arm
4. E-arm and H-arm are isolated from each other.
Of these statements

a) 1 and 2 are correct
b). 1 and 3 are correct
c). 1 and 4 are correct
d). 2 and 3 are correct

79.In 1965 first geostationary satellite was launched called -

a). ANIK

b). EARLY BIRD (Intel sat -1)
c). WESTAR
d). MOLNIYA

80.- watt of power is received from sun per m2 surface area of a geosynchronous satellite

a). 100
b). 500
c). 2000
d). 1000

81. The ripple factor in an LC filter

a). Increases with the load current
b). Increases with the load resistance
c). Remains constant with the load current
d). Has the lowest value

82. . In different parts of the country identical telephone numbers are distinguished by their –
a). Language digits
b). Access digits
c). Area codes
d). Central office codes

83. Amplitude modulation is used for broadcasting because

a). it is move noise immune than other modulation systems
b). compared with other systems it requires less transmitting power
c). its use avoids receiver complexity
d). no other modulation system can provide the necessary bandwidth for high fidelity

84. The amplifiers following the modulated stage in a low level modulation AM system be
a). linear amplifier
b). harmonic generators
c). class C power amplifiers
d). class B untuned amplifiers

85. In a radar system maximum unambiguous range depends on
a). maximum power of the transmitter
b). pulse repetition frequency
c). width of the transmitted pulse
d). sensitivity of the radar receiver

86. In composite video waveform the function of the serrations, is to

a). equalize the charge in the integrator before the start of vertical retrace.
b). help vertical synchronization
c). help horizontal synchronization.
d). simplify the generation of the vertical sync pulse

87. The frequency range 30MHz – 300MHz is –

a). medium frequency
b). very high frequency
c). super high frequency
d). Infrared frequency

88. . Which wave cannot exist inside wave guide –

a.) TE
b). TM
c). TEM
d). HE

89. Ionosphere layer of earth is situated at –

a). upto 18kms from earth
b). from 18 to 70 km
c). 70 to 500 km
d). above 500 km

90. A two cavity klystron tube is a –

a). velocity modulated tube
b). frequency modulated tube
c). Amplitude modulated tube
d). simple triode

91. As the thermal noise get doubled due to the increase in a resistance the noise power get –

a). doubled
b). quadrupted
c). unchanged
d). halved

92. Which one is a cross field tube –

a). Klystron
b). Reflex Klystron

c.) Magnetron
d.) TWT

93. The degree of coupling depends on –

a). size of hole
b). location of holes
c). size and location of holes
d). not depend on size or location of hole

94. The thermal noise depends on –

a). direct current through device
b.) resistive component of resistance
c). reactive component of impedance
d.) load to connected

95. The charge on a hole is –

96. In a radio receiver the IF amplifier

a.) is tuned above the stations incoming frequency
b). amplifies the output of local oscillator
c). is fixed tuned to one particular frequency
d). can be tuned to various isolate frequencies

97. A duplexer is used to
1.) couple two antennas to a transmitter without interference
2.) isolate the antenna from the local oscillator
3.) prevent interference between two antennas connected to a receiver
4.) use an antenna for reception or transmission without interference

98. Intel's 8085 microprocessor chip contains

a). seven 8 bit registers
b). 8 seven bits registers
c). seven 7
d). eight 8

99. Boolean algebra is based on –
a). numbers
b). logic
c). truth
d). symbols

100. When A = 0, B = 0, C = 1 then in 2 input logic gate we get - - gate

a). XOR
b). AND
c). NAND
d). NOR

101. With the beginnings of space travel, we entered a new - -

a). Era of great history
b). List
c). Book
d). Year

102. An - - though it mourns the death of someone, need not be sad.

a). Funny poem
b). Newspaper article
c). Orthodox talk
d). Elegy

103. If stare is glance so gulp is –

a). Sip
b). Tell
c). Salk
d). Admire

104. He hardly works means –

a). The work is hard
b). He is hard
c). The work is easy
d). He work very little

105. Give the opposite word for pulchritude –

a). antipathy
b). unsightliness
c). inexperience
d). languor

106.Nanometre is - - - - part of a metre.

a). Millionth
b). Ten millionth

c). Billionth
d). Ten billionth

107. Malaria affects

a). Liver
b). Spleen
c). Intestine
d). Lungs

108. Sindhu Rakshak is a/an

a). Aircraft carrier
b). Submarine
c). Multiple-purpose fighter
d). Anti-aircraft gun

109. With which subject is "Dada Saheb Phalke Award" associated?

a). Best film director
b). Best musician
c). Best documentary
d). Best work relating to promotion of Indian film Industry

110. Who developed the branch of mathematics known as Calculus?

a). Aryabhatta
b). Newton
c). Einstein
d). Archimedes

111. In which state is Kanha Park situated?

a). M.P.
b). U.P.
c). Assam
d). W. Bengal

112. Which day is observed as Human Rights Day?

a). 24th October
b). 4th July
c). 8th August
d.) 10th December

113. The Kailash Temple at Ellora is a specimen of

a). Gupta architecture
b). Rashtrakuta architecture
c). Chalukya architecture
d). Chola architecture

114. When the two Houses of Parliament differ regarding a Bill then the controversy is solved by

a). Joint sitting of the two Houses
b). President of India
c). Prime Minister of India
d). By a special committee for the purpose

115. Which of the following is not the work of Kalidasa?

a). Meghdoot
b). Raghuvansha
c). Sariputra Prakarma
d). Ritushamhara

116. Amir Khusro was the famous poet and aesthete of

a). Akbar the Great
b). Mahmud Ghaznvi
c). Shah Jahan
d.) Alauddin Khilji

117. The words 'Satyameva Jayate' have been taken from

a). Vedas
b). Bhagwad Gita
c). Mundaka Upanishada
d). Mahabharata
e). None of these

118. Which of the following countries was the first to develop a neutron bomb?

a). USA
b). USSR
c). China
d). Pakistan

119. "Kathakali" dance is connected with

a). Kerala

b). Rajasthan
c). Uttar Pradesh
d). Tamil Nadu

120. The term "Ashes" is associated with

a). Hockey
b). Cricket
c). Soccer
d). None of these

1. Modern capacitors which have high capacitance in small size use a dielectric of

(A) paper (B) rubber (C) ceramic (D) Mylar

2. The Maximum spectral response of the germanium and silicon is in the

(A) infrared region (B) ultraviolet region (C) visible region (D) x-ray region

3. For an insulating material, dielectric strength and dielectric loss should be respectively

(A) high and high (B) low and high (C) high and low (D) low and low.

4. In a distortion factor meter, the filter at the front end is used suppress

(A) odd harmonics (B) even harmonics (C) fundamental component (D) dc component

5. The coefficient of coupling between two air core coils depends on

(A) mutual inductance between two coils only (B) self inductances of the two coils only (C) mutual inductance
and self inductances of the two coils (D) none

6. For a parallel plate capacitor which is being charged out of the following the incorrect statement is

(A) Energy stored in the capacitor does not enter it through the connecting wire through the space around
the wires and plates of capacitor.

(B) Rate at which energy flows into this volume is equal to the integration of the poynting vector over the boundary
of the volume between the plates.

(C) The poynting vector points everywhere radially outward of the volume between plates.

(D) The poynting vector points everywhere radially in to the volume between the plates.

7. The presence of alkali oxides in alumino silicate ceramics is likely to result in dielectric breakdown due to

(A) Polarization (B) Conductivity (C) Structural homogeneties (D) Ionization

8. Which of the following will serve as a donor impurity in silion

(A) Boron (B) Indium (C) Germanium (D) Antimony

9. Electrical contact materials used in switches, brushes and relays must possess

(A) high thermal conductivity and high melting point (B) Low thermal conductivity and low melting point

(C) High thermal conductivity and low melting point (D) Low thermal conductivity and high melting point.

10. An SCR can only be turned off via it's

(A) cathode (B) anode (C) gates (D) none

11. Gold is often diffused into silicon PN junction devices to

(A) increase the recombination rate (B) reduce the recombination rate

(C) make silicon a direct gap semiconductor (D) make silicon semi-metal

12 With n nodes and b branches a network will have

(A) (b+n) links (B) b - n +1 links (C) b -n-1 links (D) b + n + 1 links

13. When a network has 10 nodes and 17 branches in all then the number of node pair voltages would be

(A) 7 (B) 9 (C) 10 (D) 45

14. In any atom the potential energy of an orbiting electron is

(A) always positive (B) always negative

(C) sometime positive, sometime negative (D) numerically less then its kinetic energy.

15. A delition MOSFET differs from a JFET in the sense that it has no

(A) channel (B) gate (C) P-N junctions (D) substrate

16. The advantage of a semiconductor strain gauge cover the wire round strain guage is that

(A) it is more sensitive (B) it is more linear (C) it is less temperature dependent (D) it's cost is low

17. Barrier potential in a P-N junction is caused by

(A) thermally generated electrons and holes (B) diffusion of majority carriers across the junction

(C) migration of minority carriers across the junction (D) flow of drift current.

18. When an NPN transistor is properly biased then most of the electrons from the emitter

(A) recombine with holes in the base (B) recombine in the emitter itself

(C) pass through the base to the collector (D) are stopped by the junction barrier

19. The deplition voltage for silicon diode at m0 bias is

(A) 0.5 volt (B) 0.3 volt (C) 0.7 volt (D) 1.1 volt

20. A UJT can

(A) be triggered by any one of it's three terminals (B) not be triggered

(C) be triggered by two of its three terminal only (D) be triggered by all of its terminals only.

21. The energy of electric field due to a spherical charge distribution of radius r and inform charge density in vacuum is

22. Maxwells divergence equation for the magnetic field is given by

— — — —

A. ▼* B = 0 B. ▼ . B = 0

C. ▼* B = p D. ▼ . B = p

23. When a short grounded vertical antenna has a length L which is 0.05 1 at frequency f and if it's radiation resistances
at f is R Ohms, then its radiation resistance at a frequency 2f will be

(A) R/2 ohms (B) R ohms (C) 2R ohms (D) 4R ohms

24.In a cylindrical cavity resonator, the two modes which are degenerate would include

(A) TE111 and TM111 (B) TE011 and TM011 (C) TE022 and TM111 (D) TE111 and TM011

25. When an antenna of input resistance 73 ohm is connected to a 50-ohm line and if the losses are ignored then its
efficiency will be nearly

(A) 0.19 (B) 0.81 (C) 0.97 (D) 1.19

26.The transformer utilization factor of full wave bridge rectifier is

(A) 0.812 (B) 0.286 (C) 0.693 (D) 0.782

27. When a dominant mode wave guide not terminated in its characteristic impedance is excited with a 10 GHZ signal
then if d is the distance between two successive minima of the standing wave in the guide then

(A) d = 1.5 cm (B) d is less then 1.5 cm (C) d is greater then 1.5 cm (D) d = 3cm

28. A two port network having a 6 dB loss will give

(A) an output power which is one - quarter of the input power (B) an output power which is one -
half of the input power

(C) an output voltage which is 0.707 of the input voltage. (D) an output power which is 0.707
of the input power.

29. While transporting a sensitive galvanometer

(A) the terminals are kept shorted (B) critical damping resistance is connected across the terminals

(C) the terminals are kept open circuited (D) it does not matter as to what is connected across the terminals.

30. A T type attenuator is designed for an attenuation of 40 dB and terminating resistance of 75 ohms.
Which of the following values represent full series arm R1 and shunt arm R2?

1.R1 = 147 Ω 2. R1 = 153 Ω 3. R1 = 1.5 Ω 4. R1= 3750 Ω

(A) 1 and 3 (B) 1 and 4 (C) 2 and 3 (D) 2 and 4

31. For a transmission line, the characteristic impedance with inductance 0.294 μH/m and capacitance 60pF/m is

(A) 49 Ω (B) 60 Ω (C) 70 Ω (D) 140 Ω

32. When the graph of a network has six branches with three tree branches then the minimum number
of equations required for the solution of the network is

(A) 2 (B) 3 (C) 4 (D) 5

33. Consider the following statement for a 2-port network

1. Z11 =Z22 2. h12 = h21 3.Y12 = -Y21 4.BC - AD = -1

then the network is reciprocal if and only if

(A) 1 and 2 are correct (B) 2 and 3 are correct (C) 3 and 4 are correct (D) 4 alone is correct.

34. As a network contains only independent current sources and resistors then if the values of all
resistors are doubled then the values of the node voltages are

(A) will become half (B) will remain unchanged

(C) will become double (D) cannot be determined unless the circuit configuration and the values
of the resistors are known.

35. A iron cored choke is a

(A) Linear and active device (B) Non linear and passive device (C) Active device only
(D) Linear device only

36. Poynting vector wattmeter is based on

(A) Seebeck effect (B) Ferranti effect (C) Induction effect (D) Hall effect

37. Which one of the following is not a transducer in the true sense?

(A) Thermocouple (B) Piezoelectric pick-up (C) Photo voltaic cell (D) LCD.

38. The term used to denote a static device that converts ac to dc, de to ac, dc to dc or ac to ac is

(A) Converter system (B) Inverter (C) Chopper (D) Thyristor

39. When a dipole antenna of 1/8 length has an equivalent total resistance of 1.5 Watt then the
efficiency of the antenna is

(A) 0.89159% (B) 8.9159% (C) 89.159% (D) 891.59%

40. In commercial FM broadcasting, the maximum frequency deviation is normally

(A) 5 KHz (B) 15 KHz (C) 75 KHz (D) 200 KHz

41. Weins bridge is used for measurement of frequency in the applied voltage waveform is measurement
of frequency in the applied voltage waveform is

(A)sinusoidal (B) square (C) rectangular (D) triangular

42.Strain gauge is

(A) not a transducer (B) an active transducer (C) not an electronic instrument

43.A high Q coil has

(A) large band width (B) high losses (C) low losses (D) flat response

44. In the case of an instrument reading of 8.3 V with a 0 to 150 voltmeter having a guaranteed accuracy of
1% full scale reading, the percentage limiting error is

(A) 1.810% (B) 0.181% (C)12.45% (D) 0.0018%

45. The 'h' parameter equivalent circuit of a junction transistor is valid for

(A) High frequency, large signal operation (B) High frequency, small signal operation (C) Low frequency,
large signal operation.

46. A system is causal if the output of any time depends only on

(A) Values of input in the past and in the future (B) Values of input at that time and in the past

(C) Values of input at that time and in the future (D) none

47. Form the hot metal surface electrons escape because

(A) of change of state from metal to gas due to heat. (B) of change of state from gas to metal

(C) the energy supplied is greater than the work function (D) the energy is greater than Fermi level

48. The most common device used for detection in radio receivers is

(A) amplifier (B) triode (C) diode (D) transistor

49. In a full wave rectifier the negative point in a circuit is

(A) cathode (B) anode (C) The central tap on the high voltage secondary (D) plate.

50.Negative feedback amplifier has a signal corrupted by noise as its input. The amplifier will

(A) Amplify the noise as much as the signal (B) Reduce the noise (C) Increase the noise (D) Not effect the noise

PART - II

51. It is an unidirectional device that blocks the current flow from cathode to anode

(A) SCR (B) PCR (C) VCR (D) DCR

52. An ideal constant current source is connected in series with an ideal constant voltage source. Considering together
the combination will be a

(A) constant voltage source (B)constant current source

(C) constant voltage and a constant current source or a constant power source. (D) resistance

53. Anode current in an thyristor is made up of

(A) electrons only (B) electrons or holes (C) electrons and holes (D) holes only

54. For a pulse transformer, the material used for its core and the possible turn ration from primary to secondary are
respectively

(A) ferrite : 20 : 1 (B) laminated iron : 1 :1 (C) ferrite : 1 : 1 (D) powered iron : 1: 1

55. A converter which can operate in both 3 pulse and 6 pulse mode is a

(A) 1 phase full converter (B) 3 phase half wave converter (C) 3 phase semi converter (D) 3 phase full converter.

56. A single phase CSI has capacitor C as the load. For a constant source current, the voltage across the capacitor is

(A) square wave (B) triangular wave (C) step function (D) pulsed wave

57. a single phase full wave midpoint thyristor converter uses a 230/200V transformer with centre tap
on the secondary side. The P.I.V per thyristor is

(A) 100V (B)141.4V (C)200V (D)282.8V

58. In dc choppers for chopping period T, the output voltage can be controlled by FM by varying

(A) T keeping Ton constant (B) Ton keeping T constant

(C) Toff keeping T constant (D) None of the above

59.An ideal power supply consist of

(A) Very small output resistance (B) Zero Internal resistance

(C) Very large input resistance (D) Very large output resistance

60. The linearity error for a digital input is indicated by

(A) ξ (B) γ (C) η (D) ε

61. In the 8421 BCD code the decimal number 125 is written as

(A) 1111101 (B) 0001 0010 0101 (C) 7D (D) None of the bove

62. Match the given feedback circuit with its proper nomenclatures

(A) Current series feedback (B) Current shunt feedback

(C) Voltage series feedback (D) Voltage shunt feedback

63. Class A amplifier is used when

(A) No phase inversion is required (B) Highest voltage gain is required

(C) dc voltages are to be amplified (D) Minimum distortion is desired.

64. Identity the correct match for the given transister

(A) Enhancement type P channel MOSFET (B) Depletion type N channel MOSFET

(C) Enhancement type N channel MOSFET (D) Depletion type P channel MOSFET

65. In case a signal band limited to fermimeter is sampled at a rate less than 2 fermimeter, the constructed signal will be

(A) Distortionless (B) Small in amplitude (C) Having higher frequencies suppressed (D) Distorted

66.IC which has quad 2 input AND gates

(A) 7411 (B) 7404 (C)7400 (D) 7408

67. Registers in which data is entered or taken out in serial form are referred as

(A) left shift register (B) right shift register (C) shift registers (D) none of the above

68. The expression ABC can be simplified to

— — —

A. A B C B. AB+BC+CA

C. AB+ C C. A + B + C

69. Read the following

(i) Routh Herwitz's criterion is in time domain

(ii)Root locus plot is in time domain

(iii) Bode plot is in frequency domain

(iv) Nyquist criterion is in frequency domain.

(A) 2,3 and 4 are correct (B) 1,2 and 3 are correct (C) 3 and 4 are correct (D) all four are correct

70. Register and counters are similar in the sense that they both

(A) count pulses (B) store binary operation (C) shift operation

(C) made from an array of flip flops and gates integrated on a single chip.

71. In D/A converter, the resolution required is 50mv and the total maximum input is 10v. The number of
bits required is

(A) 7 (B) 8 (C) 9 (D) 200

72. On different unit impulse function results in

(A) Unit parabolic function (B) Unit triplet (C) Unit doublet (D) Unit ramp function

73. ..... watt of power is received from sun per m2 surface area of a geosynchronous satellite

(A) 100 (B) 500 (C) 2000 (D) 1000

74. The ripple factor in an LC filter.

(A) Increases with the load current (B) Increases with the load resistance

(C) Remains constant with the load current (D) Has the lowest value

75. In different parts of the country identical telephone numbers are distinguished by their

(A) Language digits (B) Access digits (C) Area codes (D) Central office codes

76.Amplitude modulation is used for broadcasting because

(A) it is move noise immune than other modulation systems

(B) compared with other systems it requires less transmitting power

(C) its use avoids receiver complexity

(D) no other modulation system can provide the necessary bandwidth for high fidelity.

77. The maximum phase shift that can be provided by a lead compensator with transfer function.

1+6S

G0(S) = _____

1+2S

(A) 15o (B) 45o (C) 30o (D) 60o

78. The correct sequence of steps required to improve system stability is

(A) Insert derivative action, use negative feedback, reduce gain

(B) Reduce gain, use negative feedback, insert derivative action

(C) Reduce gain, insert derivative action, use negative feedback

(D) Use negative feedback, reduce gain, insert derivative action,

79. Identity slope change at w = 10 of the magnitude v/s frequency characteristic of a unity feedback system with the
following open-loop transfer function.

A -80 dB/dec to -60 dB/dec B 40 dB/dec to 20 dB/dec

C 20 dB/dec to -40 dB/dec D 40 dB/dec to -20 dB/dec

80. In the feedback control system the loop transfer function is given by

K

G(s)H(s)= _____

S(s+2)(s2+2s+2) Number of asymptotes of its root loci is

A. 1 B. 2 C. 3 D. 4

81. In a closed - loop transfer function

G(s) 2600 k(s+25)

____ = _____

H(s) s4+125s3+5100s2+65000s+65000 k

A. ±j228 B. ±j2.28 C. ±j1.14 D. j114

82. Considering the following statement : In a magic tee

1. the collinear arms are isolated from each other

2. one of the collinear is isolated from the E-arm

3. one of the collinear arm is isolated from the H-arm

4. E-arm and H-arm are isolated from each other. Of these statements

(A) 1 and 2 are correct (B) 1 and 3 are correct (C) 1 and 4 are correct (D) 2 and 3 are correct.

83. In 1965 first geostationary satellite was launched called

(A) ANIK (B) EARLY BIRD (Intel sat - 1) (C) WESTAR (D)MOLNIYA

84. When A = 0., B = 0, C = 1 then in two input logic gate we get gate

(A) XOR gate (B) AND gate (C) NAND gate (D) NOR gate

85. In a radio receiver the IF amplifier

(A) is tuned above the stations incoming frequency (B) amplifies the output of local oscillator

(C) is fixed tuned to one particular frequency (D) can be tuned to various isolate frequencies

86. A duplexer is used to

(A) Couple two antennas to a transmitter without interference

(B) isolate the antenna from the local oscillator

(C) prevent interference between two antennas connected to a receiver

(D) use an antenna for reception or transmission without interference.

87. Boolean algebra is based on

(A) numbers (B) logic (C) truth (D) symbols

88. The amplifiers following the modulated stage in a low level modulation AM system be

(A) linear amplifier (B) harmonic generators (C) class C power amplifiers (D) class untuned amplifiers

89. In a radar system maximum unambiguous range depends on

(A) maximum power of the transmitter (B) pulse repetition frequency

(C) width of the transmitted pulse (D) sensitivity of the radar receiver.

90. In composite video waveform the function of the serrations, is to

(A) equalize the charge in the integrator before the start of vertical retrace

(B) help vertical synchronization (D) simplify the generation of the vertical sync pulse

91. The frequency range 30MHz - 300MHz is

(A) medium frequency (B) very high frequency (C) super high frequency (D) Infrared frequency

92. Which wave cannot exist inside wave guide

(A) TE (B) TM (C) TEM (D) HE

93.Ionosphere layer of earth is situated at

(A) upto 18 kms from earth (B) from 18 to 70 km (C) 70 to 500 km (D) above 500km

94. A two cavity klystron tube is a

(A) velocity modulated tube (B) frequency modulated tube

(C) Amplitude modulated tube (D) simple triode

95. As the thermal noise get doubled due to the increase in a resistance the noise power get.

(A) doubled (B) quadruped (C) unchanged (D) halved.

96.Which one is a cross field tube

(A) Klystron (B) Reflex Klystron (C) Magnetron (D) TWT

97. The degree of coupling depends

(A) size of hole (B) location of holes (C) size and location of holes (D) not depend on size or location of hole

98. The thermal noise depends on

(A) direct current through device

(B) resistive component of resistance

(C) reactive component of impedance

(D) load to connected.

99. The charge on a hole is

(A) 1.6 x 10-9 (B) 1.6 x 10-19 (C) 1.6 x 101 (D) 1.6 x 1020

100. Intel's 8085 microprocessor chip contains

(A) seven 8 bit registers (B) 8 seven bits registers (C) seven 7 bit registers (D) eight 8 bit registers.

PART III

101. The words Satyameva Jayathe' have been taken from

(A) Vedas (B) Bhagavad Gita (C) Mundaka Upanishada (D) Mahabharatha (E) None of these

102.Which of the following countries was the first to develop a neutron bomb?

(A) USA (B) USSR (C) China (D) Pakistan

103. "Kathakali" dance is connected with

(A) Kerala (B) Rajastan (C) Uttar pradesh (D) Tamil Nadu

104. The term "Ashes" is associated with

(A) Hockey (B) Cricket (C) Soccer (D) None of these.

105. The Kailash Temple at Ellora is a specimen of

(A) Gupta architecture (B) Rashtrakutlas architecture (C) Chalukya architecture (D) Chola architecture

106. When the two Houses of Parliament differ regarding a Bill then the controversy is solved by

(A) Joint sitting of the two Houses

(B) President of India

(C) Prime Minister of India

(D) BY a special committee for the purpose

107. Which of the following is not work of kalidasa?

(A) Meghdood (B) Reghuvansha (C) Sariputra Prakarma (D) Ritushamhara

108. Amir Khusro was the famous poet and aesthete of

(A) Akbar the Grest (B) Mahmud Ghaznvi (C) Snah Jahan (D) Alauddin Khilji

109. With the beginings of space travel, we entered a new

(A) Era of great history (B) List (C) Book (D) Year

110. An though it mourns the death of someone, need not be sad.

(A) Funny poem (B) Newspaper article (C) Othodox talk (D) Elegy

111. If stare is glance so gulp is

(A) Sip (B) Tell (C) Salk (D) Admire

112. He hardly works means

(A) The work is hard (B) He is hard (C) The work is easy (D) He work very little.

113. Give the opposite word for pulchritude

(A) antipathy (B) unsightliness (C) inexperience (D) languor

114. Nanometre is ..... part of metre

(A) MIllionth (B) Ten Millionth (C) Billionth (D) Ten billionth

115. Malaria affects

(A) Liver (B) Spleen (C) Intestine (D) Lungs

116. Sindhu Rakshak is a /an

A) Aircraft carrier (B) Submarine (C) Multiple purpose fighter (D) Anti-aircraft gun

117. With which subject is " Dada Saheb Phalke Award" associated.

(A) Best film director

(B) Best musician

(C) Best documentary

(D) Best work relating to promotion of Indian film industry

118. Who developed the branch of mathematics known as Calculus?

(A) Arybhatta (B) Newton (C) Einstein (D) Archimedes

119. In which state in Kanha Part situated?

(A) M.P (B) U.P (C) Assam (D) W.Bengal

120. Which day is observed as Human Rights Day?

(A) 24th October (B) 4th July (C) 8th Auguest (D) 10th December