Total No. of Printed Pages: 21

SET-X

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

PHD-EE-November, 2025 **Electronics and Communication Engineering**

Time : 11/4 Hours Roll No. (in figures)	Max. Marks : 100 (in words)	Total Questions : 100
Name	Date of Birth	
ather's Name	Mother's Name	
Date of Examination		
(Signature of the Candidate)		(Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- 1. All questions are compulsory.
- 2. The candidates must return the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfairmeans / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A, B, C & D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University Website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case, will be considered.
- 5. The candidate must not do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers must not be ticked in the question booklet.
- 6. There will be negative marking and a deduction of 0.25 marks for each wrong answer. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue Ball Point Pen of good quality in the OMR Answer-Sheet.
- 8. Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(A)

6. is preferred for sampling method for the population of finite size.
(1) Systematic Sampling
(2) Purposive Sampling
(3) Cluster Sampling
(4) Area Sampling

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(A)

(4) All of the above

7.	The longitudinal approach of research deals with		
	(1) Short term researches	(2) Long term researches	
	(3) Horizontal researches	(4) None of these	
8.	Dramaturgical interviewing is carried o	ut through	
	(1) Debating	(2) Sampling	
	(3) Case Study	(4) Role Playing	
9.	The word "Anusandhan" implies		
	(1) Goal orientation	(2) Following an aim	
	(3) Attaining an aim	(4) Praying to achieve an aim	
10.	Evaluation research is concerned with .		
	(1) Why we are doing?	(2) What we are doing?	
	(3) How well we are doing?	(4) None of the above	
11.	Which of the following is <i>not</i> the characteristics of the character	eteristic of research?	
	(1) Research is systematic	(2) Research is not a process	
	(3) Research is not passive	(4) Research is problem oriented	
12.	Which of the following statements are <i>c</i>	orrect ?	
	(1) Discoveries research	(2) Researches leads to discovery	
	(3) Invention and research are related	(4) None of the above	
13.	Which one is <i>not</i> the quality of a research	cher?	
	(1) His assertion to outstrip the evidence	e	
	(2) Keenness in enquiry		
	(3) He must of alert mind		
	(4) Union with that of which he is search		
PHD-E	E-November, 2025/(Electronics and C	omm. $Engg.)(SET-X)/(A)$	

14.	Books and records are primary source of data in:	
	(1) Clinical research	(2) Laboratory research
	(3) Participatory research	(4) Historical research
15.	Which is the <i>correct</i> statement ?	
	(1) Objectives should be pin pointed	
	(2) Another word for problem is varial	ble
	(3) Objective can be written in statement	ents on question form
	(4) All of the above	
16.	Which is the main task of the research	in modern society?
	(1) To discover new things	
	(2) To keep pace with the advancement	t in knowledge
	(3) To systematically examine and objectivity	eritically analyse the investigation/sources with
	(4) All of the above	
17.	One of aim of the scientific method in	research is to:
	(1) confirm triangulation	(2) introduce new variables
	(3) improve data interpretation	(4) elimination spurious relations
18.	The depth any research can be judged by	py:
	(1) title of the research	(2) duration of the research
	(3) objectives of the research	(4) total expenditure of the research
19.	Which of the following is <i>not</i> the meth	od of research?
	(1) Survey	(2) Historical
	(3) Observation	(4) Philosophical
PHD-	EE-November, 2025/(Electronics and G	Comm. Engg.)(SET-X)/(A) P. T. O.

20. Research can be classified as:

	(1) Basic, Applied and Action Research		
	(2) Quantitative and Qualitative Research	h	
	(3) Philosophical, Historical, Survey and		perimental
	(4) All of the above		at 1
21.	The first step of research is:		
	(1) Identifying a problem	(2)	Finding a problem
	(3) Selecting a problem		Searching a problem
22.	To test null hypothesis, a researcher uses	s :	
	(1) X		t-test
	(3) ANOVA	(4)	Factorical analysis
23.	A research problem in feasible only whe	n:	
	(1) It is researchable		
	(2) It has utility and relevance		
	(3) It is new and adds something to kno	wled	lge
	(4) All of the above		
24.	Bibliography given in a research report :		
	(1) Has no relevance to research	(2)	Helps those interested in further research
	(3) Shows vast knowledge of researcher	r (4)	All of the above
25.	The study in which investigator attempt	to tr	ace an effect is known as:
	(1) Survey research	(2)	Historical research
	(3) "Ex-post Facto" research	(4)	Summative research
DIID	EE November 2025//Fleetronies and C	omi	n Fngg \(SFT_Y\)(A)

26.	A ratio represents the relation between	:
	(1) Part and part	(2) Part and whole
	(3) Whole and whole	(4) All of the above
27.	Circle graphs used to show:	
	(1) How one part is related to other	
	(2) How various parts are related to the	whole
	(3) How various sections share in the v	vhole
	(4) How one whole is relate to other wh	nole
28.	Generalized conclusion on the basis of	sample is technically known as:
	(1) Statistical inference	(2) Parameter inference
	(3) Data analysis and interpretation	(4) All of the above
29.	The experimental study is based on:	
	(1) The manipulation of variables	(2) Survey of literature
	(3) Conceptual parameters	(4) Replication of research
30.	Authenticity of a research finding is its:	
	(1) Validity	(2) Objectivity
	(3) Originality	(4) All of the above
31.	Which technique is followed when popul	lation is finite?
	(1) Systematic sampling	(2) Purposive sampling
	(3) Area sampling	(4) None of the above

32.	Research problem is selected from th	e stand point of :
	(1) Social relevance	(2) Financial relevance
	(3) Researcher's interest	(4) Availability of relevant literature
33.	Which one is called non-probability	sampling?
	(1) Quota sampling	(2) Cluster sampling
	(3) Systematic sampling	(4) Stratified random sampling
34.	Formulation of hypothesis may not b	oe required in :
	(1) Survey method	(2) Historical studies
	(3) Normative studies	(4) Experimental studies
35.	CADENCE software is used in:	
	(1) Digital Signal Processing	(2) Microwave
	(3) VLSI	(4) IoT
36.	Field work based research is classifu	ed as :
	(1) Historical	(2) Emperical
	(3) Biographical	(4) Experimental
37.	SCNE stands for :	
	(1) Science Citation Index Expande	d
	(2) Social Care Indexing for Excelli	ENGE
	(3) Science Collection Information	for Engineers
	(4) Social Citation Index for Econo	Make:

P. T. O.

38.	Which of the following is the most com	prehensive source of population data?
	(1) Census	(2) National Sample Surveys
	(3) Demographic Health Surveys	(4) National Family Health Surveys
39.	The research that applies the laws at the clear ideas about the problem is:	he time of field study to draw more and more
	(1) Extention research	(2) Experimental research
	(3) Action research	(4) None of the above
40.	The process not needed in experimental	research:
	(1) Controlling	(2) Observation
	(3) Reference collection	(4) Manipulation and replication
41.	A research problem is <i>not</i> feasible only	when:
	(1) It is researchable	
	(2) It has utility and relevance	
	(3) It is new and adds something to know	wledge
	(4) It consist of independent and depend	lent variables
42.	How can objectivity of research be enhanced	nced?
	(1) through its validity	(2) through its reliability
	(3) through its impartiality	(4) All of the above
43.	We use factorial analysis:	
	(1) To test the hypothesis	
	(2) To know the difference between two	variables
	(3) To know relationship between two v	ariables
	(4) To know difference among many var	riables

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(A)

44.	Manipulation is always a part of:	
	(1) Historical research	(2) Descriptive research
	(3) Fundamental research	(4) Experimental research
45.	Which of the coefficient best explain re	lationship between creativity and intelligence?
	(1) 0.3 (2) 0.5	(3) 1.0 (4) 1.5
46.	Normal probability curve should be:	
	(1) Zero skewed	(2) Positively skewed
	(3) Negatively skewed	(4) Leptokurtic skewed
		40
47.	Which of the following variables cannot	t be expressed in quantitative terms?
	(1) Marital status	(2) Numerical aptitude
	(3) Professional attitude	(4) Socio-economic status
48.	The "Sociogram" technique is used to s	tudy :
	(1) Human relations	(2) Vocational Interest
	(3) Achievement Motivation	(4) Professional Competence
49.	Which is <i>not</i> an example of continuous	variable ?
	(1) Height (2) Attitude	(3) Family Size (4) Intelligence
50.	A research paper is a brief report of res	search work based on :
	(1) Primary data only	
	(2) Secondary data only	
	(3) Both primary and secondary data	
	(4) None of the above	

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(A)

51. Which of the following elements of electrical engineering cannot be analysed using Ohm's law?

(1) Capacitors

(2) Inductors

(3) Transistors

(4) Resistance

52. What will be the current density of metal if a current of 30A is passed through a cross sectional area of 0.5 m²?

(1) 7.5 A/m^2

(2) $15A/m^2$

 $(3) 60A/m^2$

(4) 120 A/m²

53. Norton's theorem is true for

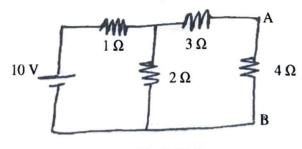
(1) Linear Networks

(2) Non-linear Networks

(3) Both (1) and (2)

(4) Neither (1) nor (2)

54. Calculate V_{th} for the given circuit between A and B:



(1) 5.54 V

(2) 3.33 V

(3) 6.67 V

(4) 3.67 V

55. What is the ROC of the signal $x(n) = \delta(n - k)$, k > 0?

- (1) z = 0
- (2) $z = \infty$
- (3) Entire z-plane, except $z = \infty$
- (4) Entire z-plane, except z = 0

56. What is the equation of the fourier series coefficient C_k of an non-periodic signal?

(1)
$$\frac{1}{T_P} \int_{0}^{t_0+T_P} x(t) e^{-j2\pi k f_0 t} dt$$

$$(2) \ \frac{1}{T_P} \int_{-\infty}^{\infty} x(t) e^{-j2\pi k f_0 t} dt$$

(3)
$$\frac{1}{T_P} \int_{t_0}^{t_0+T_P} x(t) e^{-j2\pi k f_0 t} dt$$

(4)
$$\frac{1}{T_P} \int_{t_0}^{t_0+T_P} x(t) e^{j2\pi k f_0 t} dt$$

57. How many complex multiplications are need to be performed for each FFT algorithm?

(1) $(N/2 \log N)$

(2) N log₂ N

(3) $(N/2 \log_2 N)$

(4) None of the above

58. When the temperature across a semiconductor is increased by 10°C then the conductivity is increased by times.

(1) Double

(2) Triple

(3) Four

(4) None of the above

59. Which of the following diode is used in adjustable band pass filter electronic circuits?

(1) Zener diode

(2) Varactor diode

(3) Tunnel diode

(4) Schottky diode

60. P/V of a diode in full wave bridge rectifier is given by:

(1) V_m volts

(2) $2V_m$ volts

(3) $\frac{V_m}{2}$ volts

(4) $\frac{2V_m}{\pi}$ volts

61. The relation between α and β is given by :

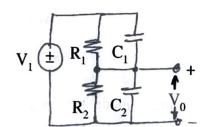
(1) $\frac{1}{1-\alpha} = 1-\beta$

 $(2) \frac{1}{1+\alpha} = 1+\beta$

(3) $\frac{1}{1-\alpha} = 1 + \beta$

 $(4) \ \frac{1}{1+\alpha} = 1-\beta$

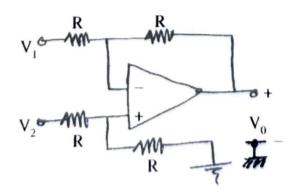
- 62. Which of the following helps in reducing the switching time of a transistor?
 - (1) a resistor connected from base to ground
 - (2) a resistor connected from emitter to ground
 - (3) a capacitor connected from base to ground
 - (4) a capacitor connected from emitter to ground
- 63. A circuit for attenuator is given, under what conditions the attenuator will be compensated?
 - $(1) \ R_1 C_1 = \frac{R_2}{C_2}$
 - (2) $C_1C_2 = R_1R_2$
 - (3) $R_1C_1 = 0$
 - (4) $R_1C_1 = R_2C_2$



- **64.** The ideal values of the input and output resistances of a transconductance amplifier are:
 - (1) $R_i = 0$ and $R_o = 0$
 - (2) $R_i = \infty$ and $R_o = \infty$
 - (3) $R_i = \infty$ and $R_o = 0$
 - (4) $R_i = 0$ and $R_o = \infty$
- 65. The signal to be amplified is current signal and desired output is a voltage signal. Which of the following amplifier can perform this task?
 - (1) Voltage amplifier
 - (2) c/n amplifier
 - (3) Transconductance amplifier
 - (4) Transresistance amplifier

- 66. Which of the following techniques is used to increase the efficiency of class A amplifier?
 - (1) By using FET
 - (2) By using PNP transistor
 - (3) By using matched transformers as load
 - (4) By using potentiometers as load
- 67. What are the units of slew rate?
 - (1) second/volt

- (2) volt/second
- (3) It is a ratio, no units
- (4) ohm/second
- **68.** If for an amplifier the common mode input signals is V_c , the differential signal is V_d and $A_c & A_d$ represents common mode and differential gains respectively, then the o/p voltage is given by:
 - (1) $V_o = A_d V_d A_c V_c$
 - (2) $V_o = -A_d V_d + A_c V_c$
 - (3) $V_o = A_d V_d + A_c V_c$
 - $(4) \quad V_o = -A_d V_d A_c V_c$
- 69. For the given difference amplifier shown, let the resistors be 10 K Ω ± x%. The expression for the worst case common mode gain is:
 - (1) $\frac{x}{50}$
 - (2) $\frac{x}{100}$
 - (3) $\frac{2x}{(100-x)}$
 - $(4) \ \frac{2x}{(100+x)}$

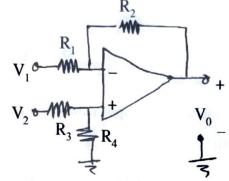


- 70. Determine the voltage gain in the given circuit. Known that $R_1 = R_3 = 10$ K and $R_2 = R_4 = 10$ R_1 .
 - (1) 1





(4) 1000



- 71. A particular op Amp, characterized by a gain bandwidth product of 20 MHz, is operated with a closed loop gain of +100 v/v. What 3 dB band width results? At what frequency does the closed loop amplifier exhibit a -6° phase shift?
 - (1) 21 KHz
 - (2) 31.5 KHz
 - (3) 42 KHz
 - (4) 52.5 KHz
- 72. The slope obtained in V_{GS} v/s I_D was 0.002. What is the value of g_m .
 - (1) 1
 - (2) 2
 - (3) 0.002
 - (4) 0
- 73. When can one logic gate drive many other logic gates?
 - (1) When its z_o is low and z_i is low
 - (2) When its z_o is high and z_i is high
 - (3) When its z_o is high and z_i is low
 - (4) When its z_o is low and z_i is high

74.	What will be the output from D flipflop if the clock is low and $D = 0$?	
	(1) 0	(2) 1
	(3) No change	(4) Toggle between 0 and 1
75.	What will be the frequency of output fr with pulse wavefrom is given?	from a JK flip-flop when $j = k = 1$ and a clock
	(1) Half the frequency of clock input.	
	(2) Equal the frequency of clock input.	
	(3) Twice the frequency of clock input.	
	(4) Independent of the frequency of close	ck input.
76.	The given switch and lamp logic with tw	vo I/P is example of which gate?
	(1) NOR	T
	(2) NAND	$ s_1 s_2 $
	(3) XOR $V = \frac{1}{1}$	
	(4) None of the above	
77.	Which of these code pairs correctly repr	esent reflective codes ?
	(1) 2421 and 8421	(2) 5211 and 8421
	(3) 5421 and 2421	(4) 2421 and 5211
78.	The memory which is used for storing the CPU is called	programs and data currently being processed by
	(1) PROM	(2) Main Memory
	(3) Non-volatile Memory	(4) Mass Memory

 $PHD\text{-}EE\text{-}November, \textbf{2025/}(Electronics\ and\ Comm.\ Engg.) (SET\text{-}X)/(A)$

79.	LDAX is a addressing mode instruction.
	(1) Direct
	(2) Indirect
	(3) Relative
	(4) Register indirect
80.	A binary input 000 is fed to a 3 bit DAC/ADC. The resultant output is 101. Find the type of error:
	(1) Settling error
	(2) Gain error
	(3) Offset error
	(4) Linearity error
81.	Which of the following element is not used in an automatic control system?
	(1) Final control element
	(2) Sensor
	(3) Oscillator
	(4) Error detector
82.	In a temperature control system, what conversion in signal takes place?
	(1) Error to Digital
	(2) Error to Analog
	(3) Digital to Analog
	(4) Analog to Digital

- 83. The characteristics equation of a control system is given by $s(s + 4) (s^2 + 2s + s) + k(s + 1) = 0$. What are the angles of asymptotes for the root loci?
 - (1) 0°, 180°, 300°
 - (2) 0°, 120°, 240°
 - (3) 60, 180°, 300°
 - (4) 120°, 180°, 240°
- **84.** What is the relation between output and I/P response and signal respectively in a closed loop system?
 - (1) Non-linear
 - (2) Linear
 - (3) Exponential
 - (4) Parabolic
- 85. Which of the motions in actuators are preferred?
 - (1) Rotary
 - (2) Stationary
 - (3) Translator
 - (4) Non-stationary
- **86.** The constant M-circle represented by the equation $x^2 + 2.25x + y^2 = 1.25$ has the value of M equal to:
 - (1) 1
 - (2) 2
 - (3) 3
 - (4) 4

87	system with gain margin of about 30. At what point does Nyquist
	plot crosses negative real axis?
	(1) -3
	(2) -0.3
	(3) -30
	(4) -0.03
88.	What is the advantage of superhetrodyning?
	(1) High selectivity and sexsitivity
	(2) Low band width
	(3) Low adjacent channel rejection
	(4) Low fidelity
89.	When will aliasing will take place?
	(1) Sampling signals less than Nyquist rate
	(2) Sampling signals more than Nyquist rate
	(3) Sampling signals equals Nyquist rate
	(4) Sampling signals at a rate which is twice of Nyquist rate
00	
90.	The method of the communication in which tail of one pulse smears into adjacent
	symbol intervals is called as:
	(1) Inter symbol interference
	(2) Inter bit interference
	(3) Inter channel interference
	(4) None of the mentioned

91.	Examples of Nyquist filters are:
	(1) Root raised cosine filter
	(2) Raised cosine filter
	(3) Root raised and raised cosine filter

- (4) None of the mentioned
- 92. Examples of double side band signals are:
 - (1) ASK
 - (2) PSK
 - (3) ASK and PSK
 - (4) None of the mentioned
- 93. In delta modulation system, granular noise occurs when:
 - (1) Modulating signal increases rapidly
 - (2) Pulse rate decreases
 - (3) Pulse amplitude decreases
 - (4) Modulating signal remains constant
- 94. An PWM signal can be generated by:
 - (1) An astable multivibrator
 - (2) A monostable multivibrator
 - (3) Integrating a PPM signal
 - (4) Differentiating a PPM signal

95. In good conductors, the electric and magnetic fields will be:

- (1) 45° in phase
- (2) 45° out of phase
- (3) 90° in phase
- (4) 90° out of phase

96. The divergence of which quantity will be zero?

- (1) E
- (2) D
- (3) H
- (4) B

97. Find the Maxwell's equation derived from Faraday's law?

- (1) Div(H) = J
- (2) Div(D) = I
- (3) Curl(E) = -dB/dt
- (4) Curl(B) = -dH/dt

98. When equipotential surface is null, then the electric field intensity will be:

- (1) 0
- (2) 1
- (3) dA/dt
- (4) -dA/dt

99.	The conduction c/n in the transmission line having a voltage of 24 V is 1.2 A.	Fin I
	receiving impedence of the line:	ind

- (1) 25.2
- (2) 22.8
- (3) 28.8
- (4) 20

100. The propagation constant of a transmission line with impedence and admittance of 9 and 16 is:

- (1) 12
- (2) 25
- (3) 144
- (4) 7

Total No. of Printed Pages: 21

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

В

PHD-EE-November, 2025

SET-X

10000

Electronics and Communication Engineering

		Sr. No
Time: 11/4 Hours	Max. Marks : 100	Total Questions: 100
Roll No. (in figures)	(in words)	
Name		
ather's Name		
Date of Examination		
(Signature of the Candidate)		(Signature of the Invigilator)
CANDIDATES MUST READ THE	E FOLLOWING INFORMAT	ION/INSTRUCTIONS REFORE

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- 1. All questions are compulsory.
- 2. The candidates *must return* the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfairmeans / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A, B, C & D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University Website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case, will be considered.
- 5. The candidate *must not* do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers *must not* be ticked in the question booklet.
- 6. There will be negative marking and a deduction of 0.25 marks for each wrong answer. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue Ball Point Pen of good quality in the OMR Answer-Sheet.
- 8. Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(B)

SEAL

		(2) 31.5 KHz	
	(3) 42 KHz	(4) 52.5 KHz	
2	2. The slope obtained in V_{GS} v/s I_D was	0.002. What is the value of g_m .	
	(1) 1	(2) 2	
	(3) 0.002	(4) 0	
3	. When can one logic gate drive many	other logic gates ?	
	(1) When its z_o is low and z_i is low		
	(2) When its z_o is high and z_i is high		
	(3) When its z_o is high and z_i is low		
	(4) When its z_o is low and z_i is high		
4.	What will be the output from D flipflo	op if the clock is low and $D = 0$?	
	(1) 0	(2) 1	
	(3) No change	(4) Toggle between 0 and 1	
5.	What will be the frequency of output with pulse wavefrom is given?	from a JK flip-flop when $j = k = 1$ and a clock	
	(1) Half the frequency of clock input.		
	(2) Equal the frequency of clock input.		
	(3) Twice the frequency of clock input		
	(4) Independent of the frequency of clo	ock input.	

6. The given switch and lamp logic w	ith two I/P is example of which gate?
(1) NOR	co un ligne in of-line to personal years of the
(2) NAND	LS ₁ S ₂ AL
(3) XOR	TI
(4) None of the above	H-20(10 zhv. al eka ay t ni be monts septe and a s
7. Which of these code pairs correctly	y represent reflective codes?
(1) 2421 and 8421	
(2) 5211 and 8421	
(3) 5421 and 2421	
(4) 2421 and 5211	
8. The memory which is used for state the CPU is called	toring programs and data currently being processed b
(1) PROM	
(2) Main Memory	1 (5)
(3) Non-volatile Memory	
(4) Mass Memory	
	ag mode instruction
9. LDAX is a addressii	ng mode instruction.
(1) Direct	the first temperature to compare an unit (3)
(2) Indirect	
(3) Relative	
(4) Register indirect	

- 10. A binary input 000 is fed to a 3 bit DAC/ADC. The resultant output is 101. Find the type of error:
 - (1) Settling error
 - (2) Gain error
 - (3) Offset error
 - (4) Linearity error
- 11. Which of the following elements of electrical engineering cannot be analysed using Ohm's law?
 - (1) Capacitors

(2) Inductors

(3) Transistors

- (4) Resistance
- 12. What will be the current density of metal if a current of 30A is passed through a cross sectional area of 0.5 m^2 ?
 - (1) 7.5 A/m^2

(2) $15A/m^2$

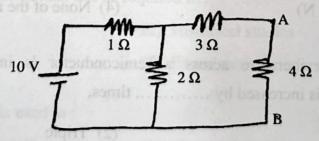
 $(3) 60A/m^2$

- (4) 120 A/m^2
- 13. Norton's theorem is true for
 - (1) Linear Networks

(2) Non-linear Networks

(3) Both (1) and (2)

- (4) Neither (1) nor (2)
- 14. Calculate V_{th} for the given circuit between A and B:



(1) 5.54 V

(2) 3.33 V

(3) 6.67 V

(4) 3.67 V

15. What is the ROC of the signal $x(n) = \delta(n-k)$, k > 0?

- (1) z = 0
- (2) $z = \infty$
- (3) Entire z-plane, except $z = \infty$
- (4) Entire z-plane, except z = 0

16. What is the equation of the fourier series coefficient C_k of an non-periodic signal?

(1)
$$\frac{1}{T_P} \int_{0}^{t_0 + T_P} x(t) e^{-j2\pi k f_{o}t} dt$$

(2)
$$\frac{1}{T_P} \int_{-\infty}^{\infty} x(t)e^{-j2\pi kf_0 t} dt$$

$$1^{t_0+T_P}$$

(3)
$$\frac{1}{T_P} \int_{t_0}^{t_0 + T_P} x(t) e^{-j2\pi k f_0 t} dt$$

(4)
$$\frac{1}{T_P} \int_{t_0}^{t_0+T_P} x(t) e^{j2\pi k f_0 t} dt$$

17. How many complex multiplications are need to be performed for each FFT algorithm?

(1) $(N/2 \log N)$

(2) N log₂ N

(3) (N/2 log₂ N)

(4) None of the above

18. When the temperature across a semiconductor is increased by 10°C then the conductivity is increased by times.

(1) Double

(2) Triple

(3) Four

(4) None of the above

	which of the following diode is used in adjustable band pass filter electronic circuits?		ircuits?
	(1) Zener diode	(2) Varactor diode	
	(3) Tunnel diode	(4) Schottky diode	
20	. P/V of a diode in full wave bridge rect	tifier is given by:	
	(1) V _m volts	(2) $2V_m$ volts	
	(3) $\frac{V_m}{2}$ volts	(4) $\frac{2V_m}{\pi}$ volts	
21.	Which technique is followed when pop	oulation is finite?	
	(1) Systematic sampling	(2) Purposive sampling	
	(3) Area sampling	(4) None of the above	
22.	22. Research problem is selected from the stand point of:		
	(1) Social relevance	(2) Financial relevance	
	(3) Researcher's interest	(4) Availability of relevant literature	
23.	23. Which one is called non-probability sampling?		
	(1) Quota sampling	(2) Cluster sampling	
	(3) Systematic sampling	(4) Stratified random sampling	
24.	4. Formulation of hypothesis may not be required in:		
	(1) Survey method	(2) Historical studies	
	(3) Normative studies	(4) Experimental studies	
25.	CADENCE software is used in:		
	(1) Digital Signal Procssing	(2) Microwave	
	(3) VLSI	(4) IoT	
PHD-E	EE-November, 2025/(Electronics and C	omm. Engg.)(SET-X)/(B)	P. T. O.

26.	Field work based research is classified a	s: blee vi opalo gravollot on to and at . At
	(1) Historical	(2) Emperical
	(3) Biographical	(4) Experimental
27.	SCIE stands for :	
	Self stands for .	
	(1) Science Citation Index Expanded	
	(2) Social Care Indexing for Excellence	
	(3) Science Collection Information for	Engineers beyolkil at supundess double 15
	(4) Social Citation Index for Economic	(1) Systemetre sampling
28.	Which of the following is the most com	prehensive source of population data?
	(1) Census	(2) National Sample Surveys
	(3) Demographic Health Surveys	(4) National Family Health Surveys
29.	The research that applies the laws at the clear ideas about the problem is:	the time of field study to draw more and mor
	(1) Extention research	(2) Experimental research
	(3) Action research	(4) None of the above
30.	The process not needed in experimental	I research:
	(1) Controlling	(2) Observation
	(3) Reference collection	(4) Manipulation and replication
31. Which of the following is <i>not</i> the o		cteristic of research?
	(1) Research is systematic	(2) Research is not a process
	(3) Research is not passive	(4) Research is problem oriented
PHD-I	EE-November, 2025/(Electronics and C	Comm. Engg.)(SET-X)/(B)

32. Which of the following statements are correct?

- (1) Discoveries research
- (2) Researches leads to discovery
- (3) Invention and research are related
- (4) None of the above

Which one is **not** the quality of a researcher? 33.

- (1) His assertion to outstrip the evidence
- (2) Keenness in enquiry
- (3) He must of alert mind
- (4) Union with that of which he is search

34. Books and records are primary source of data in:

(1) Clinical research

- (2) Laboratory research
- (3) Participatory research
- (4) Historical research

35. Which is the *correct* statement?

- (1) Objectives should be pin pointed
- (2) Another word for problem is variable
- (3) Objective can be written in statements on question form
- (4) All of the above

Which is the main task of the research in modern society? 36.

- (1) To discover new things
- (2) To keep pace with the advancement in knowledge
- (3) To systematically examine and critically analyse the investigation/sources with objectivity
- (4) All of the above

37.	One of aim of the scientific method in res	search is to:
	(1) confirm triangulation	
	(2) introduce new variables	
	(3) improve data interpretation	

38. The depth any research can be judged by:

(4) elimination spurious relations

- (1) title of the research
- (2) duration of the research
- (3) objectives of the research
- (4) total expenditure of the research
- 39. Which of the following is not the method of research?
 - (1) Survey

(2) Historical

(3) Observation

(4) Philosophical

40. Research can be classified as:

- (1) Basic, Applied and Action Research
- (2) Quantitative and Qualitative Research
- (3) Philosophical, Historical, Survey and Experimental
- (4) All of the above

41. Examples of Nyquist filters are:

- (1) Root raised cosine filter
- (2) Raised cosine filter
- (3) Root raised and raised cosine filter
- (4) None of the mentioned

(1) ASK

	(2) PSK
	(3) ASK and PSK
	(4) None of the mentioned
43	. In delta modulation system, granular noise occurs when:
	(1) Modulating signal increases rapidly
	(2) Pulse rate decreases
	(3) Pulse amplitude decreases
	(4) Modulating signal remains constant
44.	An PWM signal can be generated by:
	(1) An astable multivibrator
	(2) A monostable multivibrator
	(3) Integrating a PPM signal
	(4) Differentiating a PPM signal
45.	In good conductors, the electric and magnetic fields will be:
	(1) 45° in phase
	(2) 45° out of phase
	(3) 90° in phase

42. Examples of double side band signals are:

(4) 90° out of phase

46.	The divergence of which quantity v	vill be zero?
	(1) E	
	(2) D	
	(3) H	
	(4) B	
47.	Find the Maxwell's equation derive	ed from Faraday's law ?
	(1) $Div(H) = J$	
	(2) Div(D) = I	
	(3) $Curl(E) = -dB/dt$	
	(4) $Curl(B) = -dH/dt$	
40	When equipatential surface is null	then the electric field intensity will be
48.	(3 v Chora Vanco)	, then the electric field intensity will be:
	(1) 0	issundivittam aldelas at (15
	(2) 1	
	(3) dA/dt	
	(4) -dA/dt	
49.		
	(1) 25.2	
	(2) 22.8	
	(3) 28.8	
	(4) 20	

- **50.** The propagation constant of a transmission line with impedence and admittance of 9 and 16 is:
 - (1) 12
 - (2) 25
 - (3) 144
 - (4) 7
- 51. The relation between α and β is given by :

$$(1) \ \frac{1}{1-\alpha} = 1-\beta$$

(2)
$$\frac{1}{1+\alpha} = 1+\beta$$

(3)
$$\frac{1}{1-\alpha} = 1+\beta$$

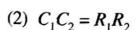
(4)
$$\frac{1}{1+\alpha} = 1-\beta$$

- 52. Which of the following helps in reducing the switching time of a transistor?
 - (1) a resistor connected from base to ground
 - (2) a resistor connected from emitter to ground
 - (3) a capacitor connected from base to ground
 - (4) a capacitor connected from emitter to ground

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(B)

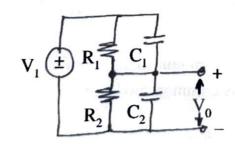
53. A circuit for attenuator is given, under what conditions the attenuator will be compensated?

(1)
$$R_1 C_1 = \frac{R_2}{C_2}$$





(4) $R_1C_1 = R_2C_2$



54. The ideal values of the input and output resistances of a transconductance amplifier are:

(1) $R_i = 0$ and $R_o = 0$

(2) $R_i = \infty$ and $R_o = \infty$

(3) $R_i = \infty$ and $R_a = 0$

(4) $R_i = 0$ and $R_o = \infty$

55. The signal to be amplified is current signal and desired output is a voltage signal. Which of the following amplifier can perform this task?

- (1) Voltage amplifier
- (2) c/n amplifier
- (3) Transconductance amplifier
- (4) Transresistance amplifier

56. Which of the following techniques is used to increase the efficiency of class A amplifier?

- (1) By using FET
- (2) By using PNP transistor
- (3) By using matched transformers as load
- (4) By using potentiometers as load

57. What are the units of slew rate?

(1) second/volt

(2) volt/second

(3) It is a ratio, no units

(4) ohm/second

58. If for an amplifier the common mode input signals is V_c , the differential signal is V_d and $A_c & A_d$ represents common mode and differential gains respectively, then the o/p voltage is given by:

(1) $V_o = A_d V_d - A_c V_c$

(2) $V_o = -A_d V_d + A_c V_c$

(3) $V_o = A_d V_d + A_c V_c$

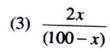
(4) $V_{o} = -A_{d} V_{d} - A_{c} V_{c}$

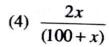
PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(B)

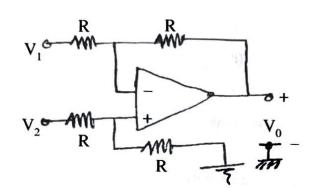
59. For the given difference amplifier shown, let the resistors be 10 K Ω ± x%. The expression for the worst case common mode gain is :





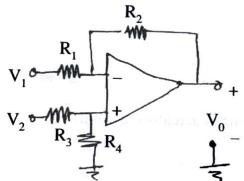






60. Determine the voltage gain in the given circuit. Known that $R_1 = R_3 = 10$ K and $R_2 = R_4 = 10$ R_1 .

- (1) 1
- (2) 10
- (3) 100
- (4) 1000



61. Which of the following element is not used in an automatic control system?

- (1) Final control element
- (2) Sensor

(3) Oscillator

(4) Error detector

62. In a temperature control system, what conversion in signal takes place?

(1) Error to Digital

(2) Error to Analog

(3) Digital to Analog

(4) Analog to Digital

- **63.** The characteristics equation of a control system is given by $s(s + 4) (s^2 + 2s + s) + k(s + 1) = 0$. What are the angles of asymptotes for the root loci?
 - (1) 0°, 180°, 300°
 - (2) 0°, 120°, 240°
 - (3) 60, 180°, 300°
 - (4) 120°, 180°, 240°
- **64.** What is the relation between output and I/P response and signal respectively in a closed loop system?
 - (1) Non-linear
 - (2) Linear
 - (3) Exponential
 - (4) Parabolic
- 65. Which of the motions in actuators are preferred?
 - (1) Rotary
 - (2) Stationary
 - (3) Translator
 - (4) Non-stationary
- **66.** The constant M-circle represented by the equation $x^2 + 2.25x + y^2 = 1.25$ has the value of M equal to:
 - (1) 1
 - (2) 2
 - (3) 3
 - (4) 4

- Consider a feedback system with gain margin of about 30. At what point does Nyquist plot crosses negative real axis?
 - (1) -3
 - (2) -0.3
 - (3) -30
 - (4) -0.03
- What is the advantage of superhetrodyning? 68.
 - (1) High selectivity and sexsitivity
 - (2) Low band width
 - (3) Low adjacent channel rejection
 - (4) Low fidelity
- When will aliasing will take place? 69.
 - (1) Sampling signals less than Nyquist rate
 - (2) Sampling signals more than Nyquist rate
 - (3) Sampling signals equals Nyquist rate
 - (4) Sampling signals at a rate which is twice of Nyquist rate
- 70. The method of the communication in which tail of one pulse smears into adjacent symbol intervals is called as:
 - (1) Inter symbol interference
 - (2) Inter bit interference
 - (3) Inter channel interference
 - (4) None of the mentioned

71.	A research problem is not feasible	e only when:
	(1) It is researchable	
	(2) It has utility and relevance	
	(3) It is new and adds something	to knowledge
	(4) It consist of independent and	dependent variables
72.	How can objectivity of research b	be enhanced ?
	(1) through its validity	(2) through its reliability
	(3) through its impartiality	(4) All of the above
73.	We use factorial analysis:	
	(1) To test the hypothesis	
	(2) To know the difference betw	
	(3) To know relationship between	
	(4) To know difference among r	many variables of a sale that you are the sale of the
74.		
	(1) Historical research	curry Sampling aignals more than Nyquist cuto
	(2) Descriptive research	
	(3) Fundamental research	
	(4) Experimental research	
	(1) Experimental research	
75.	Which of the coefficient best exp	plain relationship between creativity and intelligence?
	(1) 0.3 (2) 0.5	(3) 1.0 (4) 1.5
76.	Normal probability curve should	l be:
	(1) Zero skewed	(2) Positively skewed
	(3) Negatively skewed	(4) Leptokurtic skewed

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(B)

77.	Which of the following variables cannot	be expressed in quantitative terms ?
	(1) Marital status	(2) Numerical aptitude
	(3) Professional attitude	(4) Socio-economic status
78.	The "Sociogram" technique is used to str	udy: avoda odi to II A. (%)
	(1) Human relations	(2) Vocational Interest
	(3) Achievement Motivation	(4) Professional Competence
79.	Which is <i>not</i> an example of continuous	variable?
	(1) Height	(2) Attitude
	(3) Family Size	(4) Intelligence
80.	A research paper is a brief report of rese	earch work based on:
	(1) Primary data only	
	(2) Secondary data only	
	(3) Both primary and secondary data	
	(4) None of the above	
81.	The first step of research is:	
	(1) Identifying a problem	(2) Finding a problem
	(3) Selecting a problem	(4) Searching a problem
82.	To test null hypothesis, a researcher use	s:
	(1) X	(2) t-test
	(3) ANOVA	(4) Factorical analysis

83.	A research problem in feasible only when	VT. Which of the rollowing variables con:
	(1) It is researchable	
	(2) It has utility and relevance	
	(3) It is new and adds something to know	vledge
	(4) All of the above	
84.	Bibliography given in a research report:	
	(1) Has no relevance to research	(2) Helps those interested in further research
	(3) Shows vast knowledge of researcher	(4) All of the above
85.	The study in which investigator attempt	to trace an effect is known as:
	(1) Survey research	(2) Historical research
	(3) "Ex-post Facto" research	(4) Summative research
86.	A ratio represents the relation between:	
	(1) Part and part	(2) Part and whole
	(3) Whole and whole	(4) All of the above
87.	Circle graphs used to show:	
	(1) How one part is related to other	
	(2) How various parts are related to the	whole
	(3) How various sections share in the w	
	(4) How one whole is relate to other wh	
88.	Generalized conclusion on the basis of s	ample is technically known as:
	(1) Statistical inference	(2) Parameter inference
	(3) Data analysis and interpretation	(4) All of the above
	(5) am minijoto mio interpretation	() or the moore

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(B)

8	9. The experimental study is based on:		
	(1) The manipulation of variables	(2) Survey of literature	
	(3) Conceptual parameters	(4) Replication of research	
90	. Authenticity of a research finding is its	213 All of the above	
	(1) Validity	(2) Objectivity	
	(3) Originality	(4) All of the above	
91.	is referred to as father of a	research on teaching.	
	(1) N. L. Gage	(2) David Berliner	
	(3) Egon Brunswik	(4) Donald T. Campbell	
92.	The main purpose of research in educati	on is to	
		The fall interviewing is carried al	
	(2) Increase job prospects for an individ		
	(3) Help in personal growth		
	(4) Help the person to become eminent	educationist	
93.	refers to inferring about t made on a small part.	he whole population based on the obser	vation
	(1) Pseudo inference	(2) Objective inference	
•	(3) Inductive inference	(4) Deductive inference	
94. 9	Sampling is advantageous as it		
(1) Saves time	(2) Helps in capital saving	
() ()	3) Both (1) & (2)	(4) Increases a comment	
KE	November, 2025/(Electronics and Co	omm. Engg.)(SET-X)/(B)	P. T. O.

95.	Tippit table refers to	
	(1) Table of random digits	
	(2) Table used in sampling methods	
	(3) Table used in statistical investigation	ns
	(4) All of the above	
96.	is preferred for sampling met	hod for the population of finite size.
	(1) Systematic Sampling	(2) Purposive Sampling
	(3) Cluster Sampling	(4) Area Sampling
97.	The longitudinal approach of research de	eals with
	(1) Short term researches	(2) Long term researches
	(3) Horizontal researches	(4) None of these
98.	Dramaturgical interviewing is carried or	ut through
	(1) Debating	(2) Sampling
	(3) Case Study	(4) Role Playing
99.	The word "Anusandhan" implies	
-	(1) Goal orientation	(2) Following an aim
	(3) Attaining an aim	(4) Praying to achieve an aim
100.	Evaluation research is concerned with .	
	(1) Why we are doing?	(2) What we are doing?
	(3) How well we are doing?	(4) None of the above

Total No. of Printed Pages: 21

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

C

PHD-EE-November, 2025

Electronics and Communication Engineering

10003

SET-X

		Sr. No
Time: 11/4 Hours	Max. Marks : 100	Total Questions: 100
Roll No. (in figures)	(in words)	
Name		
Father's Name		
Date of Examination		
(Signature of the Candidate)		(Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- All questions are compulsory.
- 2. The candidates must return the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfairmeans / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A, B, C & D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University Website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case, will be considered.
- 5. The candidate *must not* do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers *must not* be ticked in the question booklet.
- 6. There will be negative marking and a deduction of 0.25 marks for each wrong answer. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue Ball Point Pen of good quality in the OMR Answer-Sheet.
- 8. Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(C)

SEAL

P. T. O.

1.	A research problem is not feasible only when:		
	(1) It is researchable		
	(2) It has utility and relevance		
	(3) It is new and adds something to kno	wledge	
	(4) It consist of independent and depend	lent variables	
2.	How can objectivity of research be enha	nced?	
	(1) through its validity	(2) through its reliability	
	(3) through its impartiality	(4) All of the above	
3.	We use factorial analysis:		
	(1) To test the hypothesis		
	(2) To know the difference between two	variables	
	(3) To know relationship between two v	variables	
	(4) To know difference among many va	riables	
4.	Manipulation is always a part of:		
	(1) Historical research	(2) Descriptive research	
	(3) Fundamental research	(4) Experimental research	
	(5) I dildamenta research	(1) Experimental rescaren	
5.	Which of the coefficient best explain rel	ationship between creativity and intelligence?	
	(1) 0.3	(2) 0.5	
	(3) 1.0	(4) 1.5	
c	Normal and altitudes and the Little		
6.	Normal probability curve should be:		
	(1) Zero skewed	(2) Positively skewed	
	(3) Negatively skewed	(4) Leptokurtic skewed	

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(C)

7.	. Which of the following variables cannot be expressed in quantitative terms	
	(1) Marital status	(2) Numerical aptitude
	(3) Professional attitude	(4) Socio-economic status
8.	The "Sociogram" technique is used to	study:
	(1) Human relations	
	(2) Vocational Interest	
	(3) Achievement Motivation	
	(4) Professional Competence	
9.	Which is <i>not</i> an example of continuou	s variable ?
	(1) Height	(2) Attitude
	(3) Family Size	(4) Intelligence
10.	A research paper is a brief report of re	search work based on :
	(1) Primary data only	
	(2) Secondary data only	
	(3) Both primary and secondary data	
	(4) None of the above	
11.	The first step of research is:	
	(1) Identifying a problem	(2) Finding a problem
	(3) Selecting a problem	(4) Searching a problem
12.	To test null hypothesis, a researcher use	es :
	(1) X	(2) t-test
	(3) ANOVA	(4) Factorical analysis
PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(C)		

13.	A research problem in feasible only when	1:
	(1) It is researchable	
	(2) It has utility and relevance	
	(3) It is new and adds something to know	vledge
	(4) All of the above	
14.	Bibliography given in a research report :	
	(1) Has no relevance to research	
	(2) Helps those interested in further rese	arch
	(3) Shows vast knowledge of researcher	
	(4) All of the above	
15.	The study in which investigator attempt	to trace an effect is known as:
	(1) Survey research	(2) Historical research
	(3) "Ex-post Facto" research	(4) Summative research
16.	A ratio represents the relation between:	
	(1) Part and part	(2) Part and whole
	(3) Whole and whole	(4) All of the above
17.	Circle graphs used to show:	
	(1) How one part is related to other	
	(2) How various parts are related to the	whole
	(3) How various sections share in the w	hole

(4) How one whole is relate to other whole

(1) Statistical inference (3) Data analysis and interpretation (4) All of the above 19. The experimental study is based on: (1) The manipulation of variables (2) Survey of literature (3) Conceptual parameters (4) Replication of research 20. Authenticity of a research finding is its: (1) Validity (2) Objectivity (3) Originality (4) All of the above 21	Generalized conclusion on the basis of sample is technically known as:	
19. The experimental study is based on: (1) The manipulation of variables (2) Survey of literature (3) Conceptual parameters (4) Replication of research 20. Authenticity of a research finding is its: (1) Validity (2) Objectivity (3) Originality (4) All of the above 21		
(1) The manipulation of variables (2) Survey of literature (3) Conceptual parameters (4) Replication of research 20. Authenticity of a research finding is its: (1) Validity (2) Objectivity (3) Originality (4) All of the above 21		
(3) Conceptual parameters (4) Replication of research 20. Authenticity of a research finding is its: (1) Validity (2) Objectivity (3) Originality (4) All of the above 21		
20. Authenticity of a research finding is its: (1) Validity (2) Objectivity (3) Originality (4) All of the above 21		
(1) Validity (2) Objectivity (3) Originality (4) All of the above 21		
(3) Originality (4) All of the above 21		
 21		
 N. L. Gage (2) David Berliner Egon Brunswik (4) Donald T. Campbell The main purpose of research in education is to		
(3) Egon Brunswik (4) Donald T. Campbell 22. The main purpose of research in education is to		
 22. The main purpose of research in education is to		
 Increase social status of an individual Increase job prospects for an individual Help in personal growth Help the person to become eminent educationist refers to inferring about the whole population based on the made on a small part. Pseudo inference Inductive inference 		
 (2) Increase job prospects for an individual (3) Help in personal growth (4) Help the person to become eminent educationist 23 refers to inferring about the whole population based on the made on a small part. (1) Pseudo inference (2) Objective inference (3) Inductive inference 		
 (3) Help in personal growth (4) Help the person to become eminent educationist 23 refers to inferring about the whole population based on the made on a small part. (1) Pseudo inference (2) Objective inference (3) Inductive inference 		
 (4) Help the person to become eminent educationist 23 refers to inferring about the whole population based on the made on a small part. (1) Pseudo inference (2) Objective inference (3) Inductive inference 		
23refers to inferring about the whole population based on the made on a small part. (1) Pseudo inference (2) Objective inference		
made on a small part. (1) Pseudo inference (2) Objective inference		
(2) Inductive inference	he observation	
(3) Inductive inference (4) Deductive inference		
(4) Deductive inference		
PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(C)		

24.	Sampling is advantageous as it	····· saggikar
	(1) Saves time	(2) Helps in capital saving
	(3) Both (1) & (2)	(4) Increases accuracy
25.	Tippit table refers to	
	(1) Table of random digits	
	(2) Table used in sampling methods	
	(3) Table used in statistical investigat	ions
	(4) All of the above	
26.	is preferred for sampling n	nethod for the population of finite size.
	(1) Systematic Sampling	(2) Purposive Sampling
	(3) Cluster Sampling	(4) Area Sampling
27.	The longitudinal approach of research	deals with
	(1) Short term researches	(2) Long term researches
	(3) Horizontal researches	(4) None of these
28.	Dramaturgical interviewing is carried	out through
	(1) Debating	(2) Sampling
	(3) Case Study	(4) Role Playing
29.	The word "Anusandhan" implies	
	(1) Goal orientation	(2) Following an aim
	(3) Attaining an aim	(4) Praying to achieve an aim
30.	. Evaluation research is concerned with	
	(1) Why we are doing?	(2) What we are doing?
	(3) How well we are doing?	(4) None of the above

31. Examples of Nyquist filters are:

- (1) Root raised cosine filter
- (2) Raised cosine filter
- (3) Root raised and raised cosine filter
- (4) None of the mentioned

32. Examples of double side band signals are:

- (1) ASK
- (2) PSK
- (3) ASK and PSK
- (4) None of the mentioned

33. In delta modulation system, granular noise occurs when:

- (1) Modulating signal increases rapidly
- (2) Pulse rate decreases
- (3) Pulse amplitude decreases
- (4) Modulating signal remains constant

34. An PWM signal can be generated by:

- (1) An astable multivibrator
- (2) A monostable multivibrator
- (3) Integrating a PPM signal
- (4) Differentiating a PPM signal

35. In good conductors, the electric and magnetic fields will be:

- (1) 45° in phase
- (2) 45° out of phase
- (3) 90° in phase
- (4) 90° out of phase

36. The divergence of which quantity will be zero?

- (1) E
- (2) D
- (3) H
- (4) B

37. Find the Maxwell's equation derived from Faraday's law?

- (1) Div(H) = J
- (2) Div(D) = I
- (3) Curl(E) = -dB/dt
- (4) Curl(B) = -dH/dt

38. When equipotential surface is null, then the electric field intensity will be:

- (1) 0
- (2) 1
- (3) dA/dt
- (4) -dA/dt

- The conduction c/n in the transmission line having a voltage of 24 V is 1.2 A. Find receiving impedence of the line:
 - (1) 25.2
 - (2) 22.8
 - (3) 28.8
 - (4) 20
- The propagation constant of a transmission line with impedence and admittance of 9 40. and 16 is:
 - (1) 12
 - (2) 25
 - (3) 144
 - (4) 7
- The relation between α and β is given by :

$$(1) \quad \frac{1}{1-\alpha} = 1-\beta$$

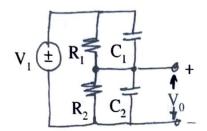
(2)
$$\frac{1}{1+\alpha} = 1+\beta$$

$$(3) \ \frac{1}{1-\alpha} = 1 + \beta$$

(4)
$$\frac{1}{1+\alpha} = 1-\beta$$

- Which of the following helps in reducing the switching time of a transistor?
 - (1) a resistor connected from base to ground
 - (2) a resistor connected from emitter to ground
 - (3) a capacitor connected from base to ground
 - (4) a capacitor connected from emitter to ground

- 43. A circuit for attenuator is given, under what conditions the attenuator will be compensated?
 - (1) $R_1C_1 = \frac{R_2}{C_2}$
 - (2) $C_1C_2 = R_1R_2$
 - (3) $R_1C_1 = 0$
 - (4) $R_1C_1 = R_2C_2$



- 44. The ideal values of the input and output resistances of a transconductance amplifier are:
 - (1) $R_i = 0$ and $R_a = 0$
 - (2) $R_i = \infty$ and $R_o = \infty$
 - (3) $R_i = \infty$ and $R_o = 0$
 - (4) $R_i = 0$ and $R_o = \infty$
- **45.** The signal to be amplified is current signal and desired output is a voltage signal. Which of the following amplifier can perform this task?
 - (1) Voltage amplifier
 - (2) c/n amplifier
 - (3) Transconductance amplifier
 - (4) Transresistance amplifier
- **46.** Which of the following techniques is used to increase the efficiency of class A amplifier?
 - (1) By using FET
 - (2) By using PNP transistor
 - (3) By using matched transformers as load
 - (4) By using potentiometers as load

47. What are the units of slew rate?

(1) second/volt

- (2) volt/second
- (3) It is a ratio, no units
- (4) ohm/second

48. If for an amplifier the common mode input signals is V_c , the differential signal is V_d and $A_c & A_d$ represents common mode and differential gains respectively, then the 0/p voltage is given by:

(1)
$$V_o = A_d V_d - A_c V_c$$

(2)
$$V_0 = -A_d V_d + A_c V_c$$

(3)
$$V_0 = A_d V_d + A_c V_c$$

(4)
$$V_0 = -A_d V_d - A_c V_c$$

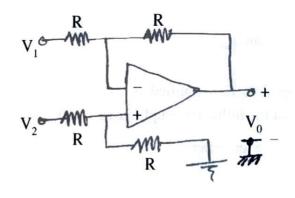
49. For the given difference amplifier shown, let the resistors be 10 K $\Omega \pm x\%$. The expression for the worst case common mode gain is:



(2)
$$\frac{x}{100}$$

(3)
$$\frac{2x}{(100-x)}$$

(4)
$$\frac{2x}{(100+x)}$$



50. Determine the voltage gain in the given circuit. Known that $R_1 = R_3 = 10$ K and $R_1 = R_2 = 10$ R

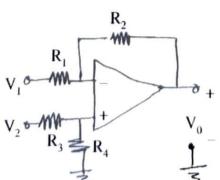
 $R_2 = R_4 = 10 R_1.$







(4) 1000



51.	Which technique is followed when population is finite?	
	(1) Systematic sampling	(2) Purposive sampling
	(3) Area sampling	(4) None of the above
52.	Research problem is selected from the st	stand point of:
	(1) Social relevance	(2) Financial relevance
	(3) Researcher's interest	(4) Availability of relevant literature
53.	Which one is called non-probability sam	mpling ?
	(1) Quota sampling	(2) Cluster sampling
	(3) Systematic sampling	(4) Stratified random sampling
54.	Formulation of hypothesis may not be re-	equired in :
	(1) Survey method	(2) Historical studies
	(3) Normative studies	(4) Experimental studies
55.	CADENCE software is used in:	
	(1) Digital Signal Procssing	(2) Microwave
	(3) VLSI	(4) IoT
56.	Field work based research is classified a	as:
	(1) Historical	(2) Emperical
	(3) Biographical	(4) Experimental
57.	SCIE stands for:	
	(1) Science Citation Index Expanded	
	(2) Social Care Indexing for Excellence	e
	(3) Science Collection Information for I	Engineers
	(4) Social Citation Index for Economic	

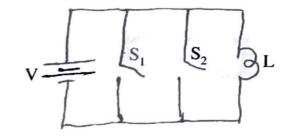
58.	Which of the following is the most comprehensive source of population data?	
	(1) Census	(2) National Sample Surveys
	(3) Demographic Health Surveys	(4) National Family Health Surveys
59.	The research that applies the laws at the clear ideas about the problem is:	the time of field study to draw more and more
	(1) Extention research	(2) Experimental research
	(3) Action research	(4) None of the above
60.	The process not needed in experimental	research:
	(1) Controlling	(2) Observation
	(3) Reference collection	(4) Manipulation and replication
61.	operated with a closed loop gain of +100 v/v. What 3 dB band width results? At v frequency does the closed loop amplifier exhibit a -6° phase shift?	
	(1) 21 KHz	(2) 31.5 KHz
	(3) 42 KHz	(4) 52.5 KHz
62.	The slope obtained in V_{GS} v/s I_D was 0.0	002. What is the value of g_m .
	(1) 1	(2) 2
	(3) 0.002	(4) 0
63.	When can one logic gate drive many oth	er logic gates ?
	(1) When its z_o is low and z_i is low	
	(2) When its z_o is high and z_i is high	
	(3) When its z_o is high and z_i is low	
	(4) When its z_o is low and z_i is high	

- 64. What will be the output from D flipflop if the clock is low and D = 0?
 - (1) 0

(2) 1

(3) No change

- (4) Toggle between 0 and 1
- 65. What will be the frequency of output from a JK flip-flop when j = k = 1 and a clock with pulse wavefrom is given?
 - (1) Half the frequency of clock input.
 - (2) Equal the frequency of clock input.
 - (3) Twice the frequency of clock input.
 - (4) Independent of the frequency of clock input.
- 66. The given switch and lamp logic with two I/P is example of which gate?
 - (1) **NOR**
 - (2) NAND
 - (3) XOR
 - (4) None of the above



- 67. Which of these code pairs correctly represent reflective codes?
 - (1) 2421 and 8421

(2) 5211 and 8421

(3) 5421 and 2421

- (4) 2421 and 5211
- 68. The memory which is used for storing programs and data currently being processed by the CPU is called
 - (1) PROM

(2) Main Memory

(3) Non-volatile Memory

(4) Mass Memory

69.	LDAX is a addressing mode instruction.
	(1) Direct
	(2) Indirect
	(3) Relative
	(4) Register indirect
70.	A binary input 000 is fed to a 3 bit DAC/ADC. The resultant output is 101. Find the type of error: (1) Settling error (2) Gain error (3) Offset error (4) Linearity error
71.	Which of the following element is <i>not</i> used in an automatic control system?
	(1) Final control element
	(2) Sensor
	(3) Oscillator
	(4) Error detector
72.	In a temperature control system, what conversion in signal takes place?
	(1) Error to Digital
	(2) Error to Analog
	(3) Digital to Analog
	(4) Analog to Digital

 $PHD\text{-}EE\text{-}November, \textbf{2025/}(Electronics \ and \ Comm.\ Engg.) (SET\text{-}X)/(C)$

73.	The characteristics equation of a control system is given by $s(s + 4) (s^2 + 2s + s) +$
	k(s+1) = 0. What are the angles of asymptotes for the root loci?

- (1) 0°, 180°, 300°
- (2) 0°, 120°, 240°
- (3) 60, 180°, 300°
- (4) 120°, 180°, 240°

74. What is the relation between output and I/P response and signal respectively in a closed loop system?

- (1) Non-linear
- (2) Linear
- (3) Exponential
- (4) Parabolic

75. Which of the motions in actuators are preferred?

- (1) Rotary
- (2) Stationary
- (3) Translator
- (4) Non-stationary

76. The constant M-circle represented by the equation $x^2 + 2.25x + y^2 = 1.25$ has the value of M equal to:

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Consider a feedback system with gain n plot crosses negative real axis?	At what point does hyquist
(1) -3	
(2) -0.3	
(3) -30	
(4) -0.03	

- 78. What is the advantage of superhetrodyning?
 - (1) High selectivity and sexsitivity
 - (2) Low band width
 - (3) Low adjacent channel rejection
 - (4) Low fidelity
- 79. When will aliasing will take place?
 - (1) Sampling signals less than Nyquist rate
 - (2) Sampling signals more than Nyquist rate
 - (3) Sampling signals equals Nyquist rate
 - (4) Sampling signals at a rate which is twice of Nyquist rate
- 80. The method of the communication in which tail of one pulse smears into adjacent symbol intervals is called as:
 - (1) Inter symbol interference
 - (2) Inter bit interference
 - (3) Inter channel interference
 - (4) None of the mentioned

81.	81. Which of the following is not the characteristic of research?	
	(1) Research is systematic	gaint area
	(2) Research is not a process	ens and entract
	(3) Research is not passive	
	(4) Research is problem oriented	
	WT 1 6 4 6 W	
82.	Which of the following statements are	correct ?
	(1) Discoveries research	
	(2) Researches leads to discovery	
	(3) Invention and research are related	л. 91 у <u>ж</u> убу I
	(4) None of the above	
83.	Which one is <i>not</i> the quality of a reset (1) His assertion to outstrip the evide (2) Keenness in enquiry (3) He must of alert mind (4) Union with that of which he is sea	ence
84.	Books and records are primary source	e of data in :
	(1) Clinical research	(2) Laboratory research
	(3) Participatory research	(4) Historical research
85.	Which is the <i>correct</i> statement ?	
	(1) Objectives should be pin pointed	
	(2) Another word for problem is varia	able
	(3) Objective can be written in statem	
	(4) All of the above	

investigation/sources with

86.	Which is the main task of the research in modern society?	
	(1) To discover new things	
	(2) To keep pace with the advancement in knowledge	
	(3) To systematically examine and critically analyse the objectivity	
	(4) All of the above	
87.	One of aim of the scientific method in research is to:	
	(1) confirm triangulation	
	(2) introduce new variables	
	(3) improve data interpretation	
	(4) elimination spurious relations	
88.	The depth any research can be judged by:	
	(1) title of the research	
	(2) duration of the research	
	(3) objectives of the research	
	(4) total expenditure of the research	
89.	Which of the following is <i>not</i> the method of research?	
	(1) Survey (2) Historical	
	(3) Observation (4) Philosophical	
90.	Research can be classified as:	
	(1) Basic, Applied and Action Research	
	(2) Quantitative and Qualitative Research	
	(3) Philosophical, Historical, Survey and Experimental	
	(4) All of the above	

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(C)

C

91. Which of the following elements of electrical engineering cannot be analysed using Ohm's law?

(1) Capacitors

(2) Inductors

(3) Transistors

(4) Resistance

92. What will be the current density of metal if a current of 30A is passed through a cross sectional area of 0.5 m²?

(1) 7.5 A/ m^2

 $(2) 15A/m^2$

 $(3) 60A/m^2$

(4) 120 A/m^2

93. Norton's theorem is true for

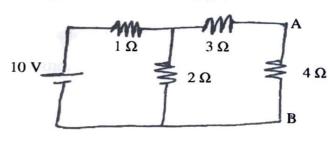
(1) Linear Networks

(2) Non-linear Networks

(3) Both (1) and (2)

(4) Neither (1) nor (2)

94. Calculate V_{th} for the given circuit between A and B:



(1) 5.54 V

(2) 3.33 V

(3) 6.67 V

(4) 3.67 V

95. What is the ROC of the signal $x(n) = \delta(n - k)$, k > 0?

(1) z = 0

(2) $z = \infty$

(3) Entire z-plane, except $z = \infty$

(4) Entire z-plane, except z = 0

96. What is the equation of the fourier series coefficient C_k of an non-periodic signal?

(1)
$$\frac{1}{T_P} \int_{0}^{t_0+T_P} x(t)e^{-j2\pi kf_0 t} dt$$

$$(2) \ \frac{1}{T_P} \int_{-\infty}^{\infty} x(t) e^{-j2\pi k f_0 t} dt$$

(3)
$$\frac{1}{T_P} \int_{t_0}^{t_0+T_P} x(t) e^{-j2\pi k f_0 t} dt$$

(4)
$$\frac{1}{T_P} \int_{t_0}^{t_0+T_P} x(t) e^{j2\pi k f_0 t} dt$$

97. How many complex multiplications are need to be performed for each FFT algorithm?

(1) (N/2 log N)

(2) N log₂ N

(3) (N/2 log₂ N)

(4) None of the above

98. When the temperature across a semiconductor is increased by 10°C then the conductivity is increased by times.

(1) Double

(2) Triple

(3) Four

(4) None of the above

99. Which of the following diode is used in adjustable band pass filter electronic circuits?

(1) Zener diode

(2) Varactor diode

(3) Tunnel diode

(4) Schottky diode

100. P/V of a diode in full wave bridge rectifier is given by:

(1) V_m volts

(2) $2V_m$ volts

(3) $\frac{V_m}{2}$ volts

(4) $\frac{2V_m}{\pi}$ volts

Total No. of Printed Pages: 21

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

D

PHD-EE-November, 2025

SET-X

Electronics and Communication Engineering

		Sr. No. 10008
Time: 11/4 Hours	Max. Marks : 100	Total Questions : 100
Roll No. (in figures)	(in words)	
Name		
Father's Name		
Date of Examination		
(Signature of the Candidate)		(Signature of the Invigilator)
CANDIDATES MUST DEAD TH	IF FOLLOWING INTERPRET	

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- 1. All questions are compulsory.
- 2. The candidates must return the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfairmeans / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A, B, C & D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University Website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case, will be considered.
- 5. The candidate *must not* do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers *must not* be ticked in the question booklet.
- 6. There will be negative marking and a deduction of 0.25 marks for each wrong answer. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue Ball Point Pen of good quality in the OMR Answer-Sheet.
- 8. Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(D)

1.	Which of the following is not the characteristic of research?	
	(1) Research is systematic	
	(2) Research is not a process	
	(3) Research is not passive	
	(4) Research is problem oriented	
2	Will be a second	
2.	Which of the following statements are <i>correct</i> ?	
	(1) Discoveries research	
	(2) Researches leads to discovery	
	(3) Invention and research are related	
	(4) None of the above	
2	Wat: 1	
3.	Which one is <i>not</i> the quality of a researcher?	
	(1) His assertion to outstrip the evidence	
	(2) Keenness in enquiry	
	(3) He must of alert mind	
	(4) Union with that of which he is search	
4.	Books and records are primary source of the in-	
	Books and records are primary source of data in:	
	(1) Clinical research (2) Laboratory research	
	(3) Participatory research (4) Historical research	
5.	Which is the <i>correct</i> statement ?	
	(1) Objectives should be pin pointed	
	(2) Another word for problem is variable	
	(3) Objective can be written in statements on question form	
	(4) All of the above	

- 6. Which is the main task of the research in modern society?
 - (1) To discover new things
 - (2) To keep pace with the advancement in knowledge
 - (3) To systematically examine and critically analyse the investigation/sources with objectivity
 - (4) All of the above
- 7. One of aim of the scientific method in research is to:
 - (1) confirm triangulation
 - (2) introduce new variables
 - (3) improve data interpretation
 - (4) elimination spurious relations
- 8. The depth any research can be judged by:
 - (1) title of the research
 - (2) duration of the research
 - (3) objectives of the research
 - (4) total expenditure of the research
- 9. Which of the following is not the method of research?
 - (1) Survey

- (2) Historical
- (3) Observation
- (4) Philosophical
- 10. Research can be classified as:
 - (1) Basic, Applied and Action Research
 - (2) Quantitative and Qualitative Research
 - (3) Philosophical, Historical, Survey and Experimental
 - (4) All of the above

11.]	Examples	of Nyquist	filters are .
-------	----------	------------	---------------

- (1) Root raised cosine filter
- (2) Raised cosine filter
- (3) Root raised and raised cosine filter
- (4) None of the mentioned

12. Examples of double side band signals are:

- (1) ASK
- (2) PSK
- (3) ASK and PSK
- (4) None of the mentioned

13. In delta modulation system, granular noise occurs when:

- (1) Modulating signal increases rapidly
- (2) Pulse rate decreases
- (3) Pulse amplitude decreases
- (4) Modulating signal remains constant

14. An PWM signal can be generated by:

- (1) An astable multivibrator
- (2) A monostable multivibrator
- (3) Integrating a PPM signal
- (4) Differentiating a PPM signal

15. In good conductors, the electric and magnetic fields will be:

- (1) 45° in phase
- (2) 45° out of phase
- (3) 90° in phase
- (4) 90° out of phase

16. The divergence of which quantity will be zero?

- (1) E
- (2) D
- (3) H
- (4) B

17. Find the Maxwell's equation derived from Faraday's law?

- (1) Div(H) = J
- (2) Div(D) = I
- (3) Curl(E) = -dB/dt
- (4) Curl(B) = -dH/dt

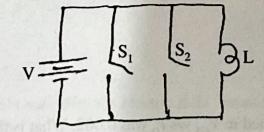
18. When equipotential surface is null, then the electric field intensity will be:

- (1) 0
- (2) 1
- (3) dA/dt
- (4) -dA/dt

19.	The conduction c/n in the transmission line having a voltage of 24 V is 1.2 A. Find receiving impedence of the line:
	(1) 25.2
	(2) 22.8
	(3) 28.8
	(4) 20
20.	The propagation constant of a transmission line with impedence and admittance of 9 and 16 is:
	(1) 12
	(2) 25
	(3) 144
	(4) 7
21.	A particular op Amp, characterized by a gain bandwidth product of 20 MHz, is operated with a closed loop gain of +100 v/v. What 3 dB band width results? At what frequency does the closed loop amplifier exhibit a -6° phase shift?
	(1) 21 KHz
	(2) 31.5 KHz
	(3) 42 KHz
	(4) 52.5 KHz
22.	The slope obtained in V_{GS} v/s I_D was 0.002. What is the value of g_m .
	(1) 1
	(2) 2
	(3) 0.002
	(4) 0

- 23. When can one logic gate drive many other logic gates?
 - (1) When its z_o is low and z_i is low
 - (2) When its z_0 is high and z_i is high
 - (3) When its z_0 is high and z_i is low
 - (4) When its z_o is low and z_i is high
- 24. What will be the output from D flipflop if the clock is low and D = 0?
 - (1) 0
- (2) 1
- (3) No change

- (4) Toggle between 0 and 1
- 25. What will be the frequency of output from a JK flip-flop when j = k = 1 and a clock with pulse wavefrom is given?
 - (1) Half the frequency of clock input.
 - (2) Equal the frequency of clock input.
 - (3) Twice the frequency of clock input.
 - (4) Independent of the frequency of clock input.
- 26. The given switch and lamp logic with two I/P is example of which gate?
 - (1) NOR
 - (2) NAND
 - (3) XOR
 - (4) None of the above



- 27. Which of these code pairs correctly represent reflective codes?
 - (1) 2421 and 8421

(2) 5211 and 8421

(3) 5421 and 2421

(4) 2421 and 5211

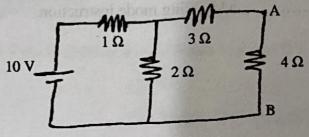
28.	The memory which is used for storing programs and data currently being processed be the CPU is called	
	(1) PROM	(2) Main Memory
	(3) Non-volatile Memory	(4) Mass Memory
29.	LDAX is a addressing mode	instruction.
	(1) Direct	
	(2) Indirect	
	(3) Relative	
	(4) Register indirect	
30. A binary input 000 is fed to a 3 bit DAC/ADC. The resultant output is 10 type of error:		AC/ADC. The resultant output is 101. Find the
	(1) Settling error	
	(2) Gain error	
	(3) Offset error	
	(4) Linearity error	
31. Which of the following elements of electrical engineering cannot be analyse Ohm's law?		ectrical engineering cannot be analysed using
	(1) Capacitors	(2) Inductors
	(3) Transistors	(4) Resistance
32.	What will be the current density of met sectional area of 0.5 m ² ?	al if a current of 30A is passed through a cross
	(1) 7.5 A/ m^2	(2) $15A/m^2$
	(3) 60A/m ²	(4) 120 A/m^2

- 33. Norton's theorem is true for
 - (1) Linear Networks

(2) Non-linear Networks

(3) Both (1) and (2)

- (4) Neither (1) nor (2)
- Calculate V_{th} for the given circuit between A and B: 34.



(1) 5.54 V

(2) 3.33 V

(3) 6.67 V

- (4) 3.67 V
- What is the ROC of the signal $x(n) = \delta(n k), k > 0$? 35.
 - (1) z = 0
 - (2) $z = \infty$
 - (3) Entire z-plane, except $z = \infty$
 - (4) Entire z-plane, except z = 0
- What is the equation of the fourier series coefficient C_k of an non-periodic signal? 36.
 - (1) $\frac{1}{T_{P}} \int_{0}^{t_{0}+T_{P}} x(t)e^{-j2\pi kf_{0}t}dt$ (2) $\frac{1}{T_{P}} \int_{-\infty}^{\infty} x(t)e^{-j2\pi kf_{0}t}dt$ (3) $\frac{1}{T_{P}} \int_{t_{0}}^{t_{0}+T_{P}} x(t)e^{-j2\pi kf_{0}t}dt$ (4) $\frac{1}{T_{P}} \int_{t_{0}}^{t_{0}+T_{P}} x(t)e^{j2\pi kf_{0}t}dt$
- How many complex multiplications are need to be performed for each FFT algorithm? 37.
 - (1) (N/2 log N)

(2) N log₂ N

(3) (N/2 log₂ N)

(4) None of the above

38.	When the temperature across a ser conductivity is increased by	miconductor is increased by 10°C ther	n the
	(1) Double	(2) Triple	
	(3) Four	(4) None of the above	
39.	Which of the following diode is used in	adjustable band pass filter electronic circu	its ?
	(1) Zener diode	(2) Varactor diode	
	(3) Tunnel diode	(4) Schottky diode	
40.	P/V of a diode in full wave bridge rectif	fier is given by:	
	(1) V _m volts	(2) 2V _m volts	
	(3) $\frac{V_m}{2}$ volts	(4) $2V_m$	
	$(3) {2}$ voits	(4) $\frac{2V_m}{\pi}$ volts	
41.	Which technique is followed when popu	ulation is finite? If worked to be a second of the	
	(1) Systematic sampling	(2) Purposive sampling	
	(3) Area sampling	(4) None of the above	
42.	Research problem is selected from the s	stand point of:	
	(1) Social relevance		
	(2) Financial relevance		
	(3) Researcher's interest		
	(4) Availability of relevant literature		
43.	Which one is called non-probability sam		
	(1) Quota sampling	(2) Cluster sampling	
	(3) Systematic sampling	(4) Stratified random sampling	
PHD-J	EE-November, 2025/(Electronics and C	Comm. Engg.)(SET-X)/(D)	P. T. O.

44.	Formulation of hypothesis may not be re			
	(1) Survey method	(2)	Historical studies	
	(3) Normative studies	(4)	Experimental studies	
45.	or 1221 (CD software is used in .			
	(1) Digital Signal Procssing	(2)	Microwave	
	(3) VLSI	(4)	IoT	
46.	Field work based research is classified a			
	ricid work based research is classified a	S .		
	(1) Historical	(2)	Emperical	
	(3) Biographical	(4)	Experimental	
47.	SCIE stands for :			
	(1) Science Citation Index Expanded			
	(2) Social Care Indexing for Excellence			
	(3) Science Collection Information for E	Engir	neers and the same of the same	
	(4) Social Citation Index for Economic			
48.	Which of the following is the most comp	orehe	ensive source of population data?	
	(1) Census		National Sample Surveys	
	(3) Demographic Health Surveys		National Family Health Surveys	
49.	The research that applies the laws at the clear ideas about the problem is:		me of field study to draw more and	more
	(1) Extention research		Experimental research	
	(3) Action research		None of the above	
PHD-E	EE-November, 2025/(Electronics and Co	omn	n. Engg.)(SET-X)/(D)	

50.	The process not needed in experimental re	eses	arch · Worle of book afficient along?	
	(1) Controlling		Observation Observation	
	(3) Reference collection		Manipulation and replication	
51.	The first step of research is:		(4) How various sections share in (4) How one whole is relate to oth	
	(1) Identifying a problem		Finding a problem	
	(3) Selecting a problem	(4)	Searching a problem	
52.	To test null hypothesis, a researcher uses			
	(1) X	(2)	t-test	
	(3) ANOVA	(4)	Factorical analysis	
53.	A research problem in feasible only when	n :		
	(1) It is researchable			
	(2) It has utility and relevance			
	(3) It is new and adds something to know	vled	ge	
	(4) All of the above			
54.	Bibliography given in a research report :			
	(1) Has no relevance to research	(2)	Helps those interested in further rea	na.
	(3) Shows vast knowledge of researcher			earcn
55.	The study in which investigator attempt t	o tr	ace an effect is known as	
			Historical research	
	(3) "Ex-post Facto" research		Summative research	
EC		()	congression to a willing said or example	
56.	A ratio represents the relation between:			
	(1) Part and part		Part and whole	
Draw			All of the above	
rap.	EE-November, 2025/(Electronics and Co	mn	n, Engg.)(SET-X)/(D)	P. T. O.

57. Circle graphs used to show:

- (1) How one part is related to other
- (2) How various parts are related to the whole
- (3) How various sections share in the whole
- (4) How one whole is relate to other whole

58. Generalized conclusion on the basis of sample is technically known as:

- (1) Statistical inference
- (2) Parameter inference
- (3) Data analysis and interpretation
- (4) All of the above

59. The experimental study is based on:

- (1) The manipulation of variables
- (2) Survey of literature
- (3) Conceptual parameters
- (4) Replication of research

60. Authenticity of a research finding is its:

(1) Validity

(2) Objectivity

(3) Originality

(4) All of the above

61. A research problem is not feasible only when:

- (1) It is researchable
- (2) It has utility and relevance
- (3) It is new and adds something to knowledge
- (4) It consist of independent and dependent variables

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(D)

62.	How can objectivity of research be enh	anced?
	(1) through its validity	(2) through its reliability
	(3) through its impartiality	(4) All of the above
63.	We use factorial analysis:	
	(1) To test the hypothesis	
	(2) To know the difference between tw	vo variables
	(3) To know relationship between two	variables
	(4) To know difference among many v	ariables
	Y	
64.	Manipulation is always a part of:	
	(1) Historical research	(2) Descriptive research
	(3) Fundamental research	(4) Experimental research
65	White Call Committee in the Committee in the Call Committee in the	
65.	Which of the coefficient best explain re	elationship between creativity and intelligence?
	(1) 0.3 (2) 0.5	(3) 1.0 (4) 1.5
66.	Normal probability curve should be:	
	(1) Zero skewed	(2) Positively skewed
	(3) Negatively skewed	(4) Leptokurtic skewed
67.	Which of the following verichles and	
07.	Which of the following variables canno	
	(1) Marital status	(2) Numerical aptitude
	(3) Professional attitude	(4) Socio-economic status
68.	The "Sociogram" technique is used to s	tudy:
	(1) Human relations	(2) Vocational Interest
	(3) Achievement Motivation	(4) Professional Competence
PHD-I	EE-November, 2025/(Electronics and C	Comm. Engg.)(SET-X)/(D) P. T. O.

- Which is *not* an example of continuous variable? 69.
 - (1) Height
- (2) Attitude
- (3) Family Size (4) Intelligence
- 70. A research paper is a brief report of research work based on:
 - (1) Primary data only
 - (2) Secondary data only
 - (3) Both primary and secondary data
 - (4) None of the above
- 71. The relation between α and β is given by :

$$(1) \ \frac{1}{1-\alpha} = 1-\beta$$

(1)
$$\frac{1}{1-\alpha} = 1-\beta$$
 (2) $\frac{1}{1+\alpha} = 1+\beta$

(3)
$$\frac{1}{1-\alpha} = 1+\beta$$
 (4) $\frac{1}{1+\alpha} = 1-\beta$

$$(4) \frac{1}{1+\alpha} = 1-\beta$$

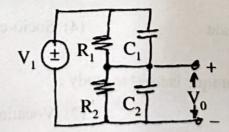
- Which of the following helps in reducing the switching time of a transistor? 72.
 - (1) a resistor connected from base to ground
 - (2) a resistor connected from emitter to ground
 - (3) a capacitor connected from base to ground
 - (4) a capacitor connected from emitter to ground
- A circuit for attenuator is given, under what conditions the attenuator will be 73. compensated?

$$(1) \ R_1 C_1 = \frac{R_2}{C_2}$$

(2)
$$C_1C_2 = R_1R_2$$

(3)
$$R_1C_1 = 0$$

(4)
$$R_1C_1 = R_2C_2$$



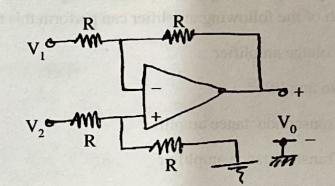
- 74. The ideal values of the input and output resistances of a transconductance amplifier and A & A, represents common mode and differential a
 - (1) $R_i = 0$ and $R_o = 0$
 - (2) $R_i = \infty$ and $R_o = \infty$
 - (3) $R_i = \infty$ and $R_o = 0$
 - (4) $R_i = 0$ and $R_o = \infty$
- The signal to be amplified is current signal and desired output is a voltage signal. 75. Which of the following amplifier can perform this task?
 - (1) Voltage amplifier
 - (2) c/n amplifier
 - (3) Transconductance amplifier
 - (4) Transresistance amplifier
- Which of the following techniques is used to increase the efficiency of class A amplifier?
 - (1) By using FET
 - (2) By using PNP transistor
 - (3) By using matched transformers as load
 - (4) By using potentiometers as load
- 77. What are the units of slew rate?
 - (1) second/volt
 - (2) volt/second
 - (3) It is a ratio, no units
 - (4) ohm/second

- 78. If for an amplifier the common mode input signals is V_c , the differential signal is V_d and $A_c & A_d$ represents common mode and differential gains respectively, then the o/p voltage is given by:
 - (1) $V_o = A_d V_d A_c V_c$

(2) $V_o = -A_d V_d + A_c V_c$

(3) $V_o = A_d V_d + A_c V_c$

- (4) $V_o = -A_d V_d A_c V_c$
- 79. For the given difference amplifier shown, let the resistors be 10 K Ω ± x%. The expression for the worst case common mode gain is:
 - (1) $\frac{x}{50}$
 - (2) $\frac{x}{100}$
 - (3) $\frac{2x}{(100-x)}$
 - (4) $\frac{2x}{(100+x)}$



- 80. Determine the voltage gain in the given circuit. Known that $R_1 = R_3 = 10$ K and $R_2 = R_4 = 10$ R_1 .
 - (1) 1
 - (2) 10
 - (3) 100
 - (4) 1000

- V_1 R_1 V_2 R_3 R_4 V_0 R_3 R_4 R_4 R_5 R_4 R_5 R_4 R_5 R_4 R_5 R_6 R_7 R_8 R_8
- 81. is referred to as father of research on teaching.
 - (1) N. L. Gage

(2) David Berliner

(3) Egon Brunswik

(4) Donald T. Campbell

82.	The main purpose of research in educat	tion i	to 2 si sui reineratai lesimunament.	
	(1) Increase social status of an individu	ual	(I) Debuting	
	(2) Increase job prospects for an indivi-			
	(3) Help in personal growth			
	(4) Help the person to become eminent	t educ	cationist	
83.	refers to inferring about made on a small part.	the v	whole population based on the observation	rvation
	(1) Pseudo inference	(2)	Objective inference	
	(3) Inductive inference		Deductive inference	
84.	Sampling is advantageous as it			
	(1) Saves time	(2)	Helps in capital saving	
	(3) Both (1) & (2)		Increases accuracy	
85.	Tippit table refers to			
	(1) Table of random digits			
	(2) Table used in sampling methods			
	(3) Table used in statistical investigation(4) All of the above	ons	golenA or ionig (g)	
86.	is preferred for sampling me	thod	for the population of finite size.	
	(1) Systematic Sampling	(2)	Purposive Sampling	
	(3) Cluster Sampling	(4)	Area Sampling	
87.	The longitudinal approach of research d	leals	with	
	(1) Short term researches		Long term researches	
	(3) Horizontal researches	(4)	None of these	
PHD-H	CE-November, 2025/(Electronics and C	Comn	n. Engg.)(SET-X)/(D)	P. T. O.

88.	Dramaturgical interviewing is car	neu out unough
	(1) Debating	(2) Sampling
	(3) Case Study	(4) Role Playing
89.	The word "Anusandhan" implies	
	(1) Goal orientation	(2) Following an aim
	(3) Attaining an aim	(4) Praying to achieve an aim
90.	Evaluation research is concerne	ed with
	(1) Why we are doing?	(2) What we are doing?
	(3) How well we are doing?	(4) None of the above
	ing.	
91.	Which of the following element	nt is not used in an automatic control system?
	(1) Final control element	(2) Sensor
	cases accorday.	TOTAL (4) Inch (4) Local (4) Inch
	(3) Oscillator	(4) Error detector
-	L - to control evet	om what conversion in signal takes place?
92.	in a temperature control system	em, what conversion in signal takes place?
	(1) Error to Digital	
	(2) Error to Analog	
	(2) Error to Analog	
	(3) Digital to Analog	
	(4) Analog to Digital	
	ive Sampling	
93		n of a control system is given by $s(s + 4) (s^2 + 2s + s) +$
	k(s+1) = 0. What are the a	ngles of asymptotes for the root loci?
	(1) 0°, 180°, 300°	(2) 0°, 120°, 240°
	na rescarches	
	(3) 60 180° 300°	(4) 120°, 180°, 240°

D

D

Wha

(3

95.

96

PHD-EE-November, 2025/(Electronics and Comm. Engg.)(SET-X)/(D)

P. T. O.

9	4. What is the relation between output loop system?	t and I/P response and signal respectively in a closed
	(1) Non-linear	
	(2) Linear	
	(3) Exponential	
	(4) Parabolic	
95	i. Which of the motions in actuators	99: When will ahasing will take place?
	(1) Rotary	are preferred?
	(2) Stationary	(I) Sampling eignals more than Nyquist rate
	(3) Translator	(6) Sumpling signals equals Avquist rate
	(4) Non-stationary	
96.	The constant M-circle represented of M equal to:	by the equation $x^2 + 2.25x + y^2 = 1.25$ has the value
	(1) 1	
	(2) 2	
	(3) 3	
	(4) 4	
97.	Consider a feedback system with gaplot crosses negative real axis?	ain margin of about 30. At what point does Nyquist
	(1) -3	
	(2) -0.3	
	(3) -30	
	(4) -0.03	
PHD-I	EE-November, 2025/(Electronics an	nd Comm. Engg.)(SET-X)/(D) P. T. 6
	, 35, (Sieces office di	1.1.0

- 98. What is the advantage of superhetrodyning?
 - (1) High selectivity and sexsitivity
 - (2) Low band width
 - (3) Low adjacent channel rejection
 - (4) Low fidelity
- 99. When will aliasing will take place?
 - (1) Sampling signals less than Nyquist rate
 - (2) Sampling signals more than Nyquist rate
 - (3) Sampling signals equals Nyquist rate
 - (4) Sampling signals at a rate which is twice of Nyquist rate
- 100. The method of the communication in which tail of one pulse smears into adjacent symbol intervals is called as:
 - (1) Inter symbol interference
 - (2) Inter bit interference
 - (3) Inter channel interference
 - (4) None of the mentioned

Ph.D	ECE	Nov	2025	Answer	Key

Sr. No	Set A	Set B	Set C	Set D
1	А	A	D	В
2	D	С	D	В
3	С	D	В	Α
4	С	С	В	D
5	D	Α	С	A
6	А	A	A	D
7	В	D	С	D
8	D	A	A	С
9	В	D	D	Č
10	С	С	С	D
11	В	C	A	C
12	В	·C	c	С
13	A	A	D	D
14	D	C		
15	A	D	В	В
16	D	В	C D	В
17	D	С		D
18	C		В	С
19	C	A	C	D
		В	A	D
20	D	A	В	A
21	. А.	A	A	A
22	С	A	D	С
23	D	A	С	D
24	В	В	С	С
25	С	С	D	A
26	D	В	A	Α
27	В	A	В	D
28	С	ı.A	D	A
29	A	В	В	D
30	В	В	С	С
31	Α	. В	С	С
32	Α	В	С	С
33	A	A	D	A
34	B	D	В	С
35	С	Α	В	D
36	В	D	D	В
37	Α	D	С	С
38	Α	С	D	Α
39	В	С	D	В
40	В	D	Α	Α
41	D	С	С	A
42	D	С	А	Α
43	В	D	D	Α
44	В	.В	В	В
45	С	В	D	С
46	A	D	С	В
47	C	C	В	А
48	A	D	С	A
49	D	D	D	В
50	С	А	В	В
51	C	С	А	A

Stopping Control of the Stopping of the Stoppi

52	C	A	A	C
53	A	D	A	D
54	С	В	В	В
55	D	D	С	С
56	В	С	В	D
57	С	В	A	В
58	A	С	Α	С
59	В	D	В	A
60	A	В	В	В
61	C	С	Α	D
62	Α	D	С	D
63	D	C	D	В
64	В	В	C	В
65	D	Α	Α	С
66	С	С	A	A
67	В	В	D	С
68	С	Α	Α	A
69	D	Α	D	D
70	В	Α	С	C
71	A	D	С	С
72	C	D	D	A
	D	В	С	D
73	C	В	В	В
74	A	С	Α	D
75	A	Α	С	С
76	D	С	В	В
77	A	Α	Α	С
78	D	D	Α	D
79	C	С	Α	В
80	C	Α	В	A
81	D	С	В	D
82	С	D	Α	С
83	В	В	D	С
84	A	С	Α	D
85	C	D	D	Α
86	В	В	D	В
87		С	С	D
88	A	A	С	В
89	A	В	D	С
90	A	A	С	С
91	C	D	С	D
92	С	С	Α	С
93	D	C	С	В
94	В	D	D	A
95	В	A	В	С
96	D	В	C	В
97	C	D	A	Α
98	D	В	В	A
99	D	C	Α	A
100	Α			

10/11/25 10/11/25