Ph.D. Entrance Examination-2024-25
ELECTRONICS
Sub. Code: 58799

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Day and Date : Tuesday 12-11-2024   **Total Marks : 100**
Time : 10.00 a.m. to 12.00 noon

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1. Which of the following is an example of a quantitative research tool?

   A) Focus groups   B) Ethnography

   C) Surveys   1. D) Case studies

2. What is the purpose of using statistical software in research?

   A) To create visual aids for presentations

   B) To analyse qualitative data

   C) To perform complex data analysis and calculations

   D) To transcribe interview recordings

3. Which research technique involves observing and recording behaviors in their natural setting without interference?

   A) Case study   B) Experimental study

   C) Survey research   D) Observational study

4. Which of the following best describes the purpose of conducting research?

   A) To prove preconceived notions

   B) To gather evidence and generate new knowledge

   C) To confirm personal beliefs

   D) To validate popular opinions

5. What is the significance of a literature review in rescarch?

   A) It provides an opportunity to showcase the researcher's writing skills.

   B) It helps to identify gaps in existing knowledge and informs the research question.

   C) It serves as a platform for presenting personal opinions on the topic.

   D) It ensures that the research adheres to a specific writing style.

6. Which of the following is a characteristic of qualitative research?

   A) It primarily relies on numerical data analysis.

   B) It focuses on establishing cause-and-effect relationships.

   C) It emphasizes understanding human behaviour in context.

   D) It involves large sample sizes for statistical significance.

7. What is Plagiarism?

   a. Using words or ideas of another author/researcher without citing the source

   b. Paraphrasing original content and not citing it

   c. Using your own previous works without proper acknowledgment

   d. All of the above

8. Which of the following should be included in a research proposal?

   a) Your academic status and experience.

   b) The difficulties you encountered with your previous reading on the topic.

   c) Your choice of research methods and reasons for choosing them.

   d) All of the above.

9. Most essential quality of a researcher is ....

   a. punctuality

   b. intelligence

   c. genuine interest in research

   d. mastery over own subject

10. Statement 1: A is bigger than B but shorter than C

    Statement 2: D is smaller than C and bigger than A

    Statement 3: B is greater than D

    If statement 1 and statement 2 are truc, statement 3 will be -

    a. true   b. false

    c. uncertain   d. None of the above

11. If PINK is coded as 1691411, then RED will be coded as-

    a. 1963   b. 1854

    c. 1853   d. 1954

12. What will be the missing number in the series 196, 169, 144, ..., 100, 81?

    a. 121   b. 120

    c. 119   4. 118

13. Sensor effectiveness depends on .... parameter.

    a) Sensitivity   b) Radiation

    c) Resistivity   d) All the above

14. For a digital oscilloscope with 8-bit AD converter and the total range of 5000 mV. The resolution in volts is ....

    a) 19.53125 mV   b) 5 mV

    c) 50 mV   d)500 mV

15. The Current in electric circuits is expressed in terms of ....

    a) Amperes   b) Volts

    c) Watts.   d) Joules

16. .... is an active transducer.

    a) Thermistor   b) Thermocouple

    c) LM35   d) RTD

17. .... is the first and initial phase of the Prototype Model.

    a) Problem identification

    b) Design

    c) Testing

    d) All of the above

18. A prototyping model starts with .... analysis.

    a) Data   b) Requirement

    c) Dummy system   d) None of the above

19. In MATLAB, ... is used to add comment

    A) #   B) /%

    C) %/   D) %

20. Which one of the following is cloud platform by Amazon?

    A) Azure   B) AWS

    C) DigitalOcean   D) GCP

21. What does an Eclipse IDE allows?

    A) Editing the Program

    B) Compiling the Program

    C) Debugging the Program

    D) Editing, Building, Debugging and Compiling Program

22. In MATLAB, 'who' function is used for

    A) lists the variables currently in the workspace

    B) lists the variables currently in the workspace and its size

    C) lists the variables currently in the workspace and its type

    D) lists the variables currently in the workspace and its size and type

23. What is the basic use of EDA tool?

    A) Communication of Electronic devices

    B) Fabrication of Electronic devices

    C) Electronic circuits simulation and synthesis

    D) Industrial automation

24. The act of building a model or representation of a digital circuit or system in order to forecast its behaviour and evaluate its usefulness is known as.

    A) Simulation   B) Synthesis

    C) Optimization   D) Verification

25. After compiling VHDL code with any EDA tool, we get

    A) FPGA   B) Final device

    C) Netlist   D) Optimized Netlist

26. A moving-coil permanent-magnet instrument can be used as flux-meter by ......

    A) using a low resistance shunt

    B) using a high series resistance

    C) climinating the control springs

    D) making control springs of large moment of inertia

27. Instrument calibration is one of the primary processes used to maintain instrument-

    (a) Accuracy   (b) ability

    (c) adjustment   (d) observation

28. Dominant mode is defined as:

    a) Mode with the lowest cut off frequency

    b) Mode with the highest cut off frequency

    c) Any TEM mode is called a dominant mode

    d) None of the mentioned

29. For TEI, mode, if the waveguide is fitted with air and the broader dimension of the waveguide is 2 cm, then the cutoff frequency is:

    a) 5 MHz

    b) 7.5 MHz

    c) 7.5 GHz

    d) 5 GHz

30. In .... generation of computers, IC's replaced transistors.

    a) First   b) Second

    c) Third   d) Forth

31. In processor each instruction processes one data item, but there are multiple redundant units each processing one data item.

    a) Scalar   b) Superscalar

    c) Vector   d) MIMD

32. Which of the following is NOT a characteristic of FPGA (Field-Programmable Gate Array) devices?

    A) Reconfigurability

    B) High-speed performance

    C) Lower power consumption compared to ASICS

    D) Fixed logic configuration

33. In digital design, what is the primary function of a multiplexer (MUX)?

    A) To perform arithmetic operations

    B) To store data temporarily

    C) To select one of many input signals and route it to the output

    D) To synchronize clocks in different parts of the circuit

34. A low pass signal has a bandwidth of 100 KHz. The minimum sampling rate of this signal is .... samples per second.

    A) 100,000

    B) 50,000

    C) 200,000

    D) 400,000

35. What is the Hamming distance between the codes '11001011' and '10000111'

    A) 1   B) 2

    C) 3   D) 4

36. In TE01 mode of wave propagauna rectangutar waveguide, it the smalter dimension of the waveguide is 2 cm, then the cutoff wavelength for that mode is:

    a) 4 cm   b) 8 cm

    c) 1 cm   d) 2 cm

37. TE_{00} mode for a rectangular waveguide:

    a) Exists

    b) Exists but defined only under special cases

    c) Does not exist

    d) Cannot be determined

38. In a thyristorized inverter, what role does the control circuitry play?

    A) It monitors the output power

    B) It adjusts the frequency of the output waveform

    C) It triggers the thyristors to switch on and off

    D) It regulates the input voltage from the DC source

39. What is the primary function of a thyristor in an inverter circuit?

   A) To regulate the output voltage

   B) To convert DC power to AC power

   C) To store energy temporarily

   D) To provide short-circuit protection

40. Devices operating at transmission rates greater than 40 Gb/s are ....

   a) GaAs and InP   b) GaAs

   c) InGa   d) InGaAs

41. HEMT based .... have a spot-size convertor with a photodiode.

   a) p-n junction diode

   b) p-i-n photoreceiver

   c) IGBT

   d) BJT

42. In state space analysis, the state equations are the set of ......differential equations.

   A) first-order   B) second-order

   C) third order   D) nth-order

43. At which frequency does the magnitude of the system become zero dB?

   A) phase crossover frequency

   B) gain crossover frequency

   C) resonant frequency

   D) cut-off frequency

44. A device that is used to connect a number of LANs is ....

   a. Router

   b. Repeater

   c. Bridge

   d. All of these.

45. IPV4 Address is ....

    a. 8 bit   b. 16 bit

    c. 32 bit   d. 64 bit

46. WR, INTR signal is an input/output signal pins in 0804 ADC?

    a) both are output

    b) both are input

    c) one is input and the other is output

    d) none of the mentioned

47. Find the machine cycle for AT89C51 if XTAL11.0592MHz

    a. 150.145us   b. 1.085us

    c. 90.42us   d. None of above

48. The procedure to compute convolution sum follows:

    A) Shifting, Folding, Multiplication and summation

    B) Folding, Shifting, Multiplication and summation

    C) Folding, Multiplication, Shifting and summation

    D) Folding, Shifting, Summation and Multiplication

49. An IC-555 based astable multivibrator has the following number of stable states

    a. 0   b. 1

    c. 2   d. 3

50. ....is not an application of Exceptions and Interrupts.

    a. Internal errors and special conditions management

    b. Multiple shared-resource-access synchronization

    c. Hardware concurrency

    d. Service requests management

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