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PD-33

Total No. of Pages : 10

Ph.D. Entrance Examination, 2025
ELECTRICAL ENGINEERING
Sub. Code : 69596

Day and Date : Tuesday, 09-09-2025

Total Marks : 100

Time : 01.00 p.m. to 3.00 p.m.

Instructions:

1. All questions are compulsory.
2. Each question carries 2 marks.
3. Answers should be marked in the given OMR answer sheet by darkening the appropriate option.
4. Use black ball point pen only for marking the circle. Do not make any stray mark on the OMR Answer Sheet.
5. Follow the instructions given on OMR Sheet.
6. Rough work shall be done on the sheet provided at the end of question paper.
7. Only non programmable calculators are allowed.

Research Methodology

- 1 Who defined "Research is a systematic, controlled, empirical and critical investigation of hypothetical relations among natural phenomena?

a) Black & Champion

b) Kerlinger

c) Creswell

d) L. V. Redman & A. V. H. Morry
- 2 Which of the following is type of survey method used to collects data to make inferences about a population of interest (universe) at one point in time.

a) Longitudinal survey

b) Correlational survey

c) Pooled surveys

d) Cross-sectional survey
- 3 Which of the following is a primary step in social science research?

a) Preparing the Research Design

b) Developing the Research Hypothesis

c) Formulation of research problem

d) Execution of the Project

4. Which type of research is also called as decisional research?
 - a) Action research
 - b) Pure research
 - c) Applied research
 - d) Explanatory research
5. Case studies are ?
 - a) In-depth and detailed examinations of specific 'units'
 - b) Allows for the collection of information on a large number of individuals
 - c) It is the story a person tells about the life he or she has lived
 - d) Scientific and systematic search for pertinent information on a specific topic
6. A planned and systematic attempt to study a specific problem that requires a solution is known as
 - a) Problem formulation
 - b) Hypothesis formation
 - c) Cross-sectional design
 - d) Research
7. Pure research is also known as?
 - a) Fundamental research
 - b) Exploratory research
 - c) Action research
 - d) Explanatory research
8. Which of the following stage is known as 'blueprint of a research'?
 - a) Research design
 - b) Development of Working Hypothesis
 - c) Formulating the Research Problem
 - d) Execution of the Project
9. It is the last step in the data collecting and compilation process, and it serves as the entry point for statistical analysis and interpretation, it is known as?
 - a) Preparing of the Report
 - b) Hypothesis Testing
 - c) Documentation
 - d) Tabulation

10. On the basis of the originality of the data, the tables may be classified into two types, Primary tables and..
- a) Simple table
 - b) Complex table
 - c) Derived or Derivative tables
 - d) Specific table
11. A histogram is an approximate representation of numerical data distribution, it introduced by?
- a) Karl Pearson
 - b) Patrick Geddes
 - c) Robert Hertz
 - d) Kerlinger
12. Which of the following statement/statements is not true regarding applied research?
- a) Solve a specific or practical problem
 - b) Identifies new ideas, theories, principals and new ways of thinking
 - c) Descriptive in nature
 - d) Findings are used to tackle immediate problems
13. Quantitative content analysis is an approach that aims to?
- a) Objectively and systematically measure the content of a text
 - b) Subjective interpretation of the content of text data
 - c) Systematic arrangement of documents
 - d) Interpretative analysis and classification of data
14. linked or unrelated? looks at the relationship between two variables that are
- a) Cross-sectional descriptive survey
 - b) Factorial survey method
 - c) Pooled surveys
 - d) Analytical cross-sectional survey

15. Which of the following is not a type of case study identified by Stake?
- a) Intrinsic case study
 - b) Instrumental case study
 - c) Descriptive case study
 - d) Collective case study
16. The primary goal of applied research is to?
- a) Solve or provide answers to practical problems
 - b) Testing theories and hypotheses
 - c) Addressing research issues in partnership with local people
 - d) Primary goal is gaining knowledge, with no aim of using it
17. Find out an example for probability sampling?
- a) Convenience or accidental Sampling
 - b) Purposive or judgmental sampling
 - c) Quota sampling
 - d) Stratified random sampling
18. Which type of research is also called as decisional research?
- a) Action research
 - b) Pure research
 - c) Applied research
 - d) Explanatory research
19. What are the conditions in which Type-I error occurs?
- a) The null hypotheses get accepted even if it is false
 - b) The null hypotheses get rejected even if it is true
 - c) Both the null hypotheses as well as alternative hypotheses are rejected
 - d) None of the above
20. Which of the following is a programme that can help with thematic analysis?
- a) MAXQDA
 - b) ZyINDEX
 - c) Develve
 - d) Epi data

21. Why do you need to review the existing literature?
- a) To make sure you have a long list of references
 - b) Because without it, you could never reach the required word-count
 - c) To find out what is already known about your area of interest
 - d) To help in your general studying
22. What do you mean by Unit of Analysis?
- a) Main parameter
 - b) Variables
 - c) Sample
 - d) Constructs
23. A statement of the quantitative research question should:
- a) Extend the statement of purpose by specifying exactly the question (s the researcher will address
 - b) Help the research in selecting appropriate participants, research methods, measures, and materials
 - c) Specify the variables of interest
 - d) All the above
24. Concept is of two types
- a) Abstract and Coherent
 - b) Concrete and Coherent
 - e) Abstract and concrete
 - d) None of the above
25. Which of the following programme help the researchers to code and retrieve information, as well as additional capabilities that aid in the development of theoretical linkages between coded notions
- a) HyperQual2
 - b) Hyper-RESEARCH
 - c) AskSam
 - d) The Text Collector

Electrical Engineering

26. Earth fault relay can be provided to the faulty portion.
- a) Isolate
 - b) Integrate
 - c) Join
 - d) Attach
27. Corona loss on a system at 50 Hz frequency is 1 KW/phase/km. the corona loss on the same system with supply frequency 25 Hz will be
- a) 2 KW/phase/km
 - b) 0.667 kw/phase/km
 - c) 0.5 kw/phase/km
 - d) 1.414 kw/phase/km
28. In distribution system in order to improve the power factor, the synchronous capacitors are installed at which end
- a) Receiving end
 - b) Sending end
 - c) At both ends
 - d) None of above
29. Scale of PMMC instrument is?
- a) uniform
 - b) cubed
 - c) squared
 - d) linear
30. Which bridge is normally used for the measurement of frequency?
- a) Anderson bridge
 - b) De Sauty's bridge
 - c) Wien bridge
 - d) None of these
31. The latching current is 4 mA, inductance 0.1H. The minimum width of gate pulse required to turn on the thyristor is
- a) 6 μ sec
 - b) 4 μ sec
 - c) 2 μ sec
 - d) 1 μ sec
32. A single phase full wave converter is connected across 250 V AC. Its output voltage when firing angle is 30° will be
- a) 195 V
 - b) 210 V
 - c) 215 V
 - d) 250 V

33. In a JK Flip-flop if the two inputs are high then:
- The output will be complemented
 - The output will be same as previous state
 - The output will be set as "1"
 - The output will be complemented by the clock pulse
34. Which of the following theorem can be applied to any network linear or non-linear. active or passive, time variant or time invariant?
- Thevenin's Theorem
 - Norton Theorem
 - Tellegen Theorem
 - Superposition Theorem
35. A relay is connected to a 400/5 current transformer and set at 150%. If the primary fault current is 2400 A, what will be the plug setting multiplier?
- 4
 - 3
 - 2
 - 1
36. In a single pulse modulation of PWM inverters, third harmonic can be eliminated if pulse width is equal to
- 180°
 - 120°
 - 60°
 - 30°
37. An octal number 1028 is equivalent to decimal number
- 524
 - 338
 - 536
 - 236
38. An overhead transmission line has a span of 260 m. the weight of the conductor is 0.68 kg/m. the maximum allowable tension in the line is 1550 kg. maximum sag of the line should be
- 5.8 m
 - 4.6 m
 - 2.7 m
 - 3.7 m

39 A short transmission line having a series impedance Z has the following parameters:

- | | |
|------------------------------|------------------------------|
| a) $A = C = 0, B = 1, D = Z$ | b) $A = D = 1, B = Z, C = 0$ |
| c) $A = 1, B = 0, D = Z$ | d) $A = B = Z, C = D = 0$ |

40. If the number of poles is 4 and number of slot is 24, then pole pitch will be

- | | |
|------------|-------------|
| a) 6 slots | b) 4 slots |
| c) 8 slots | d) 12 slots |

41. In a 4 pole, 20 Kw. 200 V wave wound DC shunt generator, the current in each parallel path will be

- | | |
|----------|---------|
| a) 100 A | b) 25 A |
| c) 10 A | d) 50 A |

42. A transformer has negligible resistance and a p.u. reactance of 0.1. Its voltage regulation on full load with a p.f. angle of 30° leading is

- | | |
|--------|---------|
| a) 5% | b) -5% |
| c) 10% | d) -10% |

43. The open loop transfer function of a unity negative feedback system is given by

$$G(s) = \frac{1}{(s+2)^2}$$

The closed loop transfer function will at

- | | |
|---------------|----------|
| a) -2, -2 | b) -2, 1 |
| c) -2+j, -2-j | d) -2, 2 |

44. In a grounded-emitter transistor, when emitter current becomes zero in cut-off region the emitter potential is called

- a) Floating Emitter potential
- b) Breaking Emitter potential
- c) Cascading Emitter potential
- d) Cut-off Emitter potential

45. Slew rate of an OP-AMP is
- Maximum change in the output voltage with respect to time
 - Difference of input voltage applied to the inverting and non inverting terminals
 - Ratio of common mode gain to differential mode gain
 - Average of input bias current
46. The number of electrical degrees passed through in one revolution of six pole synchronous alternator is
- 360 degree
 - 72 degree
 - 1080 degree
 - 2160 degree
47. A transformer having 500 primary turns is connected to a 250 V a.c. supply. For a secondary voltage of 400 V. the number of secondary turns should be
- 800
 - 200
 - 400
 - 1600.
48. An ideal transformer is one which?
- Has no loss and leakage reactance
 - Has low efficiency
 - Has same number of primary and secondary turns
 - None of these
49. An SCR is considered to be a semi-controlled device because:
- It can be turned OFF but not ON with a gate pulse
 - It conducts only during one half cycle of alternating current wave
 - It can be turned ON but not OFF with a gate pulse
 - It can be turned ON only during one half cycle of an alternating voltage wave
50. Skin effect is:
- Proportional to frequency
 - Proportional to square of frequency
 - Inversely proportional to frequency
 - Independent of frequency.

- Rough Work -