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PD - 22

Total No. of Pages : 12

Ph.d Entrance Examination March/April, 2026

ELECTRICAL ENGINEERING

Subject Code : 69596

Day and Date : Tuesday, 06-10-2026

Total Marks : 100

Time : 10.00 a.m. to 12.00 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. Which of the following is not a quantitative data analysis software
 - a) Epidata
 - b) Salstat
 - c) Kwalitan
 - d) Openstat
2. Survey is a Study
 - a) Descriptive
 - b) Fact finding
 - c) Analytical
 - d) Systematic
3. Which one is called non-probability sampling?
 - a) Quota sampling
 - b) Cluster sampling
 - c) Systematic sampling
 - d) Stratified random sampling

4. The first page of the research report is
 - a) Appendix
 - b) Bibliography
 - c) Index
 - d) Title page
5. What type of chart is useful for comparing values over categories?
 - a) Pie Chart
 - b) Column Chart
 - c) Line Chart
 - d) Dot Graph
6. In order to pursue the research, which of the following is priorly required?
 - a) Developing a research design
 - b) Formulating a research question
 - c) Deciding about the data analysis procedure
 - d) Formulating a research hypothesis
7. In a survey there is an enumerator and a.....
 - a) Guide
 - b) Respondent
 - c) Supervisor
 - d) Messenger
8. Your colleague is confused about using the marketing research process, as he knows that something is wrong but is not sure of the specific causes to investigate. He seems to be having problems with, which is often the hardest step to take.
 - a) Developing the research plan
 - b) Determining a research approach
 - c) Defining the problem and research objectives
 - d) Selecting a research agency

9. Which technique is generally followed when the population is finite?
- a) Systematic Sampling Technique
 - b) Purposive Sampling Technique
 - c) Area Sampling Technique
 - d) None of the above
10. Scale in which the respondent directly compares two or more objects and makes choices among them is
- a) Ranking Scale
 - b) Rating Scale
 - c) Graphic Scale
 - d) None of these
11. A comprehensive full Report of the research process is called
- a) Thesis
 - b) Summary Report
 - c) Abstract
 - d) Article
12. Random sampling is also called
- a) Availability sampling
 - b) Probation sampling
 - c) Probability sampling
 - d) Prospect sampling
13. It is defined as the systematic collection of numerical data and application of statistical, mathematical, or computational approaches to investigate phenomena, it is known as?
- a) Experimental research
 - b) Qualitative research
 - c) Quantitative research
 - d) Applied research
14. The research is mainly focusing testing theories and hypothesis rather than its practical applicability. It is known as?
- a) Applied research
 - b) Pure research
 - c) Action research
 - d) Participatory research

15. Which of the following is not a data collection method?
- a) Observation
 - b) Schedules
 - c) Interview
 - d) Research question
16. Facts or information's are analyzed and critical evaluation is made in
- a) Survey
 - b) Action research
 - c) Analytical research
 - d) Pilot study
17. The method section of the research plan typically specifies.....
- a) The research participants
 - b) The apparatus, instruments, and the materials for the research study
 - c) The planned research procedures
 - d) All of the above
18. Observation is a physical and activity
- a) Mental
 - b) Social
 - c) Psychological
 - d) Personal
19. Last step of problem formulation is
- a) Survey
 - b) Literature survey
 - c) Rephrasing the research problem
 - d) Discussion
20. The starting point for literature search is
- a) Primary data
 - b) Secondary data
 - c) Tertiary data
 - d) None of these
21. The interview in which questions are already prepared is called
- a) Telephonic interview
 - b) Personal interview
 - c) Unstructured interview
 - d) Structured interview

22. The alternative hypothesis is also known as
- a) Elective hypothesis
 - b) Optional hypothesis
 - c) Research hypothesis
 - d) Null hypothesis
23. The basis of scientific method is.....
- a) To test hypothesis in condition that is conclusive to its success
 - b) To formulate a research problem and disprove the hypothesis
 - c) To test hypothesis and if they are disproved, they should be abandoned completely
 - d) To formulate a research problem, test the hypothesis in carefully controlled conditions that challenge the hypothesis
24. The reasons for consulting handbooks, yearbooks, encyclopedias, or review in initial stages of identifying a research topic is
- a) They provide an overview of the issues related to topic
 - b) They are primary sources
 - c) They avoid reporting statistical data so one can interpret the results more easily
 - d) They are readily available
25. Qualitative and Quantitative research are the classification of research on the basis of
- a) Purpose of the research
 - b) Techniques used
 - c) Time dimensions
 - d) Use of the research

Electrical Engineering

26. A power transformer is usually rated in
- a) kW
 - b) KVAR
 - c) kWH
 - d) KVA
27. An 8 pole single phase Induction motor is running at 690 rpm. What is its slip with respect to forward and backward field respectively
- a) 0.08, 2.0
 - b) 0.08, 1.92
 - c) 1.92, 0.08
 - d) 2.0, 0.08
28. The rotor slots are slightly skewed in squirrel cage induction motor to
- a) Reduce the magnetic hum and locking tendency of rotor
 - b) Increase strength of rotor bars
 - c) Economize the copper used
 - d) Provide cases of fabrication
29. Merz-Price protection is used to protect:
- a) Transmission line and transformer
 - b) Transformers and generators
 - c) Motors only
 - d) Transformers only
30. The surge impedance of 50 mile long underground cable is 50Ω . For 25 mile long cable, surge impedance will be
- a) 25 ohm
 - b) 100 ohm
 - c) 50 ohm
 - d) 200 ohm
31. The difference between the measured value and the true value is called:
- a) Gross error
 - b) Relative error
 - c) Probable error
 - d) Absolute error

32. An ammeter having internal resistance of 0.2Ω , has current range of 0-5 A. in order to change the range to 0-25 A, we need to add resistance of -
- a) 0.05 ohm in parallel with the meter
 - b) 0.8 ohm in series with the meter
 - c) 1.0 ohm in series with the meter
 - d) 0.04 ohm in parallel with the meter
33. An RLC series circuit with a resistance of 50Ω , inductance of 0.01 H and capacitance of 100 pF is applied with an ac voltage of 200 V. Quality factor of the circuit at resonance is:
- a) 400
 - b) 200
 - c) 800
 - d) 100
34. Two identical 3 V, 12 batteries are connected in parallel with like polarity. Norton equivalent of the combination is
- a) 3 A, 0.5 ohm
 - b) 6 A, 1 ohm
 - c) 3 A, 1 ohm
 - d) 6 A, 0.5 ohm
35. A 3-phase circuit has a per phase impedance of $z (8+j6)$ ohm. The power factor of the circuit is:
- a) 0.8 leading
 - b) 0.6 leading
 - c) 0.8 lagging
 - d) 0.6 lagging
36. Which of the following is the best method for determining the stability and transient response?
- a) Root locus
 - b) Bode plot
 - c) Nyquist plot
 - d) None of these

37. Phase margin of a system is used to specify:
- a) Relative stability
 - b) Absolute stability
 - c) Time response
 - d) Frequency response
38. The current drawn by a 460 V dc motor of armature resistance 0.5 ohm and back emf 420 V is:
- a) 8 A
 - b) 0.8 A
 - c) 80 A
 - d) 800 A
39. If the excitation of the field of the D.C motor is constant then the torque developed in the motor is proportional to
- a) Field flux
 - b) Speed
 - c) Armature current
 - d) Magnetic flux
40. The primary and secondary of the Auto transformer are coupled
- a) Conductively alone
 - b) Magnetically alone
 - c) Magnetically and conductively
 - d) Neither magnetically nor conductively
41. A transformer has percentage resistance of 2% and percentage reactance of 4%. What are its regulations at power factor 0.8 lagging and 0.8 leading respectively?
- a) 4% and 0.8%
 - b) 3.2% and -1.6%
 - c) 1.6% and -3.2%
 - d) 4.8% and -0.6%
42. The maximum d.c voltage available from fully controlled bridge converter supplying a motor and operating from low impedance 230 V mains is:
- a) 230 V
 - b) 210 V
 - c) 207 V
 - d) 180 V

43. In a 3- phase inverter with 180° conduction, the number of switches that are 'on' at any instant of time is
- a) 1
 - b) 2
 - c) 3
 - d) 4
44. Which of the following relays has inherent directional characteristics?
- a) Mho
 - b) Impedance relay
 - c) Reactance relay
 - d) None of the above
45. In terms of constants A,B,C and D for short transmission lines, which of the following relation is valid?
- a) $A-B=1$
 - b) $B-D=0$
 - c) $A-C=1$
 - d) $C=0$
46. Armature reaction in de shunt generator, running at full load with the brushes not shifted from the geometrical neutral plane and saturation neglected is
- a) Absent
 - b) Cross-magnetizing
 - c) Demagnetizing
 - d) Magnetizing
47. An AND gate
- a) Implements logic addition
 - b) Gives high output only when all inputs are low
 - c) Is equivalent to a series switching circuit
 - d) Is equivalent to parallel switching circuit
48. The corona loss on particular system at 50 Hz is 1 KW/km per phase. What is the corona loss at 60 Hz. in KW/km per phase?
- a) 1.13
 - b) 0.83
 - c) 1.0
 - d) 1.2

49. A modern power semiconductor device that combines the characteristics of BJT and MOSFET is

- | | |
|---------|--------|
| a) GTO | b) FCT |
| c) IGBT | d) MCT |

50. Reactance relay is preferred for protection against

- a) Only earth fault
- b) Medium transmission line
- c) Both earth fault and Medium transmission line
- d) None of above



- Rough Work -

- Rough Work -