

Seat No.	
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M.Phil./Ph.D. Entrance Examination, September - 2022**ELECTRICAL ENGINEERING****Sub. Code : 69596****Day and Date : Saturday, 24- 09 - 2022****Total Marks : 100****Time : 4.00 p.m. to 6.00 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) In the process of conducting research 'Formulation of Hypothesis' is followed by
 - A) Statement of Objective
 - B) Analysis of data
 - C) Selection of research tools
 - D) Collection of data
- 2) Scientific method is committed to
 - A) Objectivity
 - B) Ethics
 - C) Proposition
 - D) Neutrality
- 3) A system of systematically interrelated concepts definitions and propositions that are advanced to explain and predict phenomena is_____
 - A) Facts
 - B) Values
 - C) Theory
 - D) Generalization
- 4) Research undertaken for knowledge sake is
 - A) Pure research
 - B) Action research
 - C) Analytical research
 - D) Long term research
- 5) Identifying causes of a problem and possible solution to the problem is
 - A) Field study
 - B) Diagnostic study
 - C) Action study
 - D) Pilot study

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- 6) A question which requires solution is
A) Observation B) Data
C) Experiment D) Problem
- 7) Converting a question into researchable problem is called
A) Solution B) Examination
C) Problem formulation D) Problem solving
- 8) Third step in problem formulation is
A) Statement of the problem
B) Survey the available research
C) Understanding the nature of problem
D) Discussion
- 9) In the formulation of the problem we need to give
A) Title B) Index
C) Concepts D) Bibliography
- 10) A_____ is an abstraction formed by generalization from particulars
A) Hypothesis B) Concept
C) Variable D) Facts
- 11) Concept is of two types
A) Abstract and coherent B) Concrete and coherent
C) Abstract and concrete D) None of the above
- 12) The chief merit of survey is
A) Adaptability B) Sensibility
C) Connectivity D) Versatility
- 13) A research report is formal statement of_____
A) Research process B) Research problem
C) Data collection D) Data editing
- 14) The concrete observable events which represents the abstract concepts or constructs are called
A) Data B) Sample
C) Variable D) Proposition

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- 15) _____Prevents a researcher from blind search and intellectual wandering
 - A) Data
 - B) Sample
 - C) Research tools
 - D) Research design
- 16) Observation of an event personally by the observer is_____
 - A) Indirect observation
 - B) Direct observation
 - C) Controlled observation
 - D) Uncontrolled observation
- 17) An example of non-personal method of data collection is
 - A) Telephone interview
 - B) Group interview
 - C) Schedule
 - D) Interview
- 18) The question which by its content structure or wordings leads the respondent in the direction of certain answer is called
 - A) Factual question
 - B) Opinion question
 - C) Leading question
 - D) Structural question
- 19) Sampling which provides for a known non-zero chance of selection is
 - A) Probability sampling
 - B) Non-probability sampling
 - C) Multiple choice
 - D) Analysis
- 20) Summarizing raw data and displaying them on compact statistical table for analysis is
 - A) Tabulation
 - B) Coding
 - C) Transcription
 - D) Editing
- 21) Which of the following statement is not true
 - A) A research proposal is a document that represents a plan for a project
 - B) A research proposal shows that the researcher is capable of successfully conducting the proposed research project
 - C) A research proposal is an unorganized and unplanned project
 - D) A research proposal is just like a research report and written before the research project
- 22) The fundamental characteristics of the scientific method is
 - A) Empiricism
 - B) Theories
 - C) Replication
 - D) Evaluating data

- 23) Good research proposal will always_____
- A) Consider all possible research that had previously been done on the topic
 - B) Provide respondent names and address
 - C) Focus on the Harvard style
 - D) Focus on addressing the research objectives
- 24) The research participants are described in details in _____section of research plan
- A) Introduction
 - B) Method
 - C) Data analysis
 - D) Discussion
- 25) To explain, predict, or control phenomenon are the goal of_____
- A) Tradition
 - B) Inductive logic
 - C) Deductive logic
 - D) The scientific method

Electrical Engineering

- 26) In RLC circuit
- A) Power consumed in resistance only and is equal to I^2R .
 - B) Exchange of power does not take place between resistance and supply mains
 - C) Exchange of power takes place between capacitor and supply mains
 - D) All of the above
- 27) In an electromechanical energy conversion device, the developed torque depends upon
- A) Stator field strength and torque angle
 - B) Stator field and rotor field strengths
 - C) Stator field, rotor field and torque angle
 - D) Stator field strength only
- 28) A transformer steps up the voltage by a factor 100. The ratio of current in primary to that in secondary is
- A) 1
 - B) 100
 - C) 0.01
 - D) 0.1
- 29) The maximum possible speed of a 3-phase squirrel cage induction motor running at a slip of 4% is
- A) 2880 rpm
 - B) 3000 rpm
 - C) 1440 rpm
 - D) 960 rpm

- 30) The voltage across the various disc of string of suspension insulators having identical disc is different due to
- A) Surface leakage currents
 - B) Series capacitances
 - C) Shunt capacitance to ground
 - D) Series and shunt capacitances
- 31) High voltage dc transmission requires filters for
- A) Current harmonics on ac side and voltage harmonics on dc side
 - B) Voltage harmonics on ac side and current harmonics on dc side
 - C) Voltage harmonics on both ac and dc sides
 - D) Current harmonics on both ac and dc sides
- 32) The positive sequence current of a transmission line is
- A) Always zero
 - B) $1/3$ of negative sequence current
 - C) Equal to negative sequence current
 - D) 3 times negative sequence current
- 33) Which of the following relays has inherent directional characteristics?
- A) Mho
 - B) Impedance relay
 - C) Reactance relay
 - D) None of the above
- 34) N-channel FETs are superior than P-channel FETs because they have
- A) Lower switching time
 - B) Lower pinch off voltage
 - C) Higher input impedance
 - D) Mobility of electrons in N-channel is greater than mobility of holes in P-channel
- 35) 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
- 36) The reliability of measuring instruments means
- A) Life of instrument
 - B) The extent over which the characteristics remains linear
 - C) Degree to which repeatability continues to remain within specified limits
 - D) All of these

- 37) Nichol's chart is plot of
- A) Magnitude in decibels vs phase shift on rectangular coordinates
 - B) Magnitude in decibels vs $\log \omega$
 - C) Magnitude vs phase angle in polar coordinates
 - D) None of the above
- 38) Turn-on of thyristor takes place when
- A) Anode to cathode voltages is positive
 - B) Anode to cathode voltage is negative
 - C) There is positive current pulse at the gate
 - D) The anode to cathode voltage is positive and there is a positive current pulse at the gate
- 39) For a series R-C circuit, the power factor corresponding to maximum power is
- A) 0.5 lag
 - B) 0.5 lead
 - C) 0.707 lead
 - D) 0.707 lag
- 40) The voltage regulation of transformer having 2% resistance and 5% reactance at full load, 0.8 pf lagging is
- A) 4.6%
 - B) -4.6%
 - C) -1.4%
 - D) 6.4%
- 41) The rotor frequency of 3 phase, 5 KW, 400 V 50 Hz, 4 pole slip ring induction motor is 25 Hz. The speed of motor when connected to a 400 V, 50 Hz supply will be
- A) 1500 rpm
 - B) 1000 rpm
 - C) 750 rpm
 - D) Zero
- 42) 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
- 43) In a 3 phase controlled bridge rectifier the maximum conduction of each thyristor is
- A) 60°
 - B) 90°
 - C) 120°
 - D) 150°

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Rough Work