

Seat No.	
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M.Phil / Ph.D. Entrance Examination, January - 2020
ELECTRICAL ENGINEERING

Day and Date : Thursday, 09 - 01 - 2020

Total Marks : 100

Time : 12.00 noon to 02.00 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) "One of the methods of logical reasoning process" is called
 - A) Induction
 - B) Deduction
 - C) Research
 - D) Experiment

- 2) Example for fact finding study is
 - A) Pure Research
 - B) Survey
 - C) Action Research
 - D) Long term Research

- 3) Research is
- A) Searching again and again
 - B) Finding solution to any problem
 - C) working in scientific way to search for truth of any problem
 - D) None of the above
- 4) Research related to abstract ideas or concept is
- A) Empirical Research
 - B) Conceptual Research
 - C) Quantitative Research
 - D) Qualitative Research
- 5) Second step in problem formulation is
- A) Statement of Problem
 - B) Understanding the nature of problem
 - C) Survey
 - D) Discussions
- 6) Objectives in problem formulation means
- A) Questions to be answered
 - B) Methods
 - C) Techniques
 - D) Methodology
- 7) A reasoning where we start with certain particular statements and conclude with a universal statement is called
- A) Deductive Reasoning
 - B) Abnormal Reasoning
 - C) Inductive Reasoning
 - D) Transcendental Reasoning

- 8) When a Hypothesis is stated negatively it is called
- A) Relational Hypothesis
 - B) Situational Hypothesis
 - C) Null Hypothesis
 - D) Descriptive Hypothesis
- 9) Hypothesis which explain relationship between two variables is
- A) Causal
 - B) Relational
 - C) Descriptive
 - D) Tentative
- 10) A research report is formal statement of
- A) Research Process
 - B) Research Problem
 - C) Data Collection
 - D) Data Editing
- 11) A short summary of Technical Report is called
- A) Article
 - B) Research Abstract
 - C) Publication
 - D) Guide
- 12) In Research Report _____ is used to acknowledge indebtedness
- A) Bibliography
 - B) Index
 - C) Appendix
 - D) Foot-Notes
- 13) A Blue print of Research work is called
- A) Research Problem
 - B) Research Design
 - C) Research Tools
 - D) Research Methods

- 14)** The original source from which researcher collects information is
- A) Primary Source
 - B) Secondary Source
 - C) Both Primary and Secondary
 - D) None of these
- 15)** In survey there is an enumerator and a
- A) Guide
 - B) Respondent
 - C) Supervisor
 - D) Messenger
- 16)** An example of non-personal method of Data collection is
- A) Interview
 - B) Group Interview
 - C) Schedule
 - D) Telephone Interview
- 17)** All Surveys are essentially
- A) Narrative
 - B) Explanatory
 - C) Interdisciplinary
 - D) Communal
- 18)** Questions which allow only a few alternative way of answering is called
- A) Open ended questions
 - B) Unstructured questions
 - C) Structural questions
 - D) Dichotomous questions
- 19)** Probability sampling is otherwise called
- A) Multiple Choice
 - B) Uni-variate analysis
 - C) Random Sampling
 - D) Bi-variate Analysis

- 20)** Validity of a research can be improved by
- A) Eliminating extraneous factors
 - B) Taking the true representative sample of population
 - C) Both A and B
 - D) None of these
- 21)** In the process of conducting research "Formulation of Hypothesis" is followed by
- A) Statement of Objectives
 - B) Analysis of Data
 - C) Selection of Research Tools
 - D) Collection of Data
- 22)** "Controlled Group" is a term used in
- A) Survey Research
 - B) Historical Research
 - C) Experimental Research
 - D) Descriptive Research
- 23)** In the research process, the management question has the following critical activity in sequence
- A) Origin, Selection, Statement, Exploration and Refinement
 - B) Origin, Statement, Selection, Exploration and Refinement
 - C) Origin, Exploration, Selection, Refinement and Statement
 - D) Origin, Exploration, Refinement, Selection and Statement
- 24)** Hypothesis cannot be stated in
- A) Null and question form terms
 - B) Declarative terms
 - C) General terms
 - D) Directional terms

- 25) A study in which quantitative and qualitative data are collected at the same time is a
- A) Concurrent mixed method design
 - B) Mixed method design
 - C) Sequential mixed method design
 - D) Cross sectional mixed method design

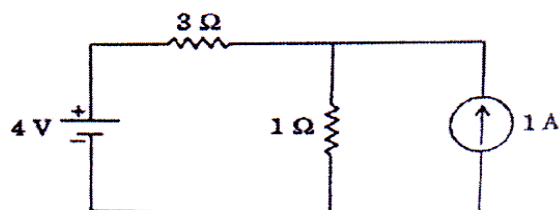
Electrical Engineering

- 26) The angular Velocity of 4 pole 2 KW Induction motor is 2π radians per second. Therefore its speed in rpm should be
- A) 15
 - B) 30
 - C) 60
 - D) 90
- 27) Among the following four, the slowest ADC is
- A) Parallel-Comparator (i.e. flash) Type
 - B) Successive approximation
 - C) Integration Type
 - D) Counting Type
- 28) The average power delivered to an impedance $(4-j3)\Omega$ by a current $5\cos(100\pi t+100)$ A is
- A) 44.2W
 - B) 50W
 - C) 62.5W
 - D) 125W
- 29) A 1mA galvanometer with internal resistance of 50Ω is to be converted to measure 5A (full scale). What is the value of shunt resistance required for this conversion?
- A) 1Ω
 - B) 0.01Ω
 - C) $1K\Omega$
 - D) 10Ω
- 30) A digital to analog converter with full scale output of 3.5 V has resolution close to 14mV. the bit length of the analog to digital converter is
- A) 2
 - B) 4
 - C) 8
 - D) 16

M/P ENT- 40

- 37) The full load copper loss and iron loss of a transformer are 6400W and 500W, respectively. The above copper loss and iron loss at half load will be
- A) 3200 W and 250 W respectively
 - B) 3200 W and 500 W respectively
 - C) 1600 W and 125 W respectively
 - D) 1600 W and 500 W respectively

- 38) For the circuit shown below, the voltage across the 1 ohm resistor is given by



- A) $7/4$
 - B) $5/4$
 - C) $7/3$
 - D) $2/3$
- 39) A transmission line section shows an input impedance of 36 ohms and 64 ohms respectively, when short circuited and open circuited. What is the characteristics impedance of transmission line?
- A) 100 ohms
 - B) 50 ohms
 - C) 45 ohms
 - D) 48 ohms
- 40) In a synchronous machine the rotor speed becomes more than the synchronous speed during hunting, the damping bars develop :
- A) Synchronous motor torque
 - B) DC motor torque
 - C) Induction motor torque
 - D) Induction generator torque

M/P ENT– 40

- 41) The per unit value of a 4 ohm resistor at 100 MVA base and 10 KV base voltage is
- | | |
|-----------|----------|
| A) 2 pu | B) 4 pu |
| C) 0.4 pu | D) 40 pu |
- 42) The voltage regulation of transformer having 2% and 5% reactance, at full load, 0.8 pf lagging is
- | | |
|----------|----------|
| A) 4.6% | B) -4.6% |
| C) -1.4% | D) 6.4% |
- 43) A series R-L-C circuit has $R=50\ \Omega$, $L=100\ \mu\text{H}$ and $C=1\ \mu\text{F}$. The lower half power frequency of the circuit is
- | | |
|--------------|--------------|
| A) 30.55 KHz | B) 3.055 KHz |
| C) 51.92 KHz | D) 1.92 KHz |
- 44) The combined capacity of the parallel combination of two capacitors is four times their combined capacity when connected in series. This means that
- A) Their Capacitance are equal
 - B) Their capacitance are $1\ \mu\text{F}$ and $2\ \mu$
 - C) Their capacitances are $0.5\ \mu\text{F}$ and $1\ \mu\text{F}$
 - D) Their capacitance are infinite
- 45) The torque speed characteristics of two phase induction motor is largely affected by
- A) Voltage
 - B) R/X and speed
 - C) X/R
 - D) Supply voltage frequency

M/P ENT– 40

- 46) A 3 phase, 50 Hz, 6 poles Induction motor has rotor resistance of 0.1Ω and reactance of 0.92Ω . Neglect the voltage drop in stator and assume that rotor resistance is constant. Given that full load slip is 3%. The ratio of maximum torque to full load torque is
- A) 1.567 B) 1.712
C) 1.94 D) 2.134
- 47) When the outputs of several open collector TTL gates are connected together, the gate outputs _____.
- A) Usually burn out B) Produce more voltage
C) Are ANDed together D) Produce more fan-out
- 48) The initial slope of Bode Plot for transfer function having poles at the origin is
- A) -10db/decade B) $+10\text{db/decade}$
C) -20db/decade D) 0db/decade
- 49) A single phase AC voltage source has 200 V rms and a system connected consumes an active power of 300 W. What is the reactive power consumed by the system if 2.5 A rms current is drawn?
- A) 100VAR B) 200VAR
C) 300VAR D) 400VAR
- 50) An emitter in bipolar junction transistor is doped much more heavily than base as it increases the
- A) Emitter Efficiency
B) Base Transport Factor
C) Forward current Gain
D) All of these



Rough Work

Rough Work