

Seat No.	
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M.Phil./Ph.D. Entrance Examination, August - 2018
ELECTRICAL ENGINEERING

Day and Date : Wednesday, 08 - 08 - 2018**Total Marks : 100****Time : 10.00 a.m. to 12.00 noon**

- 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) A researcher divides the populations into PG, graduates and 10 + 2 students and using the random digit table he selects some of them from each. This is technically called
 - A) stratified sampling
 - B) structured sampling
 - C) representative sampling
 - D) stratified random sampling

- 2) 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

- 3) Attributes of objects, events or things which can be measured are called
- A) Qualitative measure B) Data
C) Variables D) None of these
- 4) Generalized conclusion on the basis of a sample is technically known as
- A) Data analysis and interpretation
B) Statistical, inference of external validity of the research
C) Parameter inference
D) All of the above
- 5) The experimental study is based on the law of
- A) Replication B) Occupation
C) Single Variable D) Interest of the subject
- 6) The final result of a study will be more accurate if the sample drawn is
- A) representative to the population B) taken randomly
C) fixed by quota D) purposive
- 7) Independent variables are not manipulated in
- A) normative researches B) ex-post facto researches
C) both of the above D) none of the above
- 8) The process not needed in experimental researches is
- A) observation B) controlling
C) reference collection D) manipulation and replication

- 9) Validity of a research can be improved by
- A) eliminating extraneous factors
 - B) taking the true representative sample of the population
 - C) both (A) and (B)
 - D) None of these
- 10) Area (cluster) sampling technique is used when
- A) population is scattered and large size of the sample is to be drawn
 - B) population is heterogeneous
 - C) long survey is needed
 - D) (A) and (C)
- 11) 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
- 12) “Controlled Group” is a term used in _____.
- A) Experimental research
 - B) Historical research
 - C) Survey research
 - D) Descriptive research
- 13) If you are doing experiment on a large group of sample which method of controlling will you adopt?
- A) matching
 - B) randomization
 - C) elimination
 - D) elimination and matching

- 14)** A good hypothesis should be
- A) precise, specific and consistent with most known facts
 - B) formulated in such a way that it can be tested by the data
 - C) of limited scope and should not have global significance
 - D) all of these
- 15)** Last step of problem formulation is
- A) Survey
 - B) Literature survey
 - C) Discussion
 - D) Rephrasing the research problem
- 16)** All surveys are essentially
- A) Narrative
 - B) Explanatory
 - C) Interdisciplinary
 - D) Communal
- 17)** Hypothesis cannot be stated in
- A) null and question form terms
 - B) declarative terms
 - C) general terms
 - D) directional terms
- 18)** Final stage in the research process is
- A) Problem formulation
 - B) Data collection
 - C) Data analysis
 - D) Report writing

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- 19) Short summary of technical report is called
- A) Article
 - B) Abstract
 - C) Monograph
 - D) Conclusions
- 20) A blueprint of research work is called
- A) Research problem
 - B) Research design
 - C) Research method
 - D) Research tools
- 21) Interview with a detailed standardized schedule is called
- A) Clinical interview
 - B) Structural interview
 - C) Group interview
 - D) Direct interview
- 22) A researcher wants to study the future of the Congress in India. For the study which tool is most appropriate for him?
- A) Questionnaire
 - B) Schedule
 - C) Interview
 - D) Rating scale
- 23) The other name of independent variable for an experimental research is/are
- A) treatment variable
 - B) experimental variable
 - C) manipulated variable
 - D) all of the above
- 24) Which of the following is not covered under Intellectual Property Rights?
- A) Copy rights
 - B) Patents
 - C) Trademarks
 - D) Treasures

- 25)** A research paper is a brief report of research work based on
- A) Primary data B) Secondary data
- C) Both primary and secondary data D) None of the above

Electrical Engineering

- 26)** A simple series circuit of resistance and inductance has time constant 0.1 second. The 10 volt dc source when connected across the series circuit. It passes the steady state current of 10 Amp. Determine current in the circuit after 0.4 seconds.
- A) Zero B) 0.4 Amp
- C) 1.0 Amp D) 10 Amp
- 27)** Under constant excitation the dc motor is supplying a constant torque load. If 0.1 ohm resistor is inserted in series with its armature circuit, the armature current will
- A) Decrease B) Increase
- C) Not change D) Zero ampere
- 28)** The primary windings of a single phase step down transformer (rated for 500 VA, 400/200 volts, 50 Hz) is wound with conductors having 4.5 A/sq mm. Then the weight of secondary winding in terms of that of primary windings will
- A) 50% B) 200%
- C) nearly 100% D) not be predicted
- 29)** The angular velocity of a 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

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- 30) For a half controlled SCR converter the output voltage is maximum when firing angle is
- A) 90 B) 45
C) 0 D) 180
- 31) Addition of Zeros in transfer function causes
- A) Lead compensation B) Lag compensation
C) Lead-Lag compensation D) None of the above
- 32) The initial slope of BODE plot for a transfer function having poles at the origin is
- A) – 10db/decade B) + 10db/decade
C) – 20db/decade D) 0 db/decade
- 33) A digital to analog converter with a full scale output of 3.5V has a resolution close to 14 mV. The bit length of the analog to digital converter is
- A) 2 B) 4
C) 8 D) 16
- 34) The minimum input voltage recognized as HIGH by a TTL gate is
- A) 2.0V B) 2.4V
C) 0.8V D) 5V
- 35) For damping factor zero, the magnitude of system output will be
- A) zero B) any one
C) unity D) infinite

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- 36)** If a current of 1 Amp is passed through a lamp for 100 seconds, the number of coulombs of charge passing through the bulb will be equal to
- A) 10 coulombs
 - B) 15 coulombs
 - C) 100 coulombs
 - D) 0.01 coulombs
- 37)** In a series resonating circuit at the resonance the phase angle between voltage and current is equal to
- A) Zero degree
 - B) 45°
 - C) 90°
 - D) 180°
- 38)** Amongst the following electronic components which device does behave like 2 SCRs
- A) JFET
 - B) UJT
 - C) MOSFET
 - D) TRIAC
- 39)** When fault occurs near the impedance relay the V/I ratio is
- A) constant
 - B) lower than the value when fault occurs away from relay
 - C) higher than the value when fault occurs away from relay
 - D) none of the above
- 40)** Stiffness in the travelling wave is attenuated by
- A) inductance of line
 - B) capacitance of line
 - C) resistance of line
 - D) all of above

- 41) The Hysteresis loss in given magnetic material may be decreased by
- A) laminating it
 - B) increasing flux density
 - C) increasing frequency
 - D) decreasing maximum flux density
- 42) In two wattmeter method of power measurement if one wattmeter reads zero then
- A) it may be faulty
 - B) power factor of circuit is unity
 - C) power factor of circuit is 0.5
 - D) none of the above
- 43) A synchronous motor driving a 4 pole 25 Hz alternator is supplied with 50 Hz. To get rated frequency of the alternator voltage, the poles of the synchronous motor should be
- A) 2
 - B) 4
 - C) 6
 - D) 8
- 44) If the supply terminals of DC shunt motor are reversed then motor
- A) will run in same direction
 - B) will run in reverse direction
 - C) will run at lower speed
 - D) will not run
- 45) Braking Capacity of Circuit Breaker is usually expressed in
- A) MVA
 - B) Ampers
 - C) MW
 - D) Volts

- 46)** Power loss in transmission line is due to
- | | |
|----------------|---------------------|
| A) resistance | B) inductance |
| C) capacitance | D) all of the above |
- 47)** Laplace transform of unit step function is
- | | |
|------------|----------|
| A) s | B) $1/s$ |
| C) $1/s^2$ | D) 1 |
- 48)** % Slip of 6 pole Induction motor running at 960 rpm is
- | | |
|--------|--------|
| A) 10% | B) 40% |
| C) 6% | D) 4% |
- 49)** When receiving end voltage of transmission is more than sending end voltage, this effect is known as
- | | |
|--------------------|--------------------|
| A) Bucholtz effect | B) Coulombs effect |
| C) Fourier effect | D) Ferranti effect |
- 50)** If a 3-input NOR gate has eight input possibilities, how many of those possibilities will result in a HIGH output?
- | | |
|------|------|
| A) 1 | B) 2 |
| C) 7 | D) 8 |



Rough Work

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