M/P ENT – 06

Total No. of Pages : 12

Seat No.	

M.Phil / Ph.D. Entrance Examination, July - 2022
ELECTRICAL ENGINEERING

Day and Date : Friday, 15 - 07 - 2022 **Total Marks : 100**

Time : 11.00 a.m. to 01.00 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

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

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 ω

(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°

44) Armature reaction in dc 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

45) In a transmission line having negligible resistance, the surge impedance is

(A) $\sqrt{L+C}$

(B) $\sqrt{C/L}$

(C) $\sqrt{1/LC}$

(D) $\sqrt{L/C}$

46) IDMT relays are used to protect power transformer against

(A) External short circuits

(B) Overloads

(C) Internal short circuits

(D) Both (A) & (B)

47) A modern power semiconductor device that combines the characteristics of BJT and MOSFET is
(A) GTO
(B) FCT
(C) IGBT
(D) MCT

48) If two meters X and Y require 40 mA and 50 mA respectively, to give full scale deflection then
(A) X is more sensitive
(B) Y is more sensitive
(C) Both X and Y are equally sensitive
(D) It would not be possible to assess the sensitivity on the basis of given data

49) For a linear time invariant system, an optimal controller can be designed if
(A) The system is controllable and observable
(B) The system is uncontrollable but stable
(C) The system is unstable but observable
(D) The system is stable and unobservable

50) 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

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Rough Work

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