

PAPER-I
ELECTRICIAN
(THEORY)
SEMESTER-II

TIME: 3 Hrs.

MARKS: 150

Note:- Attempt all the questions.

All questions carry equal marks.

This paper carries negative marking 25% marks will be deducted for each wrong answer.

Choose the correct answer:

1. The symbol h_{fe} is the same as-
a) β_{DC}
b) α_{DC}
c) hi-fi
d) β_{ac}
2. Most of the electrons in the base of an NPN transistor flow-
a) Out of the base lead
b) Into the collector
c) Into the emitter
d) Into the base supply
3. In a transistor, collector current is controlled by-
a) Collector voltage
b) Base current
c) Collector resistance
d) All of these
4. Total emitter current is-
a) $I_E - I_C$
b) $I_C - I_E$
c) $I_B + I_C$
d) $I_B - I_C$
5. What is the dc input resistance at the base of a BJT?
a) $\beta_{DC} R_C$
b) $\beta_{DC} (R_C + I_E R_E)$
c) $\beta_{DC} r_e'$
d) $\beta_{DC} R_E$
6. The _____ can be externally programmed to turn on at a desired anode-to-gate voltage level.
a) UJT
b) PUT
c) SCR
d) SCS
7. You need a very efficient thyristor to control the speed of an AC fan motor. A good device to use would be-
a) a 4-layer diode
b) a PUT
c) a triac
d) a BJT

8. When the JFET is no longer able to control the current, the point is called the-
 - a) Breakdown region
 - b) Depletion region
 - c) Saturation point
 - d) Pinch-off region
9. With a JFET, a ratio of output current change against an input voltage change is called-
 - a) Trans conductance
 - b) Siemens
 - c) Resistivity
 - d) Gain
10. Which type of JFET bias requires a negative supply voltage?
 - a) Feedback
 - b) Source
 - c) Gate
 - d) Voltage divider
11. Base 10 refers to which number system?
 - a) Binary coded decimal
 - b) Decimal
 - c) Octal
 - d) Hexadecimal
12. Convert the decimal number 151.75 to binary.
 - a) 10000111.11
 - b) 11010011.01
 - c) 00111100.00
 - d) 10010111.11
13. Convert the binary number 1011010 to hexadecimal.
 - a) 5B
 - b) 5F
 - c) 5A
 - d) 5C
14. The number of bits used to store a BCD digit is-
 - a) 8
 - b) 4
 - c) 1
 - d) 2
15. Sample-and-hold circuits in ADCs are designed to-
 - a) Sample and hold the output of the binary counter during the conversion process
 - b) Stabilize the ADCs threshold voltage during the conversion process
 - c) Stabilize the input analog signal during the conversion process
 - d) Sample and hold the ADC staircase waveform during the conversion process
16. For safety, the fuse wire used in the mains for household supply of electricity must be made of metal having-
 - a) Low melting point
 - b) High resistance
 - c) High melting point
 - d) Low specific heat

17. When a fourth resistor is connected in series with three resistors, the total resistance-

a) Increases by one-fourth	b) Increases
c) Decreases	d) Remains the same

18. A string of five series resistors is connected across a 6 V battery. Zero voltage is measured across all resistors except R_3 . The voltage across R_3 is-

a) 0V	b) 1.2V
c) 6V	d) 0.6 V

19. A circuit breaker is a-

a) Fuse	b) Switch
c) Resettable protective device	d) Resistor

20. The current in a given circuit is not to exceed 24 A. Which value of fuse is best?

a) A fuse is not necessary	b) 10 A
c) 24 A	d) 20 A

21. An ammeter is an electrical instrument used to measure-

a) Current	b) Voltage
c) Resistance	d) None of these

22. The basic difference between a fuse and a circuit breaker is-

a) A fuse is slower	b) A fuse is reusable
c) A circuit breaker is reusable	d) A circuit breaker is more reliable

23. In a separately excited dc generator the field is connected to-

a) In series with an armature	b) Across the armature
c) To the external supply source	d) None of these

24. If we increase the field of the dc generator, its emf output-

a) Increases indefinitely	b) Increases till the winding burns
c) Increases till the magnetic saturation takes place	d) First increases and then starts reducing

25. In a dc generator the residual magnetism is of the order of-
- a) 2.5%
 - b) 10%
 - c) 15%
 - d) 25%
26. The terminal voltage of the dc shunt generator on loading.
- a) Increases slightly
 - b) Decreases sharply
 - c) Decreases slightly
 - d) Increases sharply
27. For parallel operation, the dc shunt generator normally preferred are.
- a) Shunt generator
 - b) Series generator
 - c) Under compound generator
 - d) Both (a) & (c)
28. In a rotating electrical machine the torque produced will be maximum when-
- a) Torque angle is zero
 - b) Torque angle is 90 deg
 - c) Two magnetic fields are aligned with each other
 - d) Field strengths are maximum and the torque angle is zero
29. Flashing of field of dc generator means-
- a) Neutralization of residual magnetism
 - b) Creation of the residual magnetism by a dc source
 - c) Increasing the flux density by providing extra ampere-turns in the field
 - d) None of these
30. In an arc welding in order to obtain steady arc one should use-
- a) DC series generator
 - b) DC shunt generator
 - c) DC differential compound generator
 - d) DC cumulative compound generator
31. With the increase in the speed of a dc motor.
- a) Both back emf as well as line current increases
 - b) Both back emf and line current falls
 - c) Back emf increases but the line current falls
 - d) Back emf falls and line current increases
32. The output indicated on the name plate of any motor is always the-
- a) Gross power
 - b) Power drawn in volt amperes
 - c) Power drawn in watts
 - d) Output power at the shaft
33. In a dc compound motor field regulator is provided to-
- a) Control the flux
 - b) Limit the ampere current
 - c) Demagnetize the field partially
 - d) None of these

34. Efficiency of class B push pull amplifier is-
a) 25% b) 78.5%
c) 50% d) 60%
35. Multivibrator is _____
a) Relaxation Oscillator b) Amplifier
c) Rectifier d) Attenuator
36. The direction of rotation of dc shunt motor can be reversed by interchanging.
a) The supply terminals b) The field terminals
c) The armature terminals only d) Either field or armature terminals
37. Power transformers are generally designed to have maximum efficiency around-
a) No load b) Half load
c) Near full load d) 10% overload
38. Two transformers are connected in parallel. These transformers do not have equal percentage impedance which results.
a) Short-circuiting of the secondaries
b) Power factor of one of the transformers is leading while that of the other lagging
c) Transformers having higher copper losses will have negligible core losses
d) Loading of the transformers not in proportion to their kVA ratings.
39. The changes in volume of transformer cooling oil due to variation of atmospheric temperature during day and night is taken care of by which part of transformer?
a) Conservator b) Breather
c) Bushings d) Buchholz relay
40. The transformer laminations are insulated from each other by-
a) Mica strip b) Thin coat of varnish
c) Paper d) Any of these
41. Which type of winding is used in 3 phase shell type transformer?
a) Circular type b) Sandwich type
c) Cylindrical type d) Rectangular type
42. In a CRO which of the following is not a part of electron gun-
a) Cathode b) Grid
c) Accelerating anode d) X – Y plates

43. Which of the following instruments can be used to measure AC current only?
 (i) Permanent magnet type ammeter (ii) Induction type ammeter
 (iii) Moving iron voltmeter (iv) Moving iron ammeter
 a) iv only b) ii only
 c) i, ii, iv d) ii and iv only
44. An oscilloscope indicates-
 a) Peak to peak value of voltage b) DC value of voltage
 c) RMS value d) Average value
45. In a ballistic galvanometer, the deflecting torque is proportional to-
 a) The current through coil b) Square of current through coil
 c) Square-root of current through coil d) Sine of measured
46. The error of an instrument is normally given as a percentage of-
 a) Measured value b) Full-scale value
 c) Mean value d) rms Value
47. If the instrument is to have a wide range, the instrument should have-
 a) Linear scale b) Square-law scale
 c) Exponential scale d) Logarithmic scale
48. The resistance can be measured most accurately by-
 a) Voltmeter-ammeter method b) Bridge method
 c) Multimeter d) Megger
49. The repeat accuracy of an instrument can be judged from its-
 a) Static error b) Linearity error
 c) Dynamic error d) Standard deviation of error
50. Which of the following meters has a linear scale?
 a) Thermocouple meter b) Moving iron meter
 c) Hot wire meter d) Moving coil meter
