

## PHASE I

### OBJECTIVE TYPE TEST FOR THE POST OF ASSISTANT ENGINEER (ELECTRONICS)

1. Who released the book 'Karmyodha Granth', written on the life of Prime Minister Narendra Modi, on January 07, 2020?
  - a) Amit Shah
  - b) Rajnath Singh
  - c) M. Venkaiah Naidu
  - d) Prakash Javadekar
  
2. Which state had announced the setting up of the Vikram Sarabhai Children Innovation Center (VSCIC) to identify, nurture and promote children's innovation in the state?
  - a) Madhya Pradesh
  - b) Uttar Pradesh
  - c) Gujarat
  - d) Rajasthan
  
3. Which organisation developed Quantum Random Number Generator (QRNG)?
  - a) DRDO-Naval Science and Technological Laboratory
  - b) CSIR-Central Electronics Engineering Research Institute (CSIR-CEERI)
  - c) DRDO's Young Scientist Laboratory for Quantum Technologies (DYSL-QT)
  - d) None

4. Which automobile company has become the most valuable two-wheeler company in the world in Jan 2021?

- a) Yamaha Motor Company
- b) Hero MotoCorp
- c) Bajaj Auto
- d) TVS Motor Company

5. What was the theme for Pravasi Bharatiya Divas 9th Jan 2021?

- a) Contributing to Aatmanirbhar Bharat
- b) Apna Bharat, Apna Gaurav
- c) Redefining engagement with the Indian diaspora
- d) Role of Indian Diaspora in building Self-Reliant India

6. In question given below, a part of the sentence is italicised and underlined. Below are given alternatives to the underlined part which may improve the sentence. Choose the correct alternative. In case no improvement is needed, option '**No improvement**' may be chosen as the answer.

If you are living near a market place you should be ready to **bear** the disturbances caused by traffic.

- a) No improvement
- b) bear upon
- c) bear away
- d) bear with

7. In question below, the passage consists of six sentences. The first and sixth sentences are given in the beginning. The middle sentences in each have been removed and jumbled up. These are labelled as P, Q, R and S. Find out the proper order for the four sentences.

**S1: Your letter was big relief.**

P : How did your exams go?

Q : After your result, you must come here for a week.

R : You hadn't written for over a month.

S : I am sure you will come out with flying colours.

**S6: But don't forget to bring chocolates.**

a) RPSQ

b) PQSR

c) PRQS

d) QPSR

8. Meaning of the underlined part of the sentence :

He was undecided. He let the grass grow under his feet.

a) loitered around

b) stayed out

c) sat unmoving

d) moved away

9. Give antonym for the word '**Antique**'

a) boutique

b) physique

c) obsolete

d) New

10. Fill up with most appropriate option:

If she \_\_\_\_\_ a bird, she would fly.

a) were

b) was

c) is

d) has

11. Read the following information carefully and then answer the question given below it:

$A + B$  means A is the father of B,

$A - B$  means A is the wife of B;

$A \times B$  means A is the brother of B;

$A \div B$  means A is the daughter of B.

If  $P + R \div Q$ , which of the following is true?

a) P is the brother of Q.

b) P is the husband of Q.

c) P is the father of Q.

d) P is the son of Q

12. P, Q, R, S, T, U & V are sitting around a circle facing the center.

P is between V and S.

R, who is second to right of S, is between Q and U.

Q is not the neighbour of T.

In which of the following pairs, the second member is at the immediate right of the first member?

a) QS

b) PV

c) RU

d) VT

13. Find the missing number in the given series

279936, 46656, 7776, 1296, 216, ?

a) 46

b) 60

c) 66

d) 36

14. Six lectures are organized during a week, starting from Monday & ending on Sunday.

Computer Science is not on Tuesday or Saturday. Psychology is exactly after the Organizational Practices. Statistics is not on Friday & there is a holiday for one day between Statistics & Research Methods. There is not any lecture before Economics (because it is a holiday & Monday is not a holiday). How many lectures were organized between Economics & Psychology?

a) One

b) Two

c) Three

d) Cannot be determined

15. In the following question, choose the number from the given options which is similar to the given set.

992, 733, 845, 632

a) 425

b) 114

c) 326

d) 947

16. If in a game of 80, P can give 16 points to Q and R can give 20 points to P, then in a game of 150, how many points can R give to Q?

a) 48

b) 60

c) 54

d) 90

17. Rahul is 15 years elder than Rohan. If 5 years ago, Rahul was 3 times as old as Rohan, then find Rahul's present age.

a) 32.5 years

b) 27.5 years

c) 25 years

d) 24 years

18. Two towns P & Q are 275 km apart. A motorcycle rider starts from P towards Q at 8 a.m. at the speed of 25 km/hr. Another rider starts from Q towards P at 9 a.m. at the speed of 20 km/hr. Find at what time they will cross each other?

a) 2.45 p.m.

b) 2.30 p.m.

c) 1.35 p.m.

d) 1.15 p.m.

19. The length and breadth of a playground are 36 m and 21 m respectively. Flagstaffs are required to be fixed on all along the boundary at a distance of 3 m apart. The number of flagstaffs will be?

a) 40

b) 39

c) 38

d) 37

20. The difference between a two-digit number and the number obtained by interchanging the digits is 36. What is the difference between the sum and the difference of the digits of the number if the ratio between the digits of the number is 1 : 2 ?

a) 8

b) 4

c) 10

d) 16

21. Select the correct frequency band for FM broadcast:

- a) 54-72 MHz
- b) 540-1600 kHz
- c) 88-108 MHz
- d) 3.7-4.2 GHz

22. Which mode of propagation is being used for television broadcast, satellite communication etc?

- a) Space wave
- b) Ground wave
- c) Sky wave
- d) None of these.

23. Which of the following is/are application/s of Radar Beacons?

- I. Target identification
- II. Navigation

- a) (I) only
- b) (II) only
- c) Both (I) and (II)
- d) None of these

24. The meaning of monochromatic regarding the output from a LASER is:

- a) Output light is a narrow beam.
- b) Output light is of single frequency.
- c) Output light is infrared radiation.
- d) Output light is polarized.

25. Materials such as Quartz, Rochelle salt, Barium titanite shows piezoelectric property. It is the property by which:

- a) a change in the flux linkage due to applied force.
- b) a change in the capacitance owing to applied force.
- c) a change in the inductance owing to applied force.
- d) an e.m.f is produced when the material is under stress.

26. Among the following metals, which **one is not being used** in the sensing element of a resistance thermometer:

- a) Copper
- b) Germanium
- c) Nickel
- d) Platinum

27. Indicate **false statement** regarding three-phase squirrel-cage induction motors:

- a) Rotor conductors are kept open
- b) These motors find application in large blowers and fans
- c) Rotor conductors are short-circuited through end rings
- d) Require less maintenance

28. Among the Variable Frequency Drive parameters, the parameter 'acceleration' refers to:

- a) Upper limit of output frequency
- b) Control method of VFD
- c) Time taken by the output frequency to reach 0Hz from the maximum frequency.
- d) Time taken by the output frequency to reach the maximum output frequency from 0Hz.

29. In a variable frequency drive, Insulated Gate Bipolar Transistor (IGBTs) are part of:

- a) Rectifier
- b) Filter
- c) Inverter
- d) DC link

30. The formula for finding Synchronous speed ( $N_s$ ) of 3 phase induction motor:

- a)  $(120 \cdot P)/f$
- b)  $(120 \cdot f)/P$
- c)  $(60 \cdot P)/f$
- d)  $(60 \cdot f)/P$

31.The characteristics of strain gauge described in terms of its sensitivity is\_\_\_\_\_:

- a) Change in gauge wire resistance
- b) Change in length of gauge wire
- c) Poisson's ratio

**d) Gauge factor**

32.For the Programmable Logic Controllers(PLCs), relays and valves are often connected to:

- a) Input modules
- b) Output modules**
- c) Both (a) and (b)
- d) None of these

33.A small computer on a single chip that has built in processor, memory and Input/output peripherals is termed as:

- a) SCADA
- b) PLC
- c) Microprocessor
- d) Microcontroller**

34.In digital communication systems which one of the following are part of 'Reception' process?

- a) Encoding
- b) Decoding**
- c) Sampling
- d) Quantization

35. Calculate the image signal frequency for a super heterodyne receiver with IF 455 kHz tuned to 1200 kHz.

a) 2110 kHz

b) 750 kHz

c) 2310 kHz

d) 1650 kHz

36. For which of the following applications Op-amp is configured with positive feedback:

a) Non-inverting amplifier

b) Schmitt trigger

c) Inverting amplifier

d) All of the above

37. Which form of energy is used by Radar for detecting aircrafts, ships etc?

a) Sound energy

b) Electromagnetic energy

c) Optical energy

d) Infra red radiation

38. For the following diodes which one does not have negative resistance in V-I characteristics:

a) Gunn diode

b) Tunnel diode

c) Zener diode

d) None of these

39.The graphical programming language used for PLCs:

- a) VHDL
- b) C
- c) Ladder diagram
- d) Instruction list

40.The reason for the use of Starters for the induction motor :

- a) Due to high starting torque of the motor
- b) To avoid high speed of the motor
- c) To avoid drawing of current greater than rated current by the stator.
- d) Because the motor will run in reverse direction

41.Most of the receivers falls under which group:

- a) Super heterodyne group
- b) Tuned radio frequency receiver group
- c) Amplitude modulated group
- d) Frequency modulated group

42.A single ended differential amplifier have:

- a) Both the inputs are grounded
- b) Both the inputs are connected together
- c) One of the input connected to ground and signal applied to the other input.
- d) None of the above

43. Among the following electrical characteristics **which one is false for an ideal op-amp:**

- a) Infinite open loop gain
- b) Infinite input impedance
- c) Infinite output impedance
- d) Infinite common mode rejection ratio (CMRR)

44. The data transmission rate of a modem is measured in

- a) baud rate
- b) bytes per second
- c) Hertz
- d) bits per second

45. What happens if any two phases for an induction motor are interchanged?

- a) The motor will continue to run in the same direction.
- b) The motor will stop
- c) The motor will run in the reverse direction
- d) None of the above

46. The core of an optical fiber has a

- a) Lower refracted index than air
- b) Lower refractive index than the cladding
- c) Higher refractive index than the cladding
- d) Similar refractive index with the cladding

47. A woofer should be fed from the input through a

- a) low pass filter
- b) high pass filter
- c) band pass filter
- d) band stop filter

48. The most commonly used transistor amplifier circuit is

- a) CB
- b) CC
- c) CE
- d) CE or CC

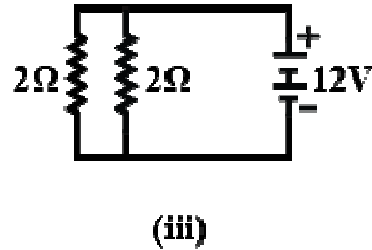
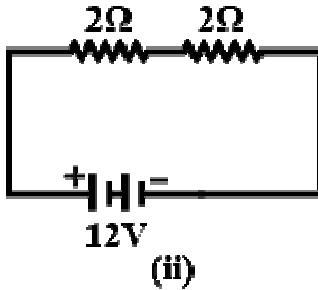
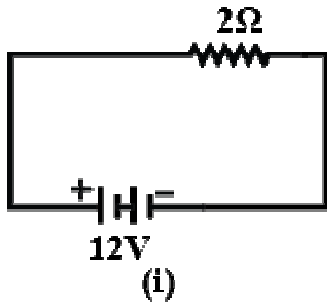
49. A certain noninverting amplifier has  $R_i$  of 1 k $\Omega$  and  $R_f$  of 100 k $\Omega$ . The closed-loop voltage gain is

- a) 100,000
- b) 1000
- c) 101
- d) 100

50. Which among the below mentioned assertions is not a way of cross-talk reduction while designing digital PCBs?

- a) Shielding of clock lines with guard strips
- b) Decrease in the distance between conductors
- c) Reduction in the loop area of circuits
- d) Avoid running of parallel traces for longer distances especially for asynchronous signals

51. In the following circuits, heat produced in the resistor or combination of resistors connected to a 12 V battery will be



- a) same in all the cases
- b) minimum in case of (i)
- c) maximum in case of (ii)
- d) maximum in case of (iii)

52. TIA/EIA-485 (formerly known as RS-485) is a digital communication standard with the following traits:

- a) Single-ended voltage signaling, multidrop
- b) Frequency Shift Key (FSK) signaling, superimposed on analog 4-20 mA
- c) Manchester encoding, multidrop
- d) Differential voltage signaling, multipoint

53. The consideration involved in the selection of the type of electric drive for the Load Variation application depends upon

- a) Constant Load
- b) Continuous Variable Load
- c) Pulsating Load
- d) All of the above

54. The frequency range of an X-band Radar is?

- a) 2 GHz – 4 GHz
- b) 4 GHz – 8 GHz
- c) 8 GHz – 12 GHz
- d) 12 GHz – 14 GHz

55.If an extra resistance is connected in the rotor circuit of slip ring induction motor, then,

- a) Starting current and torque decreases
- b) Starting current increases and torque decreases
- c) Starting current decreases and torque increases
- d) Starting current and torque increases

56.Electronic variable frequency drive (VFD) connected to motors

- a) provide variable speed with high efficiency
- b) induces eddy-current in the secondary member of the clutch mechanism
- c) is not suitable for variable torque load
- d) does not provide variable speed and has low-efficiency

57.The smallest change which a sensor can detect is called

- a) Resolution
- b) Accuracy
- c) Precision
- d) Scale

58. The purpose of Gyroscope on a ship is to

- a) Understand the ship orientation
- b) Track the ship's position
- c) Know the ship's speed
- d) Identify objects within the ship's surrounding

59. A square voltage wave is applied to a RC circuit having a short time constant. The waveshape of the charging current

- a) resembles the waveshape of the applied voltage
- b) has rounded corners
- c) has sharp peaks coinciding with leading edge of the applied voltage pulse
- d) is triangular

60. In a counter circuit consisting of JK flip flops, all the flip flops are triggered simultaneously. This counter circuit is

- a) a combinational circuit
- b) an asynchronous circuit
- c) a synchronous circuit
- d) a sequential circuit

61. The following symbol is used when something in your workplace is a



- a) Chemical Weapon
- b) Biohazard
- c) Toxic Substance
- d) Radiation Danger

62. Which of these **is not among** the 5S associated with safety?

- a) Set in order
- b) Shine
- c) Sustain
- d) Save

63. What kind of communication is used for underwater communication?

- a) Radio Communication
- b) Microwave Communication
- c) Satellite Communication
- d) SONAR

64. A diode designed for limiting the voltage across its terminal in reverse bias is called

- a) Zener diode
- b) Photodiode
- c) SCR
- d) Schottky diode

65. For attenuation of high frequencies, we should use

- a) shunt capacitance
- b) series capacitance
- c) inductance
- d) resistance

66. The following **is not** an example of a transducer

- a) Analog Voltmeter
- b) Thermocouple
- c) Photo Electric Cell
- d) Pneumatic Cylinder

67. Parity bits are used for the purpose of \_\_\_\_\_ in digital systems.

- a) power monitoring
- b) error detection
- c) symmetry generation
- d) time-stamping data

68. Which speed control is preferred for constant torque drive?

- a) Mechanical Loading
- b) Field Control
- c) Armature Voltage Control
- d) None of these

69. At resonant frequency, the impedance of a series resonant circuit is \_\_\_\_\_.

- a) Zero
- b) Maximum
- c) Minimum
- d) Infinite

70. Arc blast is caused by:

- a) Poor contact within electrical wire splices
- b) Radio frequency emissions from high-power transmitters
- c) Discharge of high electrical current through open air
- d) Failure to lock-out and tag-out electrical breakers

Signature :