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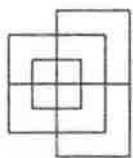
Signature of the Candidate

**NATIONAL INSTITUTE OF TECHNOLOGY, GOA****Recruitment for the Post of Junior Engineer (Electrical)***Total Time Allowed: 1 hour 30 minutes**Total Marks: 45***IMPORTANT INSTRUCTIONS**

1. The candidate will be supplied with the Question Booklet and OMR Answer Sheet 05 minutes prior to the commencement of the Examination.
2. The Level I Written Examination has the following two parts:
  - Level I, Part A (General) consist of 15 questions for a total of 15 marks, with 1 mark awarded for each correct answer and a negative marking of 0.25 for every wrong answer.
  - Level I, Part B (Domain Specific) consist of 30 questions for a total of 30 marks, with 1 mark awarded for each correct answer and a negative marking of 0.25 for every wrong answer.
3. The candidates have to mark their answer by completely darkening the appropriate circle on the OMR Answer sheet. Incomplete or improper marking may lead to non-evaluation.
4. The candidate may use strictly Black/Blue Ball Pen to darken the circle completely.
5. Question Paper, OMR sheet and rough sheet will have to be returned to the Invigilator after the end of the exam.
6. No candidates will be allowed to leave the Exam Hall before the scheduled completion time.
7. Before attempting to answer, candidates are requested to check whether all the questions are there and ensure there are no blank pages in the Question Booklet.
8. The candidate must write their Application ID in the space provided and sign on question booklet and OMR sheet. Do not write anything else on the Question Booklet.
9. Each question comprises four responses (A), (B), (C) and (D). Candidates have to select ONLY ONE correct response.
10. If more than one option is marked for one question, the answer will be treated as wrong. e.g. If for any item, B is the correct answer, the candidate has to darken only the **B circle on OMR sheet** against the question.
11. Candidates should not remove or tear off any sheet from this Question Booklet. Candidates are not allowed to take the Question Booklet out of the Examination Hall.
12. Failure to comply with any of the above instructions will render the candidate liable to such action or penalty as may be decided by the Competent Authority, NIT Goa.

*Invigilator's Signature**Candidate's Signature*

## Part A (General)

1. NIT Goa was established in  
(A) 2011 (B) 2012  
(C) 2009 (D) 2010
2. Fill in the blank in the comparison- Lake : River : : Still : \_\_\_\_\_  
(A) Fly (B) Flow  
(C) Fall (D) Rise
3. Find the missing number in the series : 35, 29, 24, 20, \_\_\_\_\_.  
(A) 17 (B) 16  
(C) 18 (D) 15
4. Find the minimum number of straight lines to make the following figure.  
  
(A) 15 (B) 13  
(C) 18 (D) 21
5. If X percent of Y is Z, Y percent of X would be  
(A) Z (B)  $1 / Z$   
(C) Infinite (D) 1
6. How many nouns are there in the sentence: "The students were rewarded for their performance".  
(A) 3 (B) 2  
(C) 1 (D) 4
7. What is a synonym for the word: "Success".  
(A) Luck (B) Result  
(C) Hard work (D) Feat
8. Fill in the blank- Engineer \_\_\_\_\_ on the drawings.  
(A) checked (B) marked  
(C) erased (D) read
9. Improve the sentence- The officer asked the staff to inform upon the matter.  
(A) The officer asked the staff to report on the matter  
(B) The officer requested the staff to discuss on the matter.  
(C) The staff was requested by the officer about the matter.  
(D) The officer informed the staff to comply on the matter.
10. Fill in the blanks: Goa was, for long, \_\_\_\_\_ by Portuguese.  
(A) bought (B) traded  
(C) ruled (D) owned
11. Complete the sentence: Despite his best attempts to hide his errors .....  
(A) we could detect his mistakes.  
(B) we failed to detect his mistakes.  
(C) he succeeded to hide the mistakes.  
(D) he failed to show his mistakes.
12. Goa was liberated in

- (A) 1947  
(C) 1959
- (B) 1961  
(D) 1962
13. Inflation is characterized by  
(A) Rise in prices  
(C) Fall in supply
- (B) Shortage of money at buyer's end  
(D) Rise in demand
14. One of the key taxes replaced by GST is  
(A) Income tax  
(C) Professional tax
- (B) Sales tax  
(D) Vehicle Registration tax
15. Full form of AQI in Environment science is  
(A) Air Quality Integer  
(C) Aero-particle Quantity Integer
- (B) Atmospheric Quality Index  
(D) Air Quality Index

### Part B (Electrical Engineering)

16. An energy source supplies a steady current of 2 A for 25 seconds to an electric bulb. If the bulb emits 22 kJ of energy as light and heat, what is the voltage drop across the bulb?  
(A) 220 V  
(C) 110 V
- (B) 230 V  
(D) 440 V
17. What is the smallest resistance obtained by connecting 30 resistors, each of resistance  $\frac{1}{4}$  ohm?  
(A)  $30/4$  ohm  
(C) 120 ohm
- (B)  $1/120$  ohm  
(D)  $1/200$  ohm
18. The current in an inductor varies as  $i = 20 + 20t$ , where  $t$  is time in seconds. If the self-induced emf is 10 mV, what is the self-inductance of the coil?  
(A) 1 mH  
(C) 2 mH
- (B) 0.5 mH  
(D) 5 mH
19. A long wire carries a current producing a magnetic field of 0.8 Tesla at 0.5 cm from it. What is the magnetic field at 1 cm distance?  
(A) 0.16 Tesla  
(C) 0.8 Tesla
- (B) 0.2 Tesla  
(D) 0.4 Tesla
20. An electron is moving horizontally towards the east. A magnetic field applied vertically downward exerts a force on the electron in which direction?  
(A) East  
(C) West
- (B) North  
(D) South
21. Permittivity is measured in which of the following units?  
(A) Mho  
(C) Farad
- (B) Ohm/meter  
(D) Farad/meter
22. For a ferromagnetic material like iron, as the magnetizing field increases, the relative permeability:  
(A) Decreases  
(C) Remains one
- (B) Increases  
(D) Becomes zero
23. A 0-250 V voltmeter has a guaranteed accuracy of 1% of full scale. If it measures 75 V, what is the relative limiting error in percentage?  
(A) 1.5%  
(C) 3.33%
- (B) 1.75%  
(D) 3.67%

24. Which metals are used to make a K-type thermocouple?  
 (A) Iron and Constantan (B) Copper and Constantan  
 (C) Platinum and Rhodium (D) Chromel and Alumel
25. A consumer uses 6,57,000 kWh annually with a maximum demand of 150 kW. What is the load factor?  
 (A) 40% (B) 50%  
 (C) 70% (D) 20%
26. A plant has a connected load of 500 MW and a maximum demand of 250 MW. If 10,000 units are generated weekly, what is the average demand?  
 (A) 150 kW (B) 297.6 kW  
 (C) 29.8 kW (D) 59.52 kW
27. What are the advantages of DC transmission over AC transmission?  
 (A) More economical for long-distance lines (B) No skin effect in DC  
 (C) Negligible corona losses compared to AC (D) All of the above
28. If the length of a cable doubles, what happens to its insulation resistance?  
 (A) Increases by 50% (B) Decreases by 25%  
 (C) Decreases by 50% (D) Increases by 25%
29. Raising the distribution voltage from 11 kV to 33 kV causes the line loss to be:  
 (A) Reduced to one-ninth (B) Increased ninefold  
 (C) Unchanged (D) Infinite
30. A symmetrical fault occurs with system reactance 25% on a 2500 kVA base, full load current of 20A. What is the short circuit current?  
 (A) 80 A (B) 40A  
 (C) 160 A (D) 20A
31. The fault current is 8 pu, what series reactance should be added to limit the fault current to 5 pu in a system with negligible resistance?  
 (a) 3 pu (B) 0.20 pu  
 (C) 0.125 pu (D) 0.075 pu
32. An 11 kV, 250 MVA circuit breaker closes suddenly onto a fault. What is the rms symmetrical breaking current?  
 (A) 45.45 kA (B) 32.24 kA  
 (C) 26.24 kA (D) 13.12 kA
33. The actuating quantity for relays can be:  
 (A) Magnitude (B) Frequency  
 (C) Phase angle (D) All of these
34. Given a fault current of 2000 A, relay setting of 50%, and a CT ratio of 200:5, what is the plug setting multiplier?  
 (A) 10 (B) 12.5  
 (C) 20 (D) 50
35. Stator of 3-phase, 50 Hz, 10 HP induction motor is made up of  
 (A) 3- $\Phi$  winding distributed in several slots  
 (B) 3- $\Phi$  winding concentrated at 3 places which are 120 degree apart  
 (C) Aluminium bars shorted at both ends  
 (D) Aluminium bars connected to 3 slip rings

36. Which of the following is a unity power factor load
- (A) Ceiling fan (B) Television set  
(C) Heater (D) Fluorescent tube
37. Type of motor generally used in ceiling fans is
- (A) Split phase induction motor (B) Capacitor start induction motor  
(C) Capacitor run induction motor (D) DC shunt motor
38. A 1- $\Phi$ , 230 V, 50 Hz, 2 kVA, pf 0.8 lag load is operating for duration of 4 hours. Energy consumption read by the energy meter placed in home is
- (A) 2000 units (B) 6400 units  
(C) 6.4 units (D) 2 units
39. Approximate full load efficiency of 3- $\Phi$ , 22 kV/ 415 V, 100 kVA transformer is
- (a) 97% (B) 90%  
(C) 85% (D) 87%
40. The speed of rotation of a 3- $\Phi$ , 50 Hz, 6 pole induction motor is 900 rpm. The slip is
- (A) 5% (B) 8%  
(C) 4% (D) 10%
41. The direction of rotation of 3-phase induction motor can be reversed by
- (A) Interchanging two supply lines (B) Using star-delta starter  
(C) Using DOL starter (D) Using an autotransformer
42. One ton of the refrigeration is
- (A) The standard unit used in refrigeration problems.  
(B) The cooling effect produced by melting 1 ton of ice.  
(C) The refrigeration effect to freeze 1 ton of water at 0°C into ice at 0°C in 24 hours.  
(D) The refrigeration effect to produce 1 ton of ice at NTP conditions.
43. If the current flowing in one of the windings of 1- $\Phi$ , 50 Hz, 23 kVA, 2300/230 transformer is 100 A under normal working conditions. Approximate value of the current flowing through the other winding is
- (A) 10 A (B) Very much higher than 10 A  
(C) 100 A (D) Slightly less than 100 A
44. Fill in the blank: The mix of individual air conditioning systems has \_\_\_\_\_ overall efficiency as compared to central air conditioning systems.
- (A) Same (B) Lower  
(C) Higher (D) None of these
45. The value of dielectric constant of air is
- (A) 0 (B) 1  
(C) Less than 1 (D) None of these

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**End of Question paper**

## ANSWER KEY

**FOR THE WRITTEN TEST CONDUCTED FOR THE POST OF  
JUNIOR ENGINEER (ELECTRICAL) AT NIT GOA ADVERTISED AGAINST THE  
ADVERTISEMENT NO NITGOA/RECT/2025/7 DATED 28032025**

Q. No.	Answer Key	Q. No.	Answer Key	Q. No.	Answer Key
1.	D	16.	D	31.	D
2.	B	17.	B	32.	D
3.	A	18.	B	33.	D
4.	B	19.	D	34.	C
5.	A	20.	D	35.	A
6.	B	21.	D	36.	C
7.	D	22.	B	37.	C
8.	B	23.	C	38.	C
9.	A	24.	D	39.	A
10.	C	25.	B	40.	D
11.	A	26.	D	41.	A
12.	B	27.	D	42.	C
13.	A	28.	C	43.	A
14.	B	29.	A	44.	B
15.	C	30.	A	45.	B