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NATIONAL INSTITUTE OF TECHNOLOGY, GOA**Recruitment for the Post of Technical Assistant***Total Time Allowed: 1 hour 30 minutes**Total Marks: 75***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) consists of 25 questions for a total of 25 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 50 questions for a total of 50 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 paper 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 the only **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

Question number	Question	Answer
1.	<p>Choose the correct completion: Unless you work hard, ____</p> <p>A) you will not succeed B) you would not succeed C) you had not succeeded D) you are not succeeded</p>	
2.	<p>Choose the correct meaning of "break the ice."</p> <p>A) To end a friendship B) To start a conversation C) To cause a disagreement D) To damage a relationship</p>	
3.	<p>Choose the correct sentence.</p> <p>A) Hardly had he reached when it started raining. B) Hardly he had reached when it started raining. C) Hardly had he reached than it started raining. D) Hardly he reached when it started raining.</p>	
4.	<p>Rewrite the following sentence without changing meaning: He is too weak to lift the box.</p> <p>A) He is very weak and lift the box. B) He is so weak that he can lift the box. C) He is so weak that he cannot lift the box. D) He is weak enough to lift the box.</p>	
5.	<p>Correct the sentence choosing from the alternatives: The committee have taken their decision.</p> <p>A) The committee have took its decision B) The committee have taken their decision C) The committee has took its decision D) The committee has taken its decision</p>	
6.	<p>Choose the sentence with the appropriate preposition.</p> <p>A) He is proficient over mathematics. B) He is proficient at mathematics. C) He is proficient in mathematics. D) He is proficient with mathematics.</p>	
7.	<p>Choose the correct option to fill in the blank: No sooner did the meeting begin ____ the power failed.</p> <p>A) when B. than C. then D. that</p>	
8.	<p>The River Mandovi primarily flows through which state?</p> <p>A. Karnataka B. Kerala C. Goa D. Maharashtra</p>	

9.	<p>If inflation rises sharply in India, which institution is most likely to increase repo rates to control it?</p> <table border="1" data-bbox="470 280 1284 430"> <tr> <td data-bbox="470 280 853 347">A. RBI Monetary Policy Committee</td> <td data-bbox="853 280 1284 347">B. NITI Aayog</td> </tr> <tr> <td data-bbox="470 347 853 430">C. Ministry of Commerce</td> <td data-bbox="853 347 1284 430">D. National Development Council</td> </tr> </table>	A. RBI Monetary Policy Committee	B. NITI Aayog	C. Ministry of Commerce	D. National Development Council	
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C. Ministry of Commerce	D. National Development Council					
10.	<p>A state government receives funds based on recommendations from a constitutional body. Which constitutional body makes these recommendations?</p> <p>A. Planning Commission B. Election Commission C. Finance Commission D. GST Council</p>					
11.	<p>If Parliament passes a law that violates Fundamental Rights, which body can declare it unconstitutional?</p> <p>A. President of India B. Prime Minister's Office C. Comptroller and Auditor General D. Supreme Court of India</p>					
12.	<p>A country facing severe climate change impacts signs the Paris Agreement. The main goal of this agreement is to:</p> <p>A. Reduce nuclear weapons B. Promote global trade C. Limit global temperature rise D. Increase oil production</p>					
13.	<p>If India's exports exceed imports significantly, the country experiences:</p> <p>A. Trade surplus condition B. Trade deficit condition C. Fiscal deficit growth D. Revenue shortfall stage</p>					
14.	<p>During a national emergency declared under Article 352, which of the following may be affected?</p> <p>A. Structure of Parliament B. Supreme Court Jurisdiction C. Election Commission tenure D. Fundamental rights provisions</p>					
15.	<p>If a citizen wants to challenge unlawful detention, which writ can be filed in court?</p> <p>A. Mandamus writ B. Certiorari writ C. Prohibition writ D. Habeas Corpus writ</p>					
16.	<p>At a college, 30% of students are football fans, 40% enjoy basketball and 20% love both. What percentage of students prefer neither sport?</p> <p>A) 50% B) 40% C) 35% D) 45%</p>					
17.	<p>Determine 60% of 60% of 360</p> <p>A) 125.8 B) 128.8 C) 130.2 D) 129.6</p>					

18.	A number when multiplied by itself gives 0.005625. The number is A) 0.065 B) 0.025 C) 0.075 D) 0.085	
19.	A shopkeeper purchases a batch of 40 pens for Rs. 50 and later sets a price where he sells 30 pens for Rs. 50. What is the percentage of profit that he makes on each pen? A) 66.66% B) 50% C) 25% D) 33.33%	
20.	A space ship uses Oxygen, Hydrogen and Helium in the ratio 7:4:1 as fuel. If it consumes 360 Liters of fuel per hour, how many Liters of each gas is used? A) 210:120:30 B) 240:90:30 C) 180:135:45 D) 180:120:60	
21.	The sum of the ages of Amar, Akbar and Anthony is 80 years. What was the total of their ages three years ago? A) 72 years B) 75 years C) 68 years D) 71 years	
22.	Two bus tickets from city A to B and three bus tickets from city A to C cost Rs. 77. Three tickets from city A to B and two tickets from city A to C cost Rs. 73. What are the fares for cities B and C from A? A) Rs. 15, Rs. 17 B) Rs. 13, Rs. 17 C) Rs. 17, Rs. 15 D) Rs. 15, Rs. 19	
23.	Ajay is taller than Sheela. Aman is not as tall as Ajay but is taller than Trisha. Sheela is not as tall as Aman but is taller than Trisha. Who is the shortest person? A) Trisha B) Aman C) Ajay D) Sheela	
24.	Complete the sequence: Z1, Y4, X9, W16, ? A) V36 B) S16 C) R49 D) V25	
25.	Which word is different (does not belong) with others? A) Unimportant B) Trivial C) Familiar D) Insignificant	

Part-B

26.	For any two $n \times n$ matrices A and B , we have A) $A \cdot B = B \cdot A$ B) $A \cdot B \neq B \cdot A$ C) $A \cdot B = 0$ D) $(A \cdot B)^T = B^T A^T$	
27.	If A is a skew symmetric matrix, then A^2 is A) Skew symmetric matrix B) Null matrix C) Symmetric matrix D) Identity matrix	
28.	The area of a triangle with vertices $(-3,0)$, $(3,0)$, $(0,k)$ is 9 square units. The value of k will be A) 3 B) 9 C) 12 D) 6	
29.	Ten years ago, the age of father was three times the age of his son. Ten years hence, the father's age will be two times the age of his son. What are the current ages of father and son? A) 70 years, 30 years B) 70 years, 40 years C) 60 years, 20 years D) 60 years, 30 years	
30.	The derivative of $f(z) = 3z^2 + 4iz - 5$ at $z = 2$ is A) $8+7i$ B) $12+4i$ C) $5+9i$ D) $7+3i$	
31.	The values of x for which the function $f(x) = \frac{x^2-3x-4}{x^2+3x-4}$ is not continuous are A) $x = 4, x = -1$ B) $x = 4, x = 1$ C) $x = -4, x = 1$ D) $x = -4, x = -1$	
32.	Evaluate $\int \cos^2 x dx$ A) $\frac{x}{2} + \frac{\cos 2x}{4} + k$ B) $\frac{x}{2} - \frac{\sin 2x}{4} + k$ C) $\frac{x}{2} + \frac{\sin 2x}{4} + k$ D) $\frac{x}{2} - \frac{\cos 2x}{4} + k$	
33.	The rate of change of volume of a sphere with respect to its diameter is A) $4\pi r^2$ B) $\frac{2}{3}\pi r^2$ C) $2\pi r^2$ D) $8\pi r^2$	
34.	The mean of the marks obtained by students in a particular examination was 50, and the standard deviation was 0. This implies that A) The series have equal number of positive and negative values B) All values in the series are equal to the mean value C) All values in the series are equal to zero D) The number of positive values in the series is twice the number of negative values.	

35.	The heights of five plants in a garden were measured and recorded as 38, 51, 46, 79, 57 (all in cm). The standard deviation of their heights is A) 16.5 B) 16 C) 15 D) 15.5	
36.	A pair of dice are rolled. The probability of obtaining an even prime number on each die is A) $\frac{1}{36}$ B) $\frac{1}{24}$ C) $\frac{1}{12}$ D) $\frac{1}{18}$	
37.	A problem in mathematics is given to three students whose probability of solving it are $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ respectively. If the events of their solving the problem are independent, then the probability that the problem will be solved is A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) $\frac{3}{4}$ D) $\frac{2}{5}$	
38.	If $\sin\theta + \cos\theta = \frac{7}{5}$, then the value of $\sin\theta\cos\theta$ is equal to A) $\frac{13}{25}$ B) $\frac{1}{3}$ C) $\frac{9}{25}$ D) $\frac{12}{25}$	
39.	Find the coordinates of the intersection for the equations $y = 6x - 8$ and $y = -2x + 4$ A) (1,1.5) B) (1, -2) C) (1.5,1) D) (1.5,2)	
40.	The dimensional formula of pressure is A) $[ML^0T^2]$ B) $[ML^{-1}T^2]$ C) $[ML^1T^{-2}]$ D) $[ML^2T^{-1}]$	
41	Stefan's law states that the total radiant energy emitted per second per unit area of a black body is directly proportional to A) Fourth power of frequency B) Fourth power of wavelength C) Fourth power of temperature D) Fourth power of time	
42	A hockey ball of mass 0.2 kg travelling at 10 m/s is struck so it returns along its path at 2 m/s. The change in momentum is A) 2.4 kg m/s B) -2.4 kg m/s C) 2.2 kg m/s D) -4.2 kg m/s	
43	A 1200 kg car travelling at 20 m/s is suddenly brought to stop by the driver by slamming the brakes. If the coefficient of friction between the road and the tyre is 0.7, the distance the car skids before coming to a stop (rounded off to nearest whole number) is A) 36 m B) 25 m C) 29 m D) 43 m	

44	A steel wire 2 mm long and 1mm^2 in area is subjected to a force of 100 N. If the Young's modulus for steel is 2×10^{11} Pa, the amount by which the wire stretches is A) 2mm B) 0.2 mm C) 0.1 mm D) 1 mm	
45	Two identical drops of radius r fall with a speed of 20 cm/sec and combine into a single large drop of radius R . The new terminal velocity is A) 31.7 cm/sec B) 3.17 cm/sec C) 30.7 cm/sec D) 3.07 cm/sec	
46	The SI units of dynamic viscosity is A) Pascal.sec B) Pascal/sec C) Pascal/sec ² D) Pascal.sec ²	
47	How does increase in temperature of a liquid affect its surface tension? A) Increases B) Remains the same C) Goes to zero D) Decreases	
48	A system absorbs 100 kJ of heat and does 40 kJ of work. The change in its internal energy is A) -60 kJ B) +60 kJ C) -140kJ D) +140 kJ	
49	If the radius of the plunger in a hydraulic press is halved, the force required to lift the same load: A) Becomes double B) Becomes half C) Becomes four times D) Remains the same	
50	Isochoric process is the one for which A) Pressure is a constant B) Temperature is a constant C) Volume is a constant D) Internal energy is a constant	
51	Kirchhoff's Voltage Law (KVL) is based on the law of conservation of: A) Energy B) Charge C) Linear momentum D) Mass	
52	Faraday's laws are result of the conservation of which quantity? A) Momentum B) Energy C) Charge D) Magnetic field	

53	Which of the following is the characteristics of an adiabatic process? A) Work done is equal to heat added B) Constant internal energy C) Work done equals change in internal energy D) Constant volume	
54	A device that violates the conservation law of energy is called a A) Perpetual Motion Machine of the second kind B) Perpetual Motion Machine of the first kind C) Perpetual Motion Machine of the third kind D) None of these	
55	The first law of thermodynamics is essentially a statement of A) Conservation of energy B) Conservation of mass C) Conservation of linear momentum D) None of the above	
56	Among Mg, Al, Zn and Fe, which metal will displace all three other metals from their solutions? A) Al B) Zn C) Mg D) Fe	
57.	One of the salts, widely used in the salt bridge of a galvanic cell, is – A) KCl B) BaCl ₂ C) Na ₂ CO ₃ D) K ₂ SO ₄	
58.	Which one of the following is used to make 'non-stick' cookware? A) Polyvinylchloride B) Polyamide C) Polystyrene D) Polytetrafluoroethylene	
59.	Which one is not true about polymers? A) The viscosity of polymers is high B) Synthetic polymers are readily biodegradable C) Polymers scatter light D) Polymers have a high molecular weight.	
60.	The vulcanization of rubber is carried out by adding ----- A) Peroxide B) Iron powder C) Sulphur D) Silicon	
61.	Which metal among the following exists in pure form? A) Gold B) Copper C) Iron D) Tin	
62.	Corrosion that exists at the contact point of two dissimilar metals is known as ----- A) Stress corrosion B) Pitting corrosion C) Galvanic corrosion D) Aeration corrosion	
63.	The main pollutant responsible for the acid rain is --- A) Carbon dioxide B) Sulphur dioxide C) Nitrogen dioxide D) Silicon dioxide	

64.	The satisfactory range of the air quality index (AQI) in India is up to A) 0-10 B) 0-50 C) 50 -100 D) 100-200	
65.	High BOD value of a waterbody indicates a high level of ----- A) Dissolved oxygen in water B) Suspended particles C) Dissolved salts D) Organic matter	
66.	What is a cell in Microsoft Excel? A) A row B) A column C) Intersection of row and column D) A worksheet	
67.	Which chart type is best for showing trends over time? A) Pie Chart B) Line Chart C) Bar Chart D) Scatter Plot	
68.	Which function in Microsoft Excel counts only numeric values? A) COUNT B) COUNTA C) COUNTIF D) SUM	
69.	What does Ctrl + S do in Microsoft Word/Excel? A) Open file B) Print file C) Close file D) None of these	
70.	What is the purpose of attachments in email? A) Delete email B) Add files C) Format email D) Send reply email	
71.	Which is a valid email format? A) user#mail.com B) user@mail C) user@mail.com D) user.com	
72.	What is OneDrive? A) Antivirus B) Operating system C) Cloud storage service D) Browser	
73.	Which of the following is a safe practice? A) Sharing passwords B) Using public Wi-Fi without care C) Regular software updates D) Ignoring antivirus	
74.	What is a scam email? A) Official message B) Fraudulent message C) Newsletter D) Report	
75.	Which is the safest way to store passwords? A) Use password manager B) Save in browser only C) Write on paper D) Share with friends	

End of Question Paper

ANSWER KEY

**FOR THE WRITTEN TEST CONDUCTED FOR THE POST OF
TECHNICAL ASSISTANT AT NIT GOA ADVERTISED AGAINST THE
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Q No	Answer Key	Q No	Answer Key	Q No	Answer Key	Q No	Answer Key	Q No	Answer key
1	A	16	A	31	C	46	A	61	A
2	B	17	D	32	C	47	D	62	C
3	A	18	C	33	C	48	B	63	B
4	C	19	D	34	B	49	C	64	B
5	D	20	A	35	D	50	C	65	D
6	C	21	D	36	A	51	A	66	C
7	B	22	B	37	C	52	B	67	B
8	C	23	A	38	D	53	C	68	A
9	A	24	D	39	C	54	B	69	D
10	C	25	C	40	B	55	A	70	B
11	D	26	D	41	C	56	C	71	C
12	C	27	C	42	B	57	A	72	C
13	A	28	A	43	C	58	D	73	C
14	D	29	A	44	D	59	B	74	B
15	D	30	B	45	A	60	C	75	A