

# CII – iPATE 1.0 (2020)

## Computer Based PAN India Examination

Category: GRADUATE ENGINEER

Engineering Discipline: CHEMICAL ENGINEERING

### Question Paper Structure

| Question Nos. | Sections & Topics                        |   | Marks      |
|---------------|--|---|------------|
| 1 to 20       | Section I :<br>Cognitive Abilities       | <ul style="list-style-type: none"><li>Quantitative Aptitude</li><li>Analytical Reasoning</li><li>Data Interpretation</li><li>English Communication</li></ul>  | 20         |
| 21 to 40      | Section II :<br>Professional Abilities   | <ul style="list-style-type: none"><li>Project Management</li><li>Health, Safety &amp; Risk Management</li><li>Environmental Laws</li><li>Social Responsibility &amp; Ethics</li><li>Finance &amp; Accounts</li><li>Legal, Contracts &amp; Arbitration</li></ul> | 20         |
| 41 to 50      | Section III (A) :<br>Technical Abilities | Physics & Chemistry (10+2 level)  | 10         |
| 51 to 100     | Section III (B) :<br>Technical Abilities | Engineering Discipline  | 50         |
| <b>TOTAL</b>  |  |   | <b>100</b> |

**NOTE:**

- Exam Duration: 3 Hours
- Total 100 no. of Questions of 1 Mark each with Negative Marking of ½ Mark for every wrong answer
- Questions (Section wise) and respective Answer Options shuffling at Candidates' terminal

|                |   |           |           |           |
|----------------|---|-----------|-----------|-----------|
| Question No. 1 | Neha goes for a walk between 4 am and 5 am. After coming back, she found that the hour hand and the minute hand of her watch had exchanged their positions. How much time(approx.) did she spend on her walk? |           |           |           |
| Answer Options | A)  | B)        | C)        | D)        |
|                | 55 min  | 55:38 min | 55:54 min | 55:46 min |
| Right Answer   | B   |           |           |           |

|                |  |       |      |      |
|----------------|--|-------|------|------|
| Question No. 2 | 4 red, 6 green and 5 white flowers are in a bag. 3 flowers are taken together. What is the probability of getting 1 white and 2 green flowers? |       |      |      |
| Answer Options | A)   | B)    | C)   | D)   |
|                | 1/5  | 15/91 | 3/91 | 3/11 |
| Right Answer   | B  |       |      |      |

|                |  |         |         |         |
|----------------|--|---------|---------|---------|
| Question No. 3 | Tony, Monu and James completed a work together in 36 days and received a total payment of Rs. 54000. Tony took half of the total money, Monu took one third and James took remaining. In how many days, Tony and James would have finished the work if Monu was not working? |         |         |         |
| Answer Options | A)   | B)      | C)      | D)      |
|                | 72 days  | 54 days | 96 days | 64 days |
| Right Answer   | B  |         |         |         |

|                |   |           |           |           |
|----------------|---|-----------|-----------|-----------|
| Question No. 4 | A shopkeeper purchased 15 kg of variety A rice at Rs. X per kg and 10 kg of variety B rice at Rs. (X + 5) per kg. The shopkeeper sold the whole quantity of variety A rice at 10% profit and that of variety B rice at 20% profit. The total selling price of variety A rice was Rs. 30 more than that of variety B rice. Had the two varieties been mixed and sold at an overall profit of 20%, what would have been the selling price (per kg)? |           |           |           |
| Answer Options | A)  | B)        | C)        | D)        |
|                | Rs. 26.40   | Rs. 23.20 | Rs. 24.20 | Rs. 25.00 |
| Right Answer   | A   |           |           |           |

|                |   |    |    |    |
|----------------|---|----|----|----|
| Question No. 5 | A club has 256 members of whom 144 can play football, 123 can play tennis, and 132 can play cricket. Moreover, 58 members can play both football and tennis, 25 can play both cricket and tennis, while 63 can play both football and cricket. If every member can play at least one game, then the number of members who can play only tennis is |    |    |    |
| Answer Options | A)  | B) | C) | D) |
|                | 32  | 43 | 38 | 45 |
| Right Answer   | B   |    |    |    |

|                |   |    |    |    |
|----------------|---|----|----|----|
| Question No. 6 | Fill up the following series:<br>5, 25, 7, _____, 9, 19 |    |    |    |
| Answer Options | A)  | B) | C) | D) |
|                | 23  | 22 | 25 | 32 |
| Right Answer   | A   |    |    |    |

|                |   |                |                            |                      |
|----------------|---|----------------|----------------------------|----------------------|
| Question No. 7 | <p><b>The question is followed by three statements I, II, and III. Read the question and the statements carefully and choose your answer according to which set of the statement(s) is/are sufficient to answer the question.</b></p> <p>What is the area of the rectangle?</p> <p>I. The ratio of length to breadth of the rectangle is 35 : 12.<br/>           II. The perimeter of the rectangle is 188 cm.<br/>           III. The length of diagonal of the rectangle is 74 cm</p> |                |                            |                      |
| Answer Options | A)  | B)             | C)                         | D)                   |
|                | I and II only   | I and III only | (I and II) or (II and III) | Any two of the three |
| Right Answer   | D   |                |                            |                      |

|                |  |                                  |  |  |
|----------------|--|----------------------------------|--|--|
| Question No. 8 | <p><b>The question below consists of a question and three statements numbered I, II and III given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read all the statements and give answer:</b></p> <p>What is the sum of the age of Ram and Mohan?</p> <p>Statement I : The age of Ram is 6 years more than the age of Mohan.<br/>           Statement II : 40% of the age of Mohan is equal to 30% of the age of Ram.<br/>           Statement III : The ratio between half of the age of Ram and one third of the age of Mohan is 2 : 1.</p> |                                  |  |  |
| Answer Options | A)   | B)                               | C)                                     | D)   |
|                | Either statement III alone or statements I and II together are sufficient.   | Only statement III is sufficient | Only statement I and II are sufficient | Only statement I, II, and III are sufficient |
| Right Answer   | C  |                                  |  |  |

|                |   |                   |       |                   |
|----------------|---|-------------------|-------|-------------------|
| Question No. 9 | <p>Mohan is the Son of Arun's Father's sister. Prakash is the son of Reva, who is the mother of Vikas and Grandmother of Arun. Pranab is the father of Neela and the grandfather of Mohan. Reva is the wife of Pranab. How is the wife of Vikas related to the neela?</p> |                   |       |                   |
| Answer Options | A)  | B)                | C)    | D)                |
|                | Sister  | Sister - In - Law | Niece | None of The Above |
| Right Answer   | B   |                   |       |                   |

|                 |   |      |       |      |
|-----------------|---|------|-------|------|
| Question No. 10 | <p><b>In the following question, there is a certain relationship between two given words on one side of:: and one word is given on another side of:: while another word is to be found from the given alternatives having the same relationship with this word as the words of the given pair bear. Choose the correct alternative.</b></p> <p>_____ : trail :: grain : grail</p> |      |       |      |
| Answer Options  | A)  | B)   | C)    | D)   |
|                 | train   | path | wheat | holy |
| Right Answer    | A   |      |       |      |

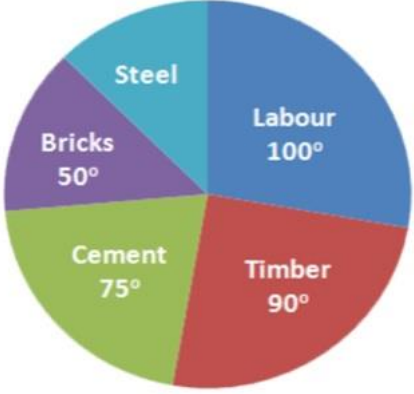
|                 |  |            |            |            |
|-----------------|--|------------|------------|------------|
| Question No. 11 | <b>Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.</b>   |            |            |            |
|                 | A: Only natural dyes are used in Kalamkari and it involves several steps.<br>B: There are two distinctive styles of Kalamkari in India.<br>C: They are the Sri kalahasti style and the Machlipatnam style.<br>D: Kalamkari is a type of hand-painted or block-printed cotton textile, produced in the Indian States of Andhra Pradesh and Telangana. |            |            |            |
| Answer Options  | A)<br>CBDA   | B)<br>DABC | C)<br>ACBD | D)<br>DCBA |
| Right Answer    | B  |            |            |            |

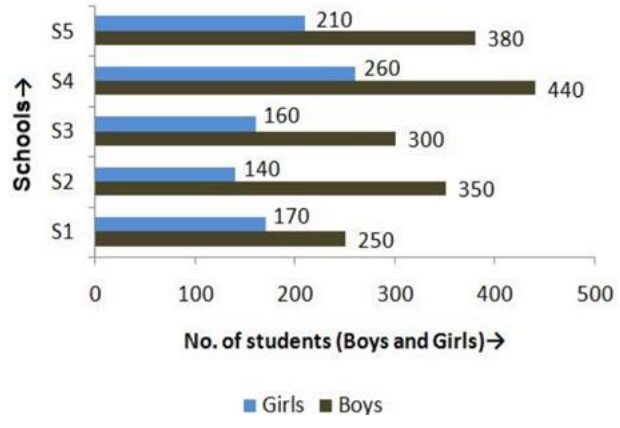
|                 |                               |                |                |                |
|-----------------|-------------------------------|----------------|----------------|----------------|
| Question No. 12 | What is the antonym of MOROSE |                |                |                |
| Answer Options  | A)<br>overawed                | B)<br>agitated | C)<br>cherubic | D)<br>cheerful |
| Right Answer    | D                             |                |                |                |

|                 |                                  |             |              |            |
|-----------------|----------------------------------|-------------|--------------|------------|
| Question No. 13 | What is the synonym of ERRONEOUS |             |              |            |
| Answer Options  | A)<br>Enormous                   | B)<br>Wrong | C)<br>Erased | D)<br>Weak |
| Right Answer    | B                                |             |              |            |

|                 |  |   |   |  |
|-----------------|--|---|---|--|
| Question No. 14 | A frustrated old man, Bandi thakur was never tired of (1)_____ the exploits of his ancestors, with a little (2) _____ he would lapse into a reminiscent mood, push back the loosely tied turban from his close-cropped grizzled hair and start a familiar story, improvising (3)_____ details which, to the mirth of his audience, always kept changing with every recounting. |   |   |  |
| Answer Options  | A)<br>(1) criticizing, (2) prompting, (3) sincere  | B)<br>(1) extolling, (2) advising, (3) rational | C)<br>(1) invoking, (2) arguing, (3) fanciful | D)<br>(1) extolling, (2) prompting, (3) fanciful |
| Right Answer    | D  |   |   |  |

|                 |   |  |  |  |
|-----------------|---|--|--|--|
| Question No. 15 | Even my goalies and the policemen, who have arrested me or (1)_____ me as a prisoner from place to place have been kind to me, and much of the (2) _____ of conflict and the sting of goal-life has been (3) _____ because of this human touch. |  |  |  |
| Answer Options  | A)<br>(1) safeguarded, (2) kindness, (3) egged on   | B)<br>(1) escorted, (2) affinity, (3) toned down | C)<br>(1) abandoned, (2) bitterness, (3) pumped up | D)<br>(1) escorted, (2) bitterness, (3) toned down |
| Right Answer    | D   |  |  |  |

|                 |   |                |                |                |
|-----------------|---|----------------|----------------|----------------|
| Question No. 16 | <p>The pie chart shows the total expense of Rs 450000 to construct a house.</p> <p>The cost of steel is</p>  |                |                |                |
| Answer Options  | A)<br>Rs 55000  | B)<br>Rs 56250 | C)<br>Rs 60000 | D)<br>Rs 62500 |
| Right Answer    | B   |                |                |                |

|                 |  |           |           |           |
|-----------------|--|-----------|-----------|-----------|
| Question No. 17 | <p>The following bar graph shows the number of boys and girls of class X of 5 different schools.</p> <p>Find the difference between the number of boys and girls of schools S2 and S3 together</p>  |           |           |           |
| Answer Options  | A)<br>300  | B)<br>350 | C)<br>400 | D)<br>450 |
| Right Answer    | B  |           |           |           |

| Question No. 18 | Study the tables carefully and answer the question that follow: Number of candidates (in lakhs) appearing in an entrance examination from six different states and the ratio of male candidates and female candidates in the same   |              |              |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
|-----------------|---|--------------|--------------|--------------|-------|----------------------|-------|--|------|--------|----------------|------|---|---|-------|------|---|---|-----------|------|---|---|--------|------|---|---|---------|------|---|---|-------|------|---|---|
|                 | The number of male candidates from Andhra Pradesh and Haryana together is what percent of the total number of female candidates from Bihar?   |              |              |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
|                 | <table border="1"> <thead> <tr> <th rowspan="2">State</th> <th rowspan="2">Number of candidates</th> <th colspan="2">Ratio</th> </tr> <tr> <th>Male</th> <th>Female</th> </tr> </thead> <tbody> <tr> <td>Andhra Pradesh</td> <td>1.85</td> <td>3</td> <td>2</td> </tr> <tr> <td>Assam</td> <td>2.73</td> <td>7</td> <td>5</td> </tr> <tr> <td>Telangana</td> <td>1.25</td> <td>7</td> <td>3</td> </tr> <tr> <td>Odisha</td> <td>3.14</td> <td>5</td> <td>3</td> </tr> <tr> <td>Haryana</td> <td>1.08</td> <td>4</td> <td>5</td> </tr> <tr> <td>Bihar</td> <td>2.27</td> <td>1</td> <td>3</td> </tr> </tbody> </table> |              |              |              | State | Number of candidates | Ratio |  | Male | Female | Andhra Pradesh | 1.85 | 3 | 2 | Assam | 2.73 | 7 | 5 | Telangana | 1.25 | 7 | 3 | Odisha | 3.14 | 5 | 3 | Haryana | 1.08 | 4 | 5 | Bihar | 2.27 | 1 | 3 |
| State           | Number of candidates  | Ratio        |              |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
|                 |   | Male         | Female       |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
| Andhra Pradesh  | 1.85  | 3            | 2            |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
| Assam           | 2.73  | 7            | 5            |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
| Telangana       | 1.25  | 7            | 3            |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
| Odisha          | 3.14  | 5            | 3            |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
| Haryana         | 1.08  | 4            | 5            |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
| Bihar           | 2.27  | 1            | 3            |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
| Answer Options  | A)<br>98.41%  | B)<br>48.45% | C)<br>95.49% | D)<br>93.39% |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
| Right Answer    | D   |              |              |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |
| NOTE            | Question was displayed incorrectly at candidates' terminals. Hence grace mark has been given to all candidates, who attempted or not.   |              |              |              |       |                      |       |  |      |        |                |      |   |   |       |      |   |   |           |      |   |   |        |      |   |   |         |      |   |   |       |      |   |   |

|                 |  |              |            |            |
|-----------------|--|--------------|------------|------------|
| Question No. 19 | Read the following information carefully and answer the given question.  |              |            |            |
|                 | i. Rajesh, Raju and Pijush are intelligent.<br>ii. Rajesh, Shib and Hari are hard-working.<br>iii. Shib, Pijush and Hari are honest.<br>iv. Rajesh, Raju and Hari are ambitious. |              |            |            |
|                 | Which of the following person is neither honest nor hard-working but is ambitious?   |              |            |            |
| Answer Options  | A)<br>Shib   | B)<br>Pijush | C)<br>Raju | D)<br>Hari |
| Right Answer    | C  |              |            |            |


|                 |  |                          |                          |                            |
|-----------------|--|--------------------------|--------------------------|----------------------------|
| Question No. 20 | Read the following information carefully and answer the following question.  |                          |                          |                            |
|                 | 'A + B' means 'A is the father of B'; 'A - B' means 'A is the wife of B'; 'A x B' means 'A is the brother of B'; 'A ÷ B' means 'A is the daughter of B'. |                          |                          |                            |
|                 | If $P \div R + S + Q$ , which of the following is true?  |                          |                          |                            |
| Answer Options  | A)<br>P is the daughter of Q   | B)<br>Q is the aunt of P | C)<br>P is the aunt of Q | D)<br>P is the mother of Q |
| Right Answer    | C  |                          |                          |                            |

|                 |   |                       |                  |                   |
|-----------------|---|-----------------------|------------------|-------------------|
| Question No. 21 | A management point in a Work Breakdown Structure (WBS) used to consolidate and process work package data and forward the result to the project management is called _____ |                       |                  |                   |
| Answer Options  | A)  | B)                    | C)               | D)                |
|                 | Part number   | Specification of Part | Name of the Part | Price of the Part |
| Right Answer    | A   |                       |                  |                   |

|                 |   |                 |      |         |
|-----------------|---|-----------------|------|---------|
| Question No. 22 | Various activities of a project are shown on a Bar Chart by _____ |                 |      |         |
| Answer Options  | A)  | B)              | C)   | D)      |
|                 | Vertical line   | Horizontal line | Dots | Crosses |
| Right Answer    | B   |                 |      |         |

|                 |   |       |          |             |
|-----------------|---|-------|----------|-------------|
| Question No. 23 | The difference between the time avail to do a job and time required to do the job is known as _____ |       |          |             |
| Answer Options  | A)  | B)    | C)       | D)          |
|                 | Event   | Float | Duration | Constraints |
| Right Answer    | B   |       |          |             |

|                 |  |            |           |                                |
|-----------------|--|------------|-----------|--------------------------------|
| Question No. 24 | Gantt Chart is commonly used for _____ |            |           |                                |
| Answer Options  | A)                                     | B)         | C)        | D)                             |
|                 | Routing                                | Scheduling | Follow up | Inspection and quality control |
| Right Answer    | B                                      |            |           |                                |

|                 |   |           |                 |                  |
|-----------------|---|-----------|-----------------|------------------|
| Question No. 25 | The following symbol is used when something in your workplace is<br> |           |                 |                  |
| Answer Options  | A)  | B)        | C)              | D)               |
|                 | Chemical Weapon   | Biohazard | Toxic Substance | Radiation Danger |
| Right Answer    | B   |           |                 |                  |

|                 |   |       |                       |                                       |
|-----------------|---|-------|-----------------------|---------------------------------------|
| Question No. 26 | What is the leading cause of death on construction sites? |       |                       |                                       |
| Answer Options  | A)  | B)    | C)                    | D)                                    |
|                 | Struck by object  | Falls | Caught-in or -between | Electrocutions<br>Hazardous Materials |
| Right Answer    | B   |       |                       |                                       |

|                 |  |             |                 |                        |
|-----------------|--|-------------|-----------------|------------------------|
| Question No. 27 | What violations are most commonly cited by OSHA? |             |                 |                        |
| Answer Options  | A)   | B)          | C)              | D)                     |
|                 | Hazard communications                            | Scaffolding | Fall protection | Respiratory protection |
| Right Answer    | C  |             |                 |                        |

|                 |  |                   |      |              |
|-----------------|--|-------------------|------|--------------|
| Question No. 28 | _____ is best suited to extinguishing oil or flammable liquid fire |                   |      |              |
| Answer Options  | A)   | B)                | C)   | D)           |
|                 | Soda acid  | Vaporizing liquid | Foam | Dry chemical |
| Right Answer    | C  |                   |      |              |

|                 |  |        |        |         |
|-----------------|--|--------|--------|---------|
| Question No. 29 | Out of the 37 countries, which country still not ratified the second commitment known as the Doha amendment to the Kyoto Protocol? |        |        |         |
| Answer Options  | A)   | B)     | C)     | D)      |
|                 | USA  | Canada | Norway | Ukraine |
| Right Answer    | A  |        |        |         |

|                 |   |   |   |                  |
|-----------------|---|---|---|------------------|
| Question No. 30 | The Ministry also serves as the nodal agency in the country for the which of these organisations? |   |   |                  |
| Answer Options  | A)  | B)  | C)  | D)               |
|                 | United Nations Environment Programme (UNEP)   | South Asia Co-operative Environment Programme (SACEP) | International Centre for Integrated Mountain Development (ICIMOD) | All of the above |
| Right Answer    | D   |   |   |                  |

|                 |   |  |   |                  |
|-----------------|---|--|---|------------------|
| Question No. 31 | There are many benefits to implementing an EMS. These include a potential for |  |   |                  |
| Answer Options  | A)  | B)   | C)  | D)               |
|                 | Reduction in waste production   | The avoidance in use, and costly disposal of, other hazardous or potentially polluting materials | A planned approach to compliance with regulations and the consequential reduced risk of prosecutions and fines. | All of the above |
| Right Answer    | D   |  |   |                  |



|                 |  |                            |                             |                          |
|-----------------|--|----------------------------|-----------------------------|--------------------------|
| Question No. 32 | Which of the following does not contribute to the development of a manager's standard of ethics? |                            |                             |                          |
| Answer Options  | A)   | B)                         | C)                          | D)                       |
|                 | competitor behaviours  | society's norms and values | individual life experiences | environmental situations |
| Right Answer    | A  |                            |                             |                          |

|                 |  |                 |            |                  |
|-----------------|--|-----------------|------------|------------------|
| Question No. 33 | Which is the approach to corporate planning? |                 |            |                  |
| Answer Options  | A)   | B)              | C)         | D)               |
|                 | Customers and workers satisfaction           | Planning skills | Optimising | All of the above |
| Right Answer    | D  |                 |            |                  |

|                 |  |                       |                       |                              |
|-----------------|--|-----------------------|-----------------------|------------------------------|
| Question No. 34 | Which one of the following is not principle business ethics? |                       |                       |                              |
| Answer Options  | A)   | B)                    | C)                    | D)                           |
|                 | Principle of universality                                    | Principle of humanity | Principle of autonomy | Principle of dissatisfaction |
| Right Answer    | D  |                       |                       |                              |

|                 |  |   |  |  |
|-----------------|--|---|--|--|
| Question No. 35 | Which of the following is a definition for variable costs? |   |  |  |
| Answer Options  | A)   | B)  | C)   | D)   |
|                 | Costs that remain the same whatever the level of output    | Costs that contain a fixed and variable element | Costs that vary directly with the number of units produced | Costs that will remain fixed as output increases until the activity reaches a level where the costs have to increase sharply |
| Right Answer    | C  |   |  |  |

|                 |   |   |   |                                      |
|-----------------|---|---|---|--------------------------------------|
| Question No. 36 | Which of the following is a definition of break-even point?   |   |   |                                      |
| Answer Options  | A)  | B)  | C)  | D)                                   |
|                 | The difference between the selling price of a product and the variable costs incurred in producing that product | The fixed plus variable costs of the business | The situation where neither a profit nor a loss is made | The situation where a profit is made |
| Right Answer    | C   |   |   |                                      |

|                 |  |                              |   |  |
|-----------------|--|------------------------------|---|--|
| Question No. 37 | Which of the following is not a benefit of budgeting?  |                              |   |  |
| Answer Options  | A)   | B)                           | C)  | D)   |
|                 | It promotes study, research, and a focus on the future | It is a source of motivation | It will prevent net losses from occurring | It is a mean of coordinating business activities |
| Right Answer    | C  |                              |   |  |

|                 |   |   |  |  |
|-----------------|---|---|--|--|
| Question No. 38 | What is the obligation of the peaceful settlement of dispute?   |   |  |  |
| Answer Options  | A)  | B)  | C)   | D)   |
|                 | It is an obligation of result i.e. States are under a strict obligation to resolve the disputes at the earliest | It is an obligation of conduct i.e. States have an obligation to try to resolve the disputes via peaceful mean. That does not entail an obligation to resolve the dispute | It is an intention to act immediately as per norms of International Law and all States have a legal interest to safeguard its application in any dispute | It is an obligation which concerns solely International courts and tribunal. |
| Right Answer    | B   |   |  |  |

|                 |  |  |                           |  |
|-----------------|--|--|---------------------------|--|
| Question No. 39 | What is the primary function of the Law of Tort? |  |                           |  |
| Answer Options  | A)   | B)   | C)                        | D)   |
|                 | Punishment of a wrong motivator                  | Clarification of the human rights of the parties | Compensating the claimant | Spreading of losses throughout the parties |
| Right Answer    | C  |  |                           |  |

|                 |   |  |  |   |
|-----------------|---|--|--|---|
| Question No. 40 | IDIC published a completely new suite of contracts in various coloured books which contain different conditions. What condition is mentioned in Red Book? |  |  |   |
| Answer Options  | A)  | B)   | C)   | D)  |
|                 | Conditions of contract for Construction project.  | Conditions of contract for EPC/ Turnkey project. | Conditions of contract for Plant & Design. | Conditions of contract for DBO (Design, Build & Operate) project. |
| Right Answer    | A   |  |  |   |

|                 |  |  |   |  |
|-----------------|--|--|---|--|
| Question No. 41 | The center of mass of the system consisting of Earth, the Sun, and the planet Mars is: |  |   |  |
| Answer Options  | A)   | B)   | C)  | D)   |
|                 | Closer to Earth than to either of the other bodies                                     | Closer to the Sun than to either of the other bodies | Closer to Mars than to either of the other bodies | At the geometric center of the triangle formed by the three bodies |
| Right Answer    | B  |  |   |  |

|                 |  |       |       |    |
|-----------------|--|-------|-------|----|
| Question No. 42 | At the same instant that a 0.50-kg ball is dropped from 25m above Earth, a second ball, with a mass of 0.25 kg, is thrown straight upward from Earth's surface with an initial speed of 15m/s. They move along nearby lines and pass without colliding. At the end of 2 sec the magnitude of the acceleration of the center of mass of the two-ball system is: |       |       |    |
| Answer Options  | A)   | B)    | C)    | D) |
|                 | 0.25g  | 0.50g | 0.75g | g  |
| Right Answer    | D  |       |       |    |

|                 |  |              |            |              |
|-----------------|--|--------------|------------|--------------|
| Question No. 43 | The rainbow seen after a rain shower is caused by: |              |            |              |
| Answer Options  | A)   | B)           | C)         | D)           |
|                 | diffraction  | interference | refraction | polarization |
| Right Answer    | C  |              |            |              |

|                 |   |   |  |  |
|-----------------|---|---|--|--|
| Question No. 44 | When light travels from medium X to medium Y as shown:  |   |  |  |
|                 |   |   |  |  |
| Answer Options  | A)  | B)  | C)   | D)   |
|                 | both the speed and the frequency decrease   | both the speed and the frequency increase | both the speed and the wavelength decrease | both the speed and the wavelength increase |
| Right Answer    | C   |   |  |  |
| NOTE            | Question was displayed incorrectly at candidates' terminals. Hence grace mark has been given to all candidates, who attempted or not. |   |  |  |

|                 |  |  |        |   |
|-----------------|--|--|--------|---|
| Question No. 45 | An object rests on a horizontal frictionless surface. A horizontal force of magnitude F is applied. This force produces an acceleration: |  |        |   |
| Answer Options  | A)   | B)   | C)     | D)  |
|                 | only if F is larger than the weight of the object  | only while the object suddenly changes from rest to motion | always | only if the inertia of the object decreases |
| Right Answer    | C  |  |        |   |

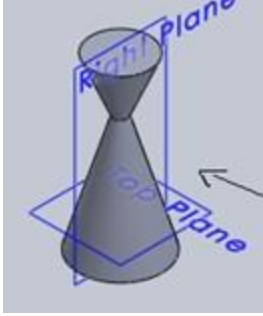
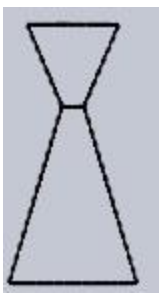
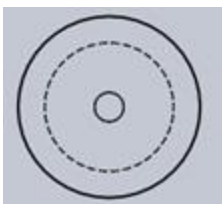
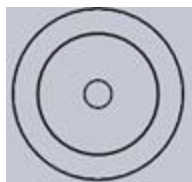
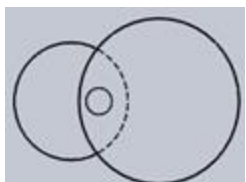
|                 |   |   |                                   |                                   |
|-----------------|---|---|-----------------------------------|-----------------------------------|
| Question No. 46 | Which statement is incorrect?                     |   |                                   |                                   |
| Answer Options  | A)  | B)  | C)                                | D)                                |
|                 | All the metals are good conductor of electricity. | All the metals are good conductor of heat | All the metals form positive ions | All the metals form acidic oxides |
| Right Answer    | D   |   |                                   |                                   |

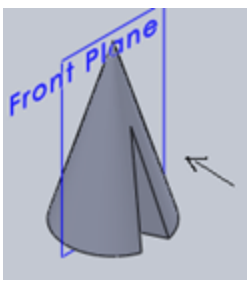
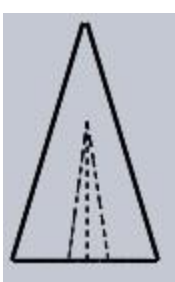
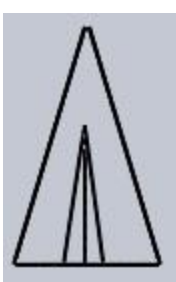

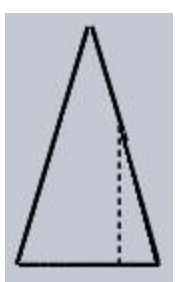
|                 |  |   |   |                                |
|-----------------|--|---|---|--------------------------------|
| Question No. 47 | Based on the first law of thermodynamics, which one of the following is correct? |   |   |                                |
| Answer Options  | A)   | B)  | C)  | D)                             |
|                 | For an isothermal process, $q = +w$  | For an isochoric process, $\Delta U = -q$ | For an adiabatic process, $\Delta U = -w$ | For a cyclic process, $q = -w$ |
| Right Answer    | D  |   |   |                                |

|                 |   |                 |                              |                        |
|-----------------|---|-----------------|------------------------------|------------------------|
| Question No. 48 | Among the electrolytes $\text{Na}_2\text{SO}_4$ , $\text{CaCl}_2$ , $\text{Al}_2(\text{SO}_4)_3$ and $\text{NH}_4\text{Cl}$ , the most effective coagulating agent for $\text{Sb}_2\text{S}_3$ sol is |                 |                              |                        |
| Answer Options  | A)  | B)              | C)                           | D)                     |
|                 | $\text{Na}_2\text{SO}_4$  | $\text{CaCl}_2$ | $\text{Al}_2(\text{SO}_4)_3$ | $\text{NH}_4\text{Cl}$ |
| Right Answer    | C   |                 |                              |                        |

|                 |  |          |           |          |
|-----------------|--|----------|-----------|----------|
| Question No. 49 | Of the following which one is classified as polyester polymer? |          |           |          |
| Answer Options  | A)   | B)       | C)        | D)       |
|                 | Nylon-66   | Terylene | Backelite | Melamine |
| Right Answer    | B  |          |           |          |

|                 |  |                 |                  |                 |
|-----------------|--|-----------------|------------------|-----------------|
| Question No. 50 | In order to increase the volume of a gas by 10%, the pressure of the gas should be |                 |                  |                 |
| Answer Options  | A)   | B)              | C)               | D)              |
|                 | increased by 10%   | increased by 1% | decreased by 10% | decreased by 1% |
| Right Answer    | C  |                 |                  |                 |

|                        |  |   |  |   |
|------------------------|--|---|--|---|
| <p>Question No. 51</p> | <p>Identify the top view for the below-given cone.</p>  |   |  |   |
| <p>Answer Options</p>  | <p>A)</p>   | <p>B)</p>  | <p>C)</p>  | <p>D)</p>  |
| <p>Right Answer</p>    | <p>C</p>   |   |  |   |

|                        |   |   |  |   |
|------------------------|---|---|--|---|
| <p>Question No. 52</p> | <p>Identify the front view of the following cone.</p>  |   |  |   |
| <p>Answer Options</p>  | <p>A)</p>    | <p>B)</p>  | <p>C)</p>  | <p>D)</p>  |
| <p>Right Answer</p>    | <p>B</p>  |   |  |   |

|                 |   |      |          |        |
|-----------------|---|------|----------|--------|
| Question No. 53 | Curve of any shape can be drawn in perspective by enclosing it in a _____ |      |          |        |
| Answer Options  | A)  | B)   | C)       | D)     |
|                 | rectangle   | cube | cylinder | square |
| Right Answer    | A   |      |          |        |

|                 |   |              |                     |             |
|-----------------|---|--------------|---------------------|-------------|
| Question No. 54 | A prism and cone got intersected at 90 degrees the line of intersection will be _____ and parallel to axis of _____ |              |                     |             |
| Answer Options  | A)  | B)           | C)                  | D)          |
|                 | straight line, prism  | curve, prism | straight line, cone | curve, cone |
| Right Answer    | B   |              |                     |             |

|                 |  |                                     |                                     |                     |
|-----------------|--|-------------------------------------|-------------------------------------|---------------------|
| Question No. 55 | The plane surfaces intersect in a _____ the line of intersection between two curved surfaces is _____ and between a plane surface and curved surfaces is a _____ |                                     |                                     |                     |
| Answer Options  | A)   | B)                                  | C)                                  | D)                  |
|                 | straight line, curve, curve  | straight line, straight line, curve | straight line, curve, straight line | curve, curve, curve |
| Right Answer    | A  |                                     |                                     |                     |

|                 |   |        |         |          |
|-----------------|---|--------|---------|----------|
| Question No. 56 | A salt solution contains 5 ppm of Sodium Iodide salt. What is the % of Sodium Iodide in the solution? |        |         |          |
| Answer Options  | A)  | B)     | C)      | D)       |
|                 | 0.005   | 0.0005 | 0.00005 | 0.000005 |
| Right Answer    | D   |        |         |          |

|                 |  |   |                              |  |
|-----------------|--|---|------------------------------|--|
| Question No. 57 | Second law of Thermodynamics deals with: |   |                              |  |
| Answer Options  | A)                                       | B)  | C)                           | D)   |
|                 | Amount of internal energy transferred    | Amount of energy transferred from external body | Direction of energy transfer | Amount of energy transferred from the system |
| Right Answer    | C  |   |                              |  |

|                 |   |  |  |  |
|-----------------|---|--|--|--|
| Question No. 58 | The mole fraction of Carbon Dioxide and Nitrogen in a gas mixture is 0.5 each. What is the mass fraction of Carbon Dioxide and Nitrogen in the gas mixture? |  |  |  |
| Answer Options  | A)  | B)   | C)   | D)   |
|                 | CO <sub>2</sub> : 0.61 and N <sub>2</sub> : 0.39  | CO <sub>2</sub> : 0.5 and N <sub>2</sub> : 0.5 | CO <sub>2</sub> : 0.72 and N <sub>2</sub> : 0.28 | CO <sub>2</sub> : 0.65 and N <sub>2</sub> : 0.35 |
| Right Answer    | A   |  |  |  |

|                 |                               |                                 |                                  |  |
|-----------------|-------------------------------|---------------------------------|----------------------------------|--|
| Question No. 59 | Cv for an ideal gas:          |                                 |                                  |  |
| Answer Options  | A)                            | B)                              | C)                               | D)   |
|                 | Is independent of volume only | Is independent of pressure only | Does not depend upon temperature | Is independent of both pressure and volume |
| Right Answer    | D                             |                                 |                                  |  |

|                 |  |          |                        |                  |
|-----------------|--|----------|------------------------|------------------|
| Question No. 60 | Which answer is correct?<br>1 atmosphere pressure is equal to: |          |                        |                  |
| Answer Options  | A)   | B)       | C)                     | D)               |
|                 | 1.013 KPa  | 14.7 psi | 10130 N/m <sup>2</sup> | 76 mm of Mercury |
| Right Answer    | B  |          |                        |                  |

|                 |   |   |  |   |
|-----------------|---|---|--|---|
| Question No. 61 | A refrigerator has been kept in a closed room and the refrigerator is operating. On opening the door of it for some time, the temperature of the room will: |   |  |   |
| Answer Options  | A)  | B)  | C)   | D)  |
|                 | decrease, as the refrigerator will decrease the room temperature  | remain same due to both cooling and heating process | increase, as the refrigerator will generate heat | depends on the season whether it's winter or summer or any other season |
| Right Answer    | C   |   |  |   |

|                 |   |            |              |              |
|-----------------|---|------------|--------------|--------------|
| Question No. 62 | The density of water is 1000 kg/m <sup>3</sup> at _____ |            |              |              |
| Answer Options  | A)  | B)         | C)           | D)           |
|                 | 0 deg C   | 15.5 deg C | 277.15 deg K | 273.15 deg K |
| Right Answer    | C   |            |              |              |

|                 |  |                            |                          |        |
|-----------------|--|----------------------------|--------------------------|--------|
| Question No. 63 | How (in which unit or terms of) you will express best way the size of ultrafine particles? |                            |                          |        |
| Answer Options  | A)   | B)                         | C)                       | D)     |
|                 | milli metre  | Surface area per unit mass | Screen size or mesh size | Micron |
| Right Answer    | B  |                            |                          |        |

|                 |   |                                |                               |                               |
|-----------------|---|--------------------------------|-------------------------------|-------------------------------|
| Question No. 64 | The Reynolds number is a dimensionless number used to categorize the fluids systems. How can you define Reynold's number as the ratio of: |                                |                               |                               |
| Answer Options  | A)  | B)                             | C)                            | D)                            |
|                 | Inertia force / Drag force  | Inertia force / Pressure force | Inertia force / Gravity force | Inertia force / Viscous force |
| Right Answer    | D   |                                |                               |                               |

|                 |   |        |         |                                  |
|-----------------|---|--------|---------|----------------------------------|
| Question No. 65 | You have visited one chemical industry which has a plate and frame filter press. Which flow pattern the filtrate follows through the cake in this type of filter press? |        |         |                                  |
| Answer Options  | A)  | B)     | C)      | D)                               |
|                 | Turbulent   | Vortex | Laminar | Initially turbulent then laminar |
| Right Answer    | C   |        |         |                                  |

|                 |  |          |        |      |
|-----------------|--|----------|--------|------|
| Question No. 66 | A Venturimeter has converging cone, throat and diverging cone. How much is the length of the diverging cone that of the converging cone? |          |        |      |
| Answer Options  | A)   | B)       | C)     | D)   |
|                 | 3 to 4 times   | equal to | double | half |
| Right Answer    | A  |          |        |      |

|                 |  |   |   |  |
|-----------------|--|---|---|--|
| Question No. 67 | The behaviour of pipe flow is governed mainly by the effects of viscosity and gravity relative to the inertial forces of the flow. When a liquid flow through a pipe, the velocity of the liquid is: |   |   |  |
| Answer Options  | A)   | B)  | C)  | D)                                       |
|                 | Maximum at centre and Zero near the wall   | Maximum at centre and minimum near the wall | Minimum at centre and maximum near the wall | Zero at centre and maximum near the wall |
| Right Answer    | B  |   |   |  |

|                 |  |                |                |              |
|-----------------|--|----------------|----------------|--------------|
| Question No. 68 | The heat is transferred by all of Conduction, convection and radiation in the process: |                |                |              |
| Answer Options  | A)   | B)             | C)             | D)           |
|                 | Condensation of steam in Condenser   | Melting of ice | Boiler Furnace | All of these |
| Right Answer    | C  |                |                |              |

|                 |   |           |           |                 |
|-----------------|---|-----------|-----------|-----------------|
| Question No. 69 | Steam may be Saturated, Superheated, Dry steam etc. The maximum heat transfer coefficient from steam is achieved when steam is: |           |           |                 |
| Answer Options  | A)  | B)        | C)        | D)              |
|                 | Super-heated steam  | Dry steam | Wet steam | Saturated steam |
| Right Answer    | D   |           |           |                 |

|                 |  |          |          |             |
|-----------------|--|----------|----------|-------------|
| Question No. 70 | A blackbody is a theoretical body. All the radiations falling on a black body are: |          |          |             |
| Answer Options  | A)   | B)       | C)       | D)          |
|                 | Reflected  | Absorbed | Radiated | Transmitted |
| Right Answer    | B  |          |          |             |



|                 |  |                   |                             |               |
|-----------------|--|-------------------|-----------------------------|---------------|
| Question No. 71 | Nucleate boiling is a type of boiling that takes place when the surface temperature is hotter than the saturated fluid temperature. Nucleate boiling is promoted on: |                   |                             |               |
| Answer Options  | A)   | B)                | C)                          | D)            |
|                 | rough surfaces   | polished surfaces | in the absence of agitation | None of these |
| Right Answer    | A  |                   |                             |               |

|                 |   |                     |                                   |            |
|-----------------|---|---------------------|-----------------------------------|------------|
| Question No. 72 | An evaporator is a device in a process used to turn the liquid form into its gaseous form/vapor. In evaporators, lowering the feed temperature: |                     |                                   |            |
| Answer Options  | A)  | B)                  | C)                                | D)         |
|                 | increases the heating area required   | reduces the economy | reduces the heating area required | both A & B |
| Right Answer    | D   |                     |                                   |            |

|                 |   |            |           |                         |
|-----------------|---|------------|-----------|-------------------------|
| Question No. 73 | The concept of overall heat transfer co-efficient of heat transfer is used in case of heat transfer by: |            |           |                         |
| Answer Options  | A)  | B)         | C)        | D)                      |
|                 | Conduction  | Convection | Radiation | Conduction & Convection |
| Right Answer    | D   |            |           |                         |

|                 |  |             |            |                   |
|-----------------|--|-------------|------------|-------------------|
| Question No. 74 | In mass transfer operation, two or more components of a liquid solution can be easily separated by |             |            |                   |
| Answer Options  | A)   | B)          | C)         | D)                |
|                 | Liquid-liquid extraction   | Evaporation | Absorption | Both option A & B |
| Right Answer    | D  |             |            |                   |

|                 |  |                  |                     |                      |
|-----------------|--|------------------|---------------------|----------------------|
| Question No. 75 | Find the wrong answer:<br>The rate of Mass transfer between two fluid phases depends on the _____ of the two phases. |                  |                     |                      |
| Answer Options  | A)   | B)               | C)                  | D)                   |
|                 | chemical properties  | interfacial area | physical properties | degree of turbulence |
| Right Answer    | A  |                  |                     |                      |

|                 |   |   |  |   |
|-----------------|---|---|--|---|
| Question No. 76 | Schmidt number ( $Sc$ ) is a dimensionless number. It is the ratio of : |   |  |   |
| Answer Options  | A)  | B)                                      | C)                                     | D)                                      |
|                 | Momentum Diffusivity / Thermal Diffusivity                              | Momentum Diffusivity / Mass Diffusivity | Mass Diffusivity / Thermal Diffusivity | Mass Diffusivity / Momentum Diffusivity |
| Right Answer    | B   |   |  |   |

|                 |   |  |  |                           |
|-----------------|---|--|--|---------------------------|
| Question No. 77 | Vacuum drying is the mass transfer operation in which the moisture present is removed by means of creating a vacuum to: |  |  |                           |
| Answer Options  | A)  | B)   | C)   | D)                        |
|                 | increase drying temperature.  | dry materials having high bound moisture content | dry those materials which have very high unbound moisture content. | reduce drying temperature |
| Right Answer    | D   |  |  |                           |

|                 |   |                |                  |              |
|-----------------|---|----------------|------------------|--------------|
| Question No. 78 | Total reflux in a distillation operation is the operating condition where vapor and liquid are passing each other in the column but no product is removed. This operating condition requires minimum: |                |                  |              |
| Answer Options  | A)  | B)             | C)               | D)           |
|                 | reboiler load   | condenser load | number of plates | All of these |
| Right Answer    | C   |                |                  |              |

|                 |  |               |                          |               |
|-----------------|--|---------------|--------------------------|---------------|
| Question No. 79 | Leaching Process is used in the extraction of substances from solids. The rate of this process increases with: |               |                          |               |
| Answer Options  | A)   | B)            | C)                       | D)            |
|                 | increasing temperature   | size of solid | viscosity of the solvent | None of these |
| Right Answer    | A  |               |                          |               |

|                 |  |      |      |     |
|-----------------|--|------|------|-----|
| Question No. 80 | Pure A in gas phase enters in a Reactor. 50% of this A is converted to B through the reaction $A \rightarrow 3B$ . Mole fraction of A in the exit stream is: |      |      |     |
| Answer Options  | A)   | B)   | C)   | D)  |
|                 | 0.5  | 0.33 | 0.25 | 0.2 |
| Right Answer    | C  |      |      |     |

|                 |   |           |           |         |
|-----------------|---|-----------|-----------|---------|
| Question No. 81 | First-order reaction is a reaction that depends on the concentration of only one reactant. The half-life period of it (where $k$ = rate constant) : |           |           |         |
| Answer Options  | A)  | B)        | C)        | D)      |
|                 | $2/k$   | $0.693/k$ | $0.693 k$ | $1.5 k$ |
| Right Answer    | B   |           |           |         |

|                 |   |                                    |                            |               |
|-----------------|---|------------------------------------|----------------------------|---------------|
| Question No. 82 | A chemical reaction will be called as zero order, if the reaction rate (where $C_A$ is the concentration of the reactant) : |                                    |                            |               |
| Answer Options  | A)  | B)                                 | C)                         | D)            |
|                 | is directly proportional to $C_A$   | is inversely proportional to $C_A$ | independent of temperature | None of these |
| Right Answer    | D   |                                    |                            |               |

|                 |   |   |   |                  |
|-----------------|---|---|---|------------------|
| Question No. 83 | The continuous stirred-tank reactor (CSTR) is a common model for a chemical reactor. In comparison to Plug flow reactor, it provides: |   |   |                  |
| Answer Options  | A)  | B)  | C)  | D)               |
|                 | More uniform operating conditions   | Higher overall selectivity for a first order consecutive reaction | Permits operation at the optimum temperature for a long reaction time | All of the above |
| Right Answer    | D   |   |   |                  |

|                 |   |                       |               |              |
|-----------------|---|-----------------------|---------------|--------------|
| Question No. 84 | In which type of reaction, conversion increases with increase in temperature of the reaction: |                       |               |              |
| Answer Options  | A)  | B)                    | C)            | D)           |
|                 | Reversible endothermic  | Reversible exothermic | Autocatalytic | Irreversible |
| Right Answer    | A   |                       |               |              |

|                 |   |  |   |   |
|-----------------|---|--|---|---|
| Question No. 85 | For the same residence time, which scheme will result maximum conversion? |  |   |   |
| Answer Options  | A)  | B)   | C)  | D)  |
|                 | One single tubular flow reactor of vol 10 liters                          | One Constant Stirred Tank Reactor of vol 10 liters | Two Constant Stirred Tank Reactors in series of volume 5 liters of each reactor | One stirred tank (of volume 5 liters) followed by one tubular flow reactor (of volume 5 liters) |
| Right Answer    | A   |  |   |   |

|                 |  |                              |                              |  |
|-----------------|--|------------------------------|------------------------------|--|
| Question No. 86 | Which of the following filled system expansion thermometer has the capability to measure the lowest temperature? |                              |                              |  |
| Answer Options  | A)   | B)                           | C)                           | D)   |
|                 | Mercury in glass thermometer   | Mercury in steel thermometer | Alcohol in glass thermometer | Fused metal (Sodium or Potassium) in steel thermometer |
| Right Answer    | C  |                              |                              |  |

|                 |  |              |            |              |
|-----------------|--|--------------|------------|--------------|
| Question No. 87 | The speed of an object is a magnitude of its velocity. It can't be measured using: |              |            |              |
| Answer Options  | A)   | B)           | C)         | D)           |
|                 | Stroboscope  | Psychrometer | Tachometer | All of these |
| Right Answer    | B  |              |            |              |

|                 |   |                           |  |   |
|-----------------|---|---------------------------|--|---|
| Question No. 88 | An orifice meter is a piece of equipment used to measure the flow rate of a gas or a fluid. The flow rate is _____ pressure drop.     |                           |  |   |
| Answer Options  | A)  | B)                        | C)   | D)  |
|                 | Directly proportional to  | Inversely proportional to | Inversely proportional to the square root of | Directly proportional to the square root of |
| Right Answer    | D   |                           |  |   |
| NOTE            | Question was displayed incorrectly at candidates' terminals. Hence grace mark has been given to all candidates, who attempted or not. |                           |  |   |

|                 |   |                      |                                 |                         |
|-----------------|---|----------------------|---------------------------------|-------------------------|
| Question No. 89 | Thermocouples are a widely used type of temperature sensor. It is useful: |                      |                                 |                         |
| Answer Options  | A)  | B)                   | C)                              | D)                      |
|                 | Very high temperature   | Very low temperature | Both of high & low temperatures | Only liquid temperature |
| Right Answer    | C   |                      |                                 |                         |

|                 |  |             |                    |                 |
|-----------------|--|-------------|--------------------|-----------------|
| Question No. 90 | A process operating properly with automatic process control can: |             |                    |                 |
| Answer Options  | A)   | B)          | C)                 | D)              |
|                 | make the process operate uniformly                               | reduce cost | reduce maintenance | reduce manpower |
| Right Answer    | A  |             |                    |                 |

|                 |  |              |              |              |
|-----------------|--|--------------|--------------|--------------|
| Question No. 91 | Mercury is commonly used as manometer liquid. But it has some disadvantage(s): |              |              |              |
| Answer Options  | A)   | B)           | C)           | D)           |
|                 | amalgamates of corrodes many metals  | is expensive | is poisonous | all of these |
| Right Answer    | D  |              |              |              |

|                 |   |                   |   |                               |
|-----------------|---|-------------------|---|-------------------------------|
| Question No. 92 | A balance sheet for an industry is one of the three fundamental financial statements. It shows: |                   |   |                               |
| Answer Options  | A)  | B)                | C)  | D)                            |
|                 | Only current assets   | Only fixed assets | The financial condition at any given time | Only current and fixed assets |
| Right Answer    | C   |                   |   |                               |

|                 |  |                |                  |                |
|-----------------|--|----------------|------------------|----------------|
| Question No. 93 | During designing a shell & tube heat exchanger, which fluid you will allocate in shell side? |                |                  |                |
| Answer Options  | A)   | B)             | C)               | D)             |
|                 | Corrosive  | High flow rate | High temperature | Highly viscous |
| Right Answer    | D  |                |                  |                |

|                 |   |                    |             |               |
|-----------------|---|--------------------|-------------|---------------|
| Question No. 94 | Current assets are all the assets of a company that are expected to be sold or used over the next year. Among the following, which is/are not such asset of a chemical company? |                    |             |               |
| Answer Options  | A)  | B)                 | C)          | D)            |
|                 | Marketable securities   | Chemical equipment | Inventories | None of these |
| Right Answer    | B   |                    |             |               |

|                 |   |                |                |                |
|-----------------|---|----------------|----------------|----------------|
| Question No. 95 | In India, what is the cooling water temperature generally considered while designing cooling towers and process plants? |                |                |                |
| Answer Options  | A)  | B)             | C)             | D)             |
|                 | 33 to 35 deg C  | 27 to 30 deg C | 25 to 27 deg C | 35 to 37 deg C |
| Right Answer    | A   |                |                |                |

|                 |   |                  |                                    |  |
|-----------------|---|------------------|------------------------------------|--|
| Question No. 96 | Operating profit is the profitability of the business. It is: |                  |                                    |  |
| Answer Options  | A)  | B)               | C)                                 | D)   |
|                 | Net profit + tax  | Profit after tax | Profit after tax plus depreciation | Profit before interest and tax i.e., net profit + interest + tax |
| Right Answer    | D   |                  |                                    |  |

|                 |   |  |  |  |
|-----------------|---|--|--|--|
| Question No. 97 | The LMTD is used to determine the temperature driving force for heat transfer. It is the: |  |  |  |
| Answer Options  | A)  | B)   | C)   | D)   |
|                 | Ratio of LMTD to the true temperature difference  | Difference of true temperature difference and the LMTD | Geometric mean of the true temperature difference and the LMTD | Ratio of true temperature difference to the LMTD |
| Right Answer    | D   |  |  |  |

|                 |  |                  |                    |                                   |
|-----------------|--|------------------|--------------------|-----------------------------------|
| Question No. 98 | The main constituents of LPG in India are: |                  |                    |                                   |
| Answer Options  | A)   | B)               | C)                 | D)                                |
|                 | Methane                                    | Methane & Ethane | Propane and Butane | Methane, Ethane, Propane & Butane |
| Right Answer    | C  |                  |                    |                                   |

|                 |   |                                       |                                      |              |
|-----------------|---|---------------------------------------|--------------------------------------|--------------|
| Question No. 99 | What is the major use of sulfuric acid? |                                       |                                      |              |
| Answer Options  | A)                                      | B)                                    | C)                                   | D)           |
|                 | Manufacturing fertilizers               | Removal of rust and scale from metals | As the electrolyte in car batteries. | All of these |
| Right Answer    | A                                       |                                       |                                      |              |

|                  |  |                                  |                               |                                     |
|------------------|--|----------------------------------|-------------------------------|-------------------------------------|
| Question No. 100 | In India, Gas based fertilizer plants have been operating smoothly. It uses: |                                  |                               |                                     |
| Answer Options   | A)   | B)                               | C)                            | D)                                  |
|                  | Coal gas as heating medium   | Coal gas as a source of hydrogen | Natural gas as heating medium | Natural gas as a source of hydrogen |
| Right Answer     | D  |                                  |                               |                                     |