

National Employability Assessment Test and Industry Readiness Program

for Diploma Engineers and Professionals | Winter – 2022

Discipline: Chemical Engineering

Computer Based PAN India Examination held on 18.03.2023

Questions & Answers

(Published dtd. 29.03.2023)

PAPER STRUCTURE

| Question Nos. | Sections & Topics | | Marks |
|---------------|----------------------------------|---|------------|
| 1 to 40 | Section I : General Aptitude | <ul style="list-style-type: none">Quantitative AptitudeLogical ReasoningData InterpretationEnglish Communication | 40 |
| 41 to 60 | Section II : Basic Concepts | <ul style="list-style-type: none">General PhysicsGeneral ChemistryMechanicsEngineering Drawing | 20 |
| 61 to 100 | Section III : Technical Aptitude | <ul style="list-style-type: none">Chemical Engineering | 40 |
| TOTAL | | | 100 |

NOTE:

- Exam Duration: 3 Hours
- Total 100 no. of Questions of 1 Mark each with Negative Marking of ¼ Mark for every wrong answer
- Questions (Section wise) and respective Answer Options shuffled at Candidates' terminal

| | | | | |
|----------------|--|------|------|-----|
| Question No. 1 | In the first 10 overs of a cricket game, the run rate was only 3.2. What should be the run rate in the remaining 40 overs to reach the target of 282 runs? | | | |
| Answer Options | A) | B) | C) | D) |
| | 7 | 6.75 | 6.25 | 6.5 |
| Right Option | C | | | |

| | | | | |
|----------------|---|----------|---------|-----------|
| Question No. 2 | Today is Monday. After 61 days, it will be: | | | |
| Answer Options | A) | B) | C) | D) |
| | Thursday | Saturday | Tuesday | Wednesday |
| Right Option | B | | | |

| | | | | |
|----------------|---|----|----|----|
| Question No. 3 | 3 pumps working 8 hours a day, can empty a tank in 2 days. How many hours a day must 4 pumps work to empty the tank in 1 day? | | | |
| Answer Options | A) | B) | C) | D) |
| | 9 | 10 | 12 | 11 |
| Right Option | C | | | |

| | | | | |
|----------------|--|---------|----------|----------|
| Question No. 4 | A man standing at a point P is watching the top of a tower, which makes an angle of elevation of 30° with the man's eye. The man walks some distance towards the tower to watch its top and the angle of the elevation becomes 60° . What is the distance between the base of the tower and the point P? | | | |
| Answer Options | A) | B) | C) | D) |
| | Data inadequate | 8 units | 12 units | 43 units |
| Right Option | A | | | |

| | | | | |
|----------------|--|------|------|---------------|
| Question No. 5 | Find the largest 4-digit number, which gives the remainder 7 and 13 when divided by 11 and 17? | | | |
| Answer Options | A) | B) | C) | D) |
| | 9900 | 9907 | 9807 | None of these |
| Right Option | B | | | |

| | | | | |
|----------------|--|------|------|-----|
| Question No. 6 | In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit? | | | |
| Answer Options | A) | B) | C) | D) |
| | 30% | 100% | 250% | 70% |
| Right Option | D | | | |

| | | | | |
|----------------|---|----|----|-----|
| Question No. 7 | A candidate who gets 20% marks fails by 10 marks but another candidate who gets 42% marks gets 12% more than the passing marks. Find the maximum marks. | | | |
| Answer Options | A) | B) | C) | D) |
| | 75 | 68 | 37 | 100 |
| Right Option | D | | | |

| | | | | |
|----------------|--|----|----|----|
| Question No. 8 | A sum of Rs. 12,500 amounts to Rs. 15,500 in 4 years at the rate of simple interest. What is the rate of interest? | | | |
| Answer Options | A) | B) | C) | D) |
| | 6% | 4% | 5% | 3% |
| Right Option | A | | | |

| | | | | |
|----------------|--|-------|-------|-------|
| Question No. 9 | A train travelling at 48 kmph completely crosses another train having half its length and travelling in opposite direction at 42 kmph, in 12 seconds. It also passes a railway platform in 45 seconds. The length of the platform is | | | |
| Answer Options | A) | B) | C) | D) |
| | 560 m | 450 m | 400 m | 600 m |
| Right Option | C | | | |

| | | | | |
|-----------------|---|----------|-------------|------------|
| Question No. 10 | In a shower, 5 cm of rain falls. The volume of water that falls on 1.5 hectares of ground is: | | | |
| Answer Options | A) | B) | C) | D) |
| | 750 cu. m | 75 cu. m | 75000 cu. m | 7500 cu. m |
| Right Option | A | | | |

| | | | | |
|-----------------|---|-------|------|------|
| Question No. 11 | A good way to figure out the relationship in a given question is to make up a sentence that describes the relationship between the first two words. Then, try to use the same sentence to find out which of the answer choices completes the same relationship with the third word. Cup is to coffee as bowl is to | | | |
| Answer Options | A) | B) | C) | D) |
| | Food | Spoon | Soup | Dish |
| Right Option | C | | | |

| | | | | |
|-----------------|--|----|----|----|
| Question No. 12 | A student got twice as many sums wrong as he got right. If he attempted 48 sums in all, how many did he solve correctly? | | | |
| Answer Options | A) | B) | C) | D) |
| | 12 | 16 | 18 | 24 |
| Right Option | B | | | |

| | | | | |
|-----------------|---|--|---|--|
| Question No. 13 | Choose the statement that is best supported by the information given in the question passage. In the 1966 Supreme Court decision <i>Miranda v. Arizona</i> , the court held that before the police can obtain statements from a person subjected to an interrogation, the person must be given a Miranda warning. This warning means that a person must be told that he or she has the right to remain silent during the police interrogation. Violation of this right means that any statement that the person makes is not admissible in a court hearing. This paragraph best supports the statement that | | | |
| Answer Options | A) | B) | C) | D) |
| | The police may no longer interrogate persons suspected of a crime unless a lawyer is present. | A Miranda warning must be given before a police interrogation can begin. | Police who do not warn persons of their Miranda rights are guilty of a crime. | The 1966 Supreme Court decision in <i>Miranda</i> should be reversed |
| Right Option | B | | | |

| | | | | |
|-----------------|---|--------|---------|----------|
| Question No. 14 | Here are some words translated from an artificial language. godabim means kidney stones romzbim means kidney beans romzbako means wax beans Which word could mean "wax statue"? | | | |
| Answer Options | A) | B) | C) | D) |
| | Godaromz | Lazbim | Romzpeo | Wasibako |
| Right Option | D | | | |

| | | | | |
|-----------------|--|--------|----------------------|---------|
| Question No. 15 | If A is the brother of B; B is the sister of C; and C is the father of D, how D is related to A? | | | |
| Answer Options | A) | B) | C) | D) |
| | Sister | Nephew | Cannot be determined | Brother |
| Right Option | C | | | |

| | | | | |
|-----------------|---|---------|------|-------|
| Question No. 16 | Choose the word which is different from the rest. | | | |
| Answer Options | A) | B) | C) | D) |
| | Mandible | Sternum | Ulna | Pinna |
| Right Option | D | | | |

| | | | | |
|-----------------|--|------------------|-----------------------|----------------|
| Question No. 17 | In each question below is given a statement followed by three courses of action numbered I, II and III. You have to assume everything in the statement to be true, then decide which of the three given suggested courses of action logically follows for pursuing. Statement: Besides looks and appearances, it is also important to develop oneself from within. Courses of Action: I. One should not pay attention to fashion. II. One should pay attention to fashion. III. Books on self-development should be encouraged. | | | |
| Answer Options | A) | B) | C) | D) |
| | Only II follows | Only III follows | Only I and III follow | Only I follows |
| Right Option | B | | | |

| | | | | |
|-----------------|---|---------------|---------------|---------------|
| Question No. 18 | Arrange the words given below in a meaningful sequence. 1. Index 2. Contents 3. Title 4. Chapters 5. Introduction | | | |
| Answer Options | A) | B) | C) | D) |
| | 3, 2, 5, 1, 4 | 3, 2, 5, 4, 1 | 2, 3, 4, 5, 1 | 5, 1, 4, 2, 3 |
| Right Option | B | | | |

| | | | | |
|-----------------|---------------|-------|-------|-------|
| Question No. 19 | 3, 10, 101, ? | | | |
| Answer Options | A) | B) | C) | D) |
| | 10202 | 10201 | 10101 | 11012 |
| Right Option | A | | | |

| | | | | |
|-----------------|----------------------|------|---------|------|
| Question No. 20 | A disease always has | | | |
| Answer Options | A) | B) | C) | D) |
| | Cause | Cure | Patient | Germ |
| Right Option | A | | | |

| Question No. 21 | <p>Question nos. 21 to 25:</p> <p>Splash.Inc produces fabric sold in rolls of 35 metres (units) for the wholesale textile market. The production manager at Splash.Inc has produced the following table to illustrate how the unit cost of their bestselling product falls as production increases. Total costs are derived by adding fixed costs and variable costs; the fixed costs used in the calculations total \$3m.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Scenario</th> <th>Total cost \$</th> <th>Unit cost \$</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>\$4,500,000</td> <td>\$18.00</td> </tr> <tr> <td>B</td> <td>\$5,400,000</td> <td>\$17.46</td> </tr> <tr> <td>C</td> <td>\$6,477,000</td> <td>\$16.94</td> </tr> <tr> <td>D</td> <td>\$7,776,000</td> <td>\$16.43</td> </tr> </tbody> </table> <p>How much are the variable costs in scenario B?</p> | | | | Scenario | Total cost \$ | Unit cost \$ | A | \$4,500,000 | \$18.00 | B | \$5,400,000 | \$17.46 | C | \$6,477,000 | \$16.94 | D | \$7,776,000 | \$16.43 |
|-----------------|--|--------------|-----------|-------------|----------|---------------|--------------|---|-------------|---------|---|-------------|---------|---|-------------|---------|---|-------------|---------|
| Scenario | Total cost \$ | Unit cost \$ | | | | | | | | | | | | | | | | | |
| A | \$4,500,000 | \$18.00 | | | | | | | | | | | | | | | | | |
| B | \$5,400,000 | \$17.46 | | | | | | | | | | | | | | | | | |
| C | \$6,477,000 | \$16.94 | | | | | | | | | | | | | | | | | |
| D | \$7,776,000 | \$16.43 | | | | | | | | | | | | | | | | | |
| Answer Options | A) | B) | C) | D) | | | | | | | | | | | | | | | |
| | \$2,400,000 | \$1,500,000 | \$750,000 | Cannot tell | | | | | | | | | | | | | | | |
| Right Option | A | | | | | | | | | | | | | | | | | | |

| | | | | |
|-----------------|--|---------|-----------|---------|
| Question No. 22 | How many units are produced in scenario A? | | | |
| Answer Options | A) | B) | C) | D) |
| | 2,500,000 | 250,000 | 1,250,000 | 225,000 |
| Right Option | B | | | |

| | | | | |
|-----------------|--|---------|---------|---------|
| Question No. 23 | How many more units are produced in scenario C compared to scenario A? | | | |
| Answer Options | A) | B) | C) | D) |
| | 131,000 | 132,349 | 139,274 | 136,998 |
| Right Option | B | | | |

| | | | | |
|-----------------|--|------|------|------|
| Question No. 24 | By what percentage did the total unit cost in scenario A increase in order to realize the unit cost reduction between scenarios A and B? | | | |
| Answer Options | A) | B) | C) | D) |
| | 117% | 120% | 121% | 119% |
| Right Option | B | | | |

| | | | | |
|-----------------|---|---|---|--|
| Question No. 25 | Which suggested answer would provide the best estimate of the unit cost if variable costs were \$750,000? | | | |
| Answer Options | A) | B) | C) | D) |
| | $\$18 \times 97\% = \text{new unit price}$ | $\text{New unit cost} \times 97\% = \18 | $\$28 \times 103\% = \text{new unit price}$ | $\text{New unit cost} \times 103\% = \18 |
| Right Option | B | | | |

| Question No. 26 | Question nos. 26 to 30: This following table is related to profit and loss and some values are missing. All the discounts are on the M.P. and the profit are on C.P. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|--|------------|--------------------|--------------|---------------------|---------|------------------|------------|--------------------|--------------|---------------------|-------|------|-----|------|-----|-----|-------|-----|-----|-----|-----|-----|---------|-----|-----|------|-----|-----|------|------|-----|-----|-----|------|-------|-----|-----|------|-----|-----|
| | <table border="1"> <thead> <tr> <th>Article</th> <th>Cost Price (Rs.)</th> <th>Profit (%)</th> <th>Marked Price (Rs.)</th> <th>Discount (%)</th> <th>Selling Price (Rs.)</th> </tr> </thead> <tbody> <tr> <td>Jeans</td> <td>2280</td> <td>---</td> <td>2720</td> <td>---</td> <td>---</td> </tr> <tr> <td>Shirt</td> <td>---</td> <td>30%</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>T-shirt</td> <td>---</td> <td>---</td> <td>2875</td> <td>14%</td> <td>---</td> </tr> <tr> <td>Suit</td> <td>2200</td> <td>---</td> <td>---</td> <td>---</td> <td>2640</td> </tr> <tr> <td>Saree</td> <td>---</td> <td>20%</td> <td>3800</td> <td>---</td> <td>---</td> </tr> </tbody> </table> | | | | | Article | Cost Price (Rs.) | Profit (%) | Marked Price (Rs.) | Discount (%) | Selling Price (Rs.) | Jeans | 2280 | --- | 2720 | --- | --- | Shirt | --- | 30% | --- | --- | --- | T-shirt | --- | --- | 2875 | 14% | --- | Suit | 2200 | --- | --- | --- | 2640 | Saree | --- | 20% | 3800 | --- | --- |
| Article | Cost Price (Rs.) | Profit (%) | Marked Price (Rs.) | Discount (%) | Selling Price (Rs.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jeans | 2280 | --- | 2720 | --- | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shirt | --- | 30% | --- | --- | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T-shirt | --- | --- | 2875 | 14% | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Suit | 2200 | --- | --- | --- | 2640 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Saree | --- | 20% | 3800 | --- | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | If the discount % and profit % of the Suit is same. Find out the M.P. of Suit? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Answer Options | A) | B) | C) | D) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Rs. 2800 | Rs. 2200 | Rs. 3300 | Rs. 2500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Right Option | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | |
|-----------------|---|--------|--------|--------|
| Question No. 27 | If the M.P. of jeans is Rs. 140 more than the C.P. of Shirt and the difference between M.P. and S.P. of Shirt is Rs. 780. Find the discount % of Shirt? | | | |
| Answer Options | A) | B) | C) | D) |
| | 17.56% | 18.86% | 19.76% | 20.46% |
| Right Option | B | | | |

| | | | | |
|-----------------|--|--------|--------|--------|
| Question No. 28 | C.P. of Suit is how much percentage less than the M.P. of Jeans? | | | |
| Answer Options | A) | B) | C) | D) |
| | 19.10% | 18.60% | 21.20% | 18.40% |
| Right Option | A | | | |

| | | | | |
|-----------------|--|----------|----------|----------|
| Question No. 29 | The ratio of discount % and profit % of the T-shirt is 7:5. Find CP. of T-shirt? (approximately) | | | |
| Answer Options | A) | B) | C) | D) |
| | Rs. 2552 | Rs. 2248 | Rs. 2398 | Rs. 2285 |
| Right Option | B | | | |

| | | | | |
|-----------------|---|-----|-----|-----|
| Question No. 30 | If the ratio of the C.P. of the Jeans and Saree is 4:5, find out the discount % of Saree? | | | |
| Answer Options | A) | B) | C) | D) |
| | 15% | 10% | 12% | 20% |
| Right Option | B | | | |

| | | | | |
|-----------------|---|------|------|------|
| Question No. 31 | <p>Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.</p> <p>A: Only natural dyes are used in Kalamkari and it involves several steps. B: There are two distinctive styles of Kalamkari in India. C: They are the Sri kalahasti style and the Machlipatnam style. D: Kalamkari is a type of hand-painted or block-printed cotton textile, produced in the Indian States of Andhra Pradesh and Telangana.</p> | | | |
| Answer Options | A) | B) | C) | D) |
| | DCBA | CBDA | ACBD | DABC |
| Right Option | D | | | |

| | | | | |
|-----------------|-------------------------------|----------|----------|----------|
| Question No. 32 | What is the antonym of MOROSE | | | |
| Answer Options | A) | B) | C) | D) |
| | Overawed | Cherubic | Cheerful | Agitated |
| Right Option | C | | | |

| | | | | |
|-----------------|----------------------------------|-------|------|----------|
| Question No. 33 | What is the synonym of ERRONEOUS | | | |
| Answer Options | A) | B) | C) | D) |
| | Erased | Wrong | Weak | Enormous |
| Right Option | B | | | |

| | | | | |
|-----------------|---|----|----|----|
| Question No. 34 | <p>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.</p> | | | |
| | A) | B) | C) | D) |

| | | | | |
|----------------|---|--|---|---|
| Answer Options | (1) extolling, (2) advising, (3) rational | (1) extolling, (2) prompting, (3) fanciful | (1) criticizing, (2) prompting, (3) sincere | (1) invoking, (2) arguing, (3) fanciful |
| Right Option | B | | | |

| | | | | |
|-----------------|--|--|---|--|
| Question No. 35 | 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) | B) | C) | D) |
| | (1) escorted, (2) affinity, (3) toned down | (1) abandoned, (2) bitterness, (3) pumped up | (1) safeguarded, (2) kindness, (3) egged on | (1) escorted, (2) bitterness, (3) toned down |
| Right Option | D | | | |

| | | | | |
|-----------------|--|---|---|---|
| Question No. 36 | Attracted by the serenity of the evening, a friend and I lately went to one of the public walks near the city. Here we (1) _____ together for some time. Then my friend, stopping suddenly, (2) _____ by the elbow, and led me out of the public walk. I could perceive by the quickness of this (3) _____, and by his frequently looking behind, that he was attempting to avoid somebody who followed. | | | |
| Answer Options | A) | B) | C) | D) |
| | (1) sauntered, (2) trapped, (3) pace | (1) vamoosed, (2) relinquished, (3) hands | (1) sauntered, (2) caught, (3) gallop | (1) dance, (2) caught, (3) gallop |
| Right Option | C | | | |

| | | | | |
|-----------------|--|--|--|---|
| Question No. 37 | It was not surprising that my own countrymen should treat me so, for I had gained a (1) _____ of notoriety and popularity among them. Even for Englishmen I was individual and not merely one of the (2) _____ and, I imagine the fact that I had received my education in England, brought me (3) _____ | | | |
| Answer Options | A) | B) | C) | D) |
| | (1) measure, (2) dispersal, (3) at a remote position | (1) weight, (2) collection, (3) in juxtaposition with them | (1) ration, (2) mass, (3) nearer to them | (1) measure, (2) mass, (3) nearer to them |
| Right Option | D | | | |

| | | | | |
|-----------------|---|------|------|------|
| Question No. 38 | Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order. A: A man on a bike had to ride on the pavement. B: When he tried to plunge onto the road, a car hit him. C: As the bus inched through the evening life, the traffic grew. D: There was no space on the road any more. | | | |
| Answer Options | A) | B) | C) | D) |
| | CDAB | CBAD | ADBC | DBCA |
| Right Option | A | | | |

| | | | | |
|-----------------|-------------------------------|--------------|-----------|----------|
| Question No. 39 | Select the Antonym of OFFHAND | | | |
| Answer Options | A) | B) | C) | D) |
| | Appropriate | Premeditated | Universal | Accurate |
| Right Option | B | | | |

| | | | | |
|-----------------|------------------------------|--------|-------|---------|
| Question No. 40 | What is the synonym of SEIZE | | | |
| Answer Options | A) | B) | C) | D) |
| | Grasp | Length | Start | Release |
| Right Option | A | | | |

| | | | | |
|-----------------|---|------------|---------------------------|------------|
| Question No. 41 | A pond of clear water appears less deep than it really is. This is due to | | | |
| Answer Options | A) | B) | C) | D) |
| | Dispersion | Refraction | The transparency of water | Reflection |
| Right Option | B | | | |

| | | | | |
|-----------------|--|--------------------|-------------------|--------------------|
| Question No. 42 | Friction can be reduced by changing from | | | |
| Answer Options | A) | B) | C) | D) |
| | Potential energy to kinetic energy | Sliding to rolling | Dynamic to static | Rolling to sliding |
| Right Option | B | | | |

| | | | | |
|-----------------|---|------|------|------|
| Question No. 43 | Identify the vector quantity from the following | | | |
| Answer Options | A) | B) | C) | D) |
| | Angular momentum | Heat | Time | Work |
| Right Option | A | | | |

| | | | | |
|-----------------|--|---------------------------|--------------------------|-------------------------------------|
| Question No. 44 | Intensity of sound at a point is _____ its distance from the source. | | | |
| Answer Options | A) | B) | C) | D) |
| | Directly proportional to square of | Inversely proportional to | Directly proportional to | Inversely proportional to square of |
| Right Option | D | | | |

| | | | | |
|-----------------|--|---|---|---|
| Question No. 45 | Mercury is commonly used as a thermometric fluid rather than water because | | | |
| Answer Options | A) | B) | C) | D) |
| | Specific heat of mercury is more than water | Density of mercury is more than the water | Mercury has greater visibility than water | Specific heat of mercury is less than water |
| Right Option | C | | | |

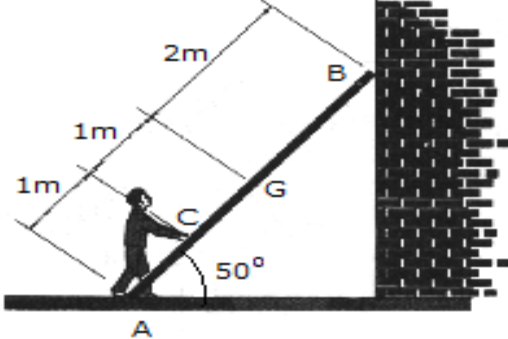
| | | | | |
|-----------------|---|-------------------------------------|------------------------------|----------------------------------|
| Question No. 46 | Lime is sometimes applied to soil in order to | | | |
| Answer Options | A) | B) | C) | D) |
| | Make the soil more porous | Increase the alkalinity of the soil | Restore nitrates to the soil | Increase the acidity of the soil |
| Right Option | B | | | |

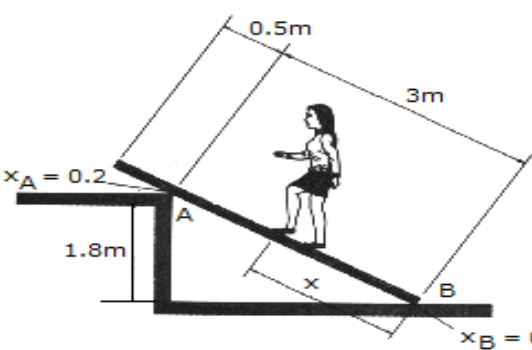
| | | | | |
|-----------------|--------------------|------------|------------------------------------|------------------|
| Question No. 47 | Photo-oxidation is | | | |
| Answer Options | A) | B) | C) | D) |
| | Photo respiration | Photolysis | Light and oxygen induced breakdown | All of the above |
| Right Option | D | | | |

| | | | | |
|-----------------|--------------------------|--|---|---|
| Question No. 48 | The exhaled air contains | | | |
| Answer Options | A) | B) | C) | D) |
| | Carbon dioxide only | A mixture of carbon dioxide and nitrogen | A mixture which has more carbon dioxide than oxygen | A mixture of carbon dioxide, nitrogen and oxygen in which nitrogen has the highest percentage |
| Right Option | D | | | |

| | | | | |
|-----------------|--|--------|-------|---------|
| Question No. 49 | The ionization energy of hydrogen atom in the ground state is x KJ. The energy required for an electron to jump from 2nd orbit to 3rd orbit is | | | |
| Answer Options | A) | B) | C) | D) |
| | $5x$ | $7.2x$ | $x/6$ | $5x/36$ |
| Right Option | D | | | |

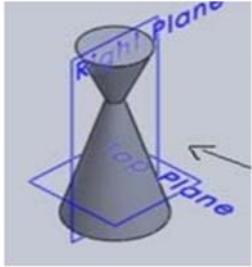
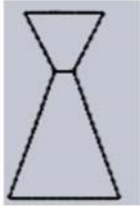
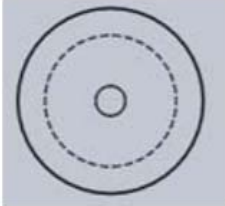
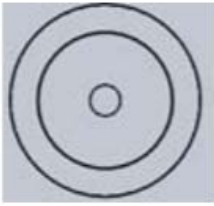
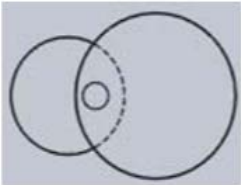
| | | | | |
|-----------------|---|--------|---------|---------------|
| Question No. 50 | The oldest rocks in the earth's crust were once molten, and came from deep inside the earth. The molten rock, called magma, spewed out in volcanic eruptions during the earth's early life and solidified into hard rock's called | | | |
| Answer Options | A) | B) | C) | D) |
| | Sedimentary rocks | Basalt | Granite | Igneous rocks |
| Right Option | D | | | |

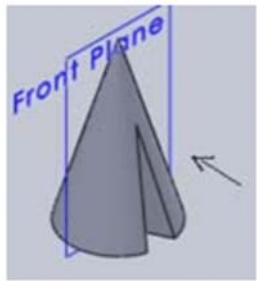

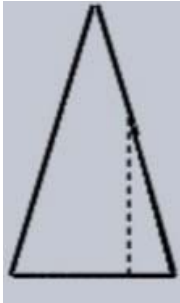

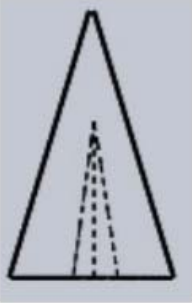
| | | | | |
|------------------------|--|--|--|--|
| <p>Question No. 51</p> |  <p>A 17-kg ladder has a center of mass at G. If the coefficients of friction at A and B are $\mu_A = 0.3$ and $\mu_B = 0.2$, respectively, determine the smallest horizontal force that the man must exert of the ladder at point C in order to push the ladder forward.</p> | | | |
| <p>Answer Options</p> | <p>A) $F = 204 \text{ N}$</p> | <p>B) $F = 166.8 \text{ N}$</p> | <p>C) $F = 120.2 \text{ N}$</p> | <p>D) $F = 288 \text{ N}$</p> |
| <p>Right Option</p> | <p>A</p> | | | |

| | | | | |
|------------------------|--|--|--|--|
| <p>Question No. 52</p> |  <p>A uniform beam has a mass of 18 kg and rests on two surfaces at points A and B. Determine the maximum distance x to which the girl can slowly walk up the beam before it begins to slip. The girl has a mass of 50 kg and walks up the beam with a constant velocity.</p> | | | |
| <p>Answer Options</p> | <p>A) $x = 0.678 \text{ m}$</p> | <p>B) $x = 0.712 \text{ m}$</p> | <p>C) $x = 0.508 \text{ m}$</p> | <p>D) $x = 1.005 \text{ m}$</p> |
| <p>Right Option</p> | <p>D</p> | | | |

| | | | | |
|-----------------|---|--------|-----------|--------|
| Question No. 53 | <p>Determine the length of side AB if the angle ABC is similar to the angle A'B'C':</p> | | | |
| Answer Options | A) | B) | C) | D) |
| | AB = 4 | AB = 5 | AB = 5.42 | AB = 3 |
| Right Option | B | | | |

| | | | | |
|-----------------|---|---------------------|---------------------|---------------------|
| Question No. 54 | <p>Locate the center of gravity of the homogeneous "bell-shaped" volume formed by revolving the shaded area about the y axis.</p> | | | |
| Answer Options | A) | B) | C) | D) |
| | $\bar{y} = 3.33$ ft | $\bar{y} = 2.80$ ft | $\bar{y} = 3.20$ ft | $\bar{y} = 3.00$ ft |
| Right Option | A | | | |
| Question No. 55 | <p>Using the basic trigonometric functions, determine the length of side AB of the right triangle.</p> | | | |
| Answer Options | A) | B) | C) | D) |
| | h = 8.66 | h = 11.55 | h = 5.77 | h = 5 |
| Right Option | D | | | |

| | | | | |
|------------------------|--|---|--|---|
| <p>Question No. 56</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 Option</p> | <p>C</p> | | | |

| | | | | |
|------------------------|---|---|--|---|
| <p>Question No. 57</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 Option</p> | <p>A</p> | | | |

| | | | | |
|-----------------|---|--------|------|----------|
| Question No. 58 | Curve of any shape can be drawn in perspective by enclosing it in a _____ | | | |
| Answer Options | A) | B) | C) | D) |
| | Rectangle | Square | Cube | Cylinder |
| Right Option | A | | | |

| | | | | |
|-----------------|---|--------------|----------------------|---------------------|
| Question No. 59 | 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) |
| | curve, cone | curve, prism | straight line, prism | straight line, cone |
| Right Option | B | | | |

| | | | | |
|-----------------|--|-------------------------------------|-----------------------------|-------------------------------------|
| Question No. 60 | 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) |
| | curve, curve, curve | straight line, curve, straight line | straight line, curve, curve | straight line, straight line, curve |
| Right Option | C | | | |

| | | | | |
|-----------------|---|-----------------|--------------|--------|
| Question No. 61 | A coal with high _____ content will ignite most easily. | | | |
| Answer Options | A) | B) | C) | D) |
| | Hydrogen | Volatile matter | Fixed carbon | Oxygen |
| Right Answer | B | | | |

| | | | | |
|-----------------|--|---------------|---------|------------------------|
| Question No. 62 | A common disinfectant used in village wells for disinfection of water is | | | |
| Answer Options | A) | B) | C) | D) |
| | Iodine | Free chlorine | Bromine | Potassium Permanganate |
| Right Answer | D | | | |

| | | | | |
|-----------------|---|-----|------|-----|
| Question No. 63 | A furnace is made of a refractory brick wall of thickness 0.5 metre and thermal conductivity 0.7 W/m.K For the same temperature drop and heat loss, this refractory wall can be replaced by a layer of diatomaceous earth of thermal conductivity 0.14 W/m.K and thickness _____ metre. | | | |
| Answer Options | A) | B) | C) | D) |
| | 0.25 | 0.5 | 0.01 | 0.1 |
| Right Answer | D | | | |

| | | | | |
|-----------------|---|---------------|---------|------------------|
| Question No. 64 | A gas having a negative Joule-Thompson co-efficient, when throttled, will | | | |
| Answer Options | A) | B) | C) | D) |
| | Become cooler | Become hotter | Liquefy | Remain unchanged |
| Right Answer | B | | | |

| | | | | |
|-----------------|--|---------|---------------------|--------|
| Question No. 65 | A material being tested for endurance strength is subjected to the _____ load. | | | |
| Answer Options | A) | B) | C) | D) |
| | Static & Dynamic | Dynamic | Completely reversed | Impact |
| Right Answer | C | | | |

| | | | | |
|-----------------|---|-------------------------------|------------------------------|----------------------------------|
| Question No. 66 | A simple closed grinding circuit may consist of | | | |
| Answer Options | A) | B) | C) | D) |
| | A ball mill and a froth floatation cell | A rod mill and a hydrocyclone | A ball mill and a classifier | A jaw crusher and a hydrocyclone |
| Right Answer | C | | | |

| | | | | |
|-----------------|----------------------------|------------------------|-----------------------|---------------|
| Question No. 67 | A static fluid cannot have | | | |
| Answer Options | A) | B) | C) | D) |
| | Zero shear stress | Positive normal stress | Non-zero shear stress | None of these |
| Right Answer | C | | | |

| | | | | |
|-----------------|--|----------|------------------------|---------------|
| Question No. 68 | A suitable lubricant used for watches is | | | |
| Answer Options | A) | B) | C) | D) |
| | Grease | Palm oil | Metallic soap solution | Hazel-nut oil |
| Right Answer | D | | | |

| | | | | |
|-----------------|--|-----|-----|---------------|
| Question No. 69 | Absolute zero pressure can be attained at a temperature of | | | |
| Answer Options | A) | B) | C) | D) |
| | 0°C | 50K | 0°R | None of these |
| Right Answer | C | | | |

| | | | | |
|-----------------|--|----------------|---|---------------|
| Question No. 70 | All modes of heat transfer i.e., conduction, convection & radiation occur in case of the | | | |
| Answer Options | A) | B) | C) | D) |
| | Condensation of steam in a partial condenser | Boiler furnace | Insulated pipe carrying high pressure steam | None of these |
| Right Answer | B | | | |

| | | | | |
|-----------------|-----------------------------|------------|-------------------|---|
| Question No. 71 | Ammonia gas can be dried by | | | |
| Answer Options | A) | B) | C) | D) |
| | PCl ₅ | Quick lime | CaCl ₂ | Concentrated H ₂ SO ₄ |
| Right Answer | B | | | |

| | | | | |
|-----------------|----------------------------|------------------------|--------------------------|------------------------------|
| Question No. 72 | An ideal fluid is | | | |
| Answer Options | A) | B) | C) | D) |
| | Non-viscous & compressible | Viscous & compressible | Viscous & incompressible | Non-viscous & incompressible |
| Right Answer | D | | | |

| | | | | |
|-----------------|--|------------------------------------|----------------------------------|------------------------------------|
| Question No. 73 | At 100% relative humidity, the dew point temperature of moist air is | | | |
| Answer Options | A) | B) | C) | D) |
| | Equal to the wet bulb temperature | More than the wet bulb temperature | Equal to the ambient temperature | Less than the wet bulb temperature |
| Right Answer | B | | | |

| | | | | |
|-----------------|----------------------------------|----------|-------|-----------|
| Question No. 74 | Auto collimator is used to check | | | |
| Answer Options | A) | B) | C) | D) |
| | Rotor balancing | Flatness | Angle | Roughness |
| Right Answer | C | | | |

| | | | | |
|-----------------|--|------------------------------|--------------------------------------|------------------------------|
| Question No. 75 | Boiler rating is normally done in terms of | | | |
| Answer Options | A) | B) | C) | D) |
| | Steam output (tons/hr) | Steam temperature & pressure | Heat transfer area (m ²) | Heat transfer rate (kcal/hr) |
| Right Answer | A | | | |

| | | | | |
|-----------------|--|----------|-----------|--------|
| Question No. 76 | Brittleness induced due to the presence of sulphur in steel can be reduced by adding | | | |
| Answer Options | A) | B) | C) | D) |
| | Magnesium | Vanadium | Manganese | Copper |
| Right Answer | C | | | |

| | | | | |
|-----------------|---|------------------------------|----------------------------------|---|
| Question No. 77 | Carbide tipped cutting tools are manufactured by powder metallurgy techniques and have a composition of | | | |
| Answer Options | A) | B) | C) | D) |
| | 90% tungsten carbide and 10% cobalt | 65% tungsten & 35% zirconium | 70% aluminium oxide & 30% silica | 30% nickel, 15% chromium & 55% tungsten |
| Right Answer | A | | | |

| | | | | |
|-----------------|---|-----------------------------------|--|--------------------------------|
| Question No. 78 | Carburettor in a spark ignition engine is used to | | | |
| Answer Options | A) | B) | C) | D) |
| | Adjust the stroke length | Mix air-fuel in the desired ratio | Maintain a constant speed at varying loads | Increase the compression ratio |
| Right Answer | B | | | |

| | | | | |
|-----------------|--|----------|--------|------|
| Question No. 79 | Carnot cycle is also termed as the constant _____ cycle in thermodynamics. | | | |
| Answer Options | A) | B) | C) | D) |
| | Entropy | Pressure | Volume | Heat |
| Right Answer | D | | | |

| | | | | |
|-----------------|-----------------------|------------------------------|-----------------|-----------------------|
| Question No. 80 | Corrosion is | | | |
| Answer Options | A) | B) | C) | D) |
| | A chemical phenomenon | An uncontrollable phenomenon | Same as erosion | A physical phenomenon |
| Right Answer | A | | | |

| | | | | |
|-----------------|---|----------------------------------|------------------------------|---------------|
| Question No. 81 | Dowtherm is a | | | |
| Answer Options | A) | B) | C) | D) |
| | High temperature heating medium (a petroleum product) | Product of coal tar distillation | Very heat sensitive material | None of these |
| Right Answer | A | | | |

| | | | | |
|-----------------|---|--|-------------------------------------|------------|
| Question No. 82 | Electrolytic reduction cell used for conversion of calcined Al_2O_3 to Al is a carbon lined furnace operating at 800-900°C. The purpose of electric current supplied to the furnace is to | | | |
| Answer Options | A) | B) | C) | D) |
| | Achieve very high purity of aluminium (99.9%) | Keep the electrolyte in liquid condition by the generation of heat | Electrolytically dissociate alumina | Both B & C |
| Right Answer | D | | | |

| | | | | |
|-----------------|---|---------|-----------|----------------|
| Question No. 83 | Failure of a material is attributed to _____ if it fails below its yield point. | | | |
| Answer Options | A) | B) | C) | D) |
| | Creep | Fatigue | Straining | impact loading |
| Right Answer | B | | | |

| | | | | |
|-----------------|--|----------------|--------------|-------------------------|
| Question No. 84 | Fatigue limit of a material should not be increased by | | | |
| Answer Options | A) | B) | C) | D) |
| | Shot peening | Understressing | Cold working | Surface decarburisation |
| Right Answer | D | | | |
| Question No. 85 | Fibrous fracture is normally encountered in the _____ materials. | | | |
| Answer Options | A) | B) | C) | D) |
| | Ductile | Elastic | Brittle | Hard |
| Right Answer | A | | | |

| | | | | |
|-----------------|--------------------------|----------------------------|----------------|---------------|
| Question No. 86 | Fine grained steels have | | | |
| Answer Options | A) | B) | C) | D) |
| | High brittleness | Higher tendency to distort | High ductility | None of these |
| Right Answer | C | | | |

| | | | | |
|-----------------|---|----------------------|------------------------|------------------|
| Question No. 87 | For a fixed cross-sectional area, the most economical channel section has maximum | | | |
| Answer Options | A) | B) | C) | D) |
| | Fluid velocity | Fluid discharge rate | Depth of flowing fluid | Wetted perimeter |
| Right Answer | B | | | |

| | | | | |
|-----------------|--|-------------|-------------|----------|
| Question No. 88 | Heating of an ore below its melting point in presence of excess of air is called | | | |
| Answer Options | A) | B) | C) | D) |
| | Roasting | Calcination | Sublimation | Smelting |
| Right Answer | A | | | |

| | | | | |
|-----------------|---|----------|----------|----------|
| Question No. 89 | High relative humidity decreases the evaporation process and as the temperature is increased, the relative humidity decreases. The comfort range for human body is the ambient temperature of 22 to 27°C with relative humidity ranging from _____ percent. | | | |
| Answer Options | A) | B) | C) | D) |
| | 5 to 10 | 45 to 50 | 15 to 25 | 75 to 80 |
| Right Answer | B | | | |

| | | | | |
|-----------------|---|---|--|--|
| Question No. 90 | In chemical de humidification of air | | | |
| Answer Options | A) | B) | C) | D) |
| | Both specific humidity & dry bulb temperature increases | Both specific humidity & dry bulb temperature decreases | Specific humidity increases & dry bulb temperature decreases | Specific humidity decreases & dry bulb temperature increases |
| Right Answer | D | | | |

| | | | | |
|-----------------|---|--------------|------------|----------|
| Question No. 91 | In spite of large heat transfer co-efficients in boiling liquids, fins are used advantageously, where the entire surface is exposed to _____ boiling. | | | |
| Answer Options | A) | B) | C) | D) |
| | Film | All modes of | Transition | Nucleate |
| Right Answer | B | | | |

| | | | | |
|-----------------|---|------|-------|---------------------|
| Question No. 92 | Increasing sulphur content in pig iron tends to make it | | | |
| Answer Options | A) | B) | C) | D) |
| | Soft | Hard | Tough | Ductile & Malleable |
| Right Answer | B | | | |

| | | | | |
|-----------------|--|--------------------------------------|-----------------------------------|---------------------------------|
| Question No. 93 | Maxwell's thermodynamic relations applies to the | | | |
| Answer Options | A) | B) | C) | D) |
| | Reversible thermodynamic processes | Irreversible thermodynamic processes | Mechanical systems in equilibrium | Chemical systems in equilibrium |
| Right Answer | D | | | |

| | | | | |
|-----------------|--|--|---|---------------|
| Question No. 94 | Multistage compression is necessary for high efficiency, | | | |
| Answer Options | A) | B) | C) | D) |
| | If the ratio of the delivery pressure to the intake pressure exceeds 5:1 | When large amount of gas is to be compressed | When the delivered gas is desired at very high velocity | None of these |
| Right Answer | A | | | |
| Question No. 95 | Nitriding of steel is a process for | | | |
| Answer Options | A) | B) | C) | D) |
| | Spheroidising | Annealing | Case hardening | Normalising |
| Right Answer | C | | | |

| | | | | |
|-----------------|-----------------------------------|-----------------------|--------------------|----------------------------|
| Question No. 96 | Normalising of a casting does no | | | |
| Answer Options | A) | B) | C) | D) |
| | Improve its mechanical properties | Induce stresses in it | Reduce segregation | Refine its grain structure |
| Right Answer | B | | | |

| | | | | |
|-----------------|---|---|-------------------------------------|---|
| Question No. 97 | Often earing defects are found during deep drawing operation, because the | | | |
| Answer Options | A) | B) | C) | D) |
| | Starting sheet has normal anitropy due to its texture | Sheet material has been given substantial spring back | Surface finish of the sheet is poor | Starting sheet has planer anisotropy due to its texture |
| Right Answer | D | | | |

| | | | | |
|-----------------|--|------------------------|------------|-------------|
| Question No. 98 | Out of the following materials, the one which generally exhibits an yield point is | | | |
| Answer Options | A) | B) | C) | D) |
| | Hot rolled mild steel | Cold rolled mild steel | Soft brass | Hard bronze |
| Right Answer | A | | | |

| | | | | |
|-----------------|---|-------------------|-------------|----------------|
| Question No. 99 | Oxyacetylene reducing flame is used while carrying out welding on | | | |
| Answer Options | A) | B) | C) | D) |
| | Mild steel | High carbon steel | Alloy steel | Grey cast iron |
| Right Answer | A | | | |

| | | | | |
|------------------|---|---------------------------|--|---------------------------|
| Question No. 100 | Particle nature of cathode rays is proved due to the fact that they | | | |
| Answer Options | A) | B) | C) | D) |
| | Produce fluorescence | Heat the exposed material | Get deflected by magnetic electric field | Travel in a straight line |
| Right Answer | C | | | |