CII – iPATE 1.0 (2020)

Computer Based PAN India Examination

Category: GRADUATE ENGINEER (ENTRY LEVEL)

Engineering Discipline: MECHANICAL ENGINEERING

Questions & Answers

(Reviewed, Revised & Published dtd. 20.01.2021)

Paper Structure

Question Nos.	Sections & Topics		Marks
1 to 20	Section I : Cognitive Abilities	• Quantitative Aptitude • Analytical Reasoning • Data Interpretation • English Communication	20
21 to 40	Section II : Professional Abilities	• Project Management • Health, Safety & Risk Management • Environmental Laws • Social Responsibility & Ethics • Finance & Accounts • Legal, Contracts & Arbitration	20
41 to 50	Section III (A) : Technical Abilities	Physics & Chemistry (10+2 level)	10
51 to 100	Section III (B) : Technical Abilities	Engineering Discipline	50
TOTAL			**100**

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 shuffled 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: 5, 25, 7,_____, 9, 19			
Answer Options	A)	B)	C)	D)
	23	22	25	32
Right Answer	B			

Question No. 7	**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.** What is the area of the rectangle? I. The ratio of length to breadth of the rectangle is 35 : 12. II. The perimeter of the rectangle is 188 cm. III. The length of diagonal of the rectangle is 74 cm			
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	**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:** What is the sum of the age of Ram and Mohan? Statement I : The age of Ram is 6 years more than the age of Mohan. Statement II : 40% of the age of Mohan is equal to 30% of the age of Ram. Statement III : The ratio between half of the age of Ram and one third of the age of Mohan is 2 : 1.			
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	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?			
Answer Options	A)	B)	C)	D)
	Sister	Sister - In - Law	Niece	None of The Above
Right Answer	B			

Question No. 10	**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.** _____ : trail :: grain : grail			
Answer Options	A)	B)	C)	D)
	train	path	wheat	holy
Right Answer	A			

Question No. 11	**Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.** 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.			
Answer Options	A)	B)	C)	D)
	CBDA	DABC	ACBD	DCBA
Right Answer	B			

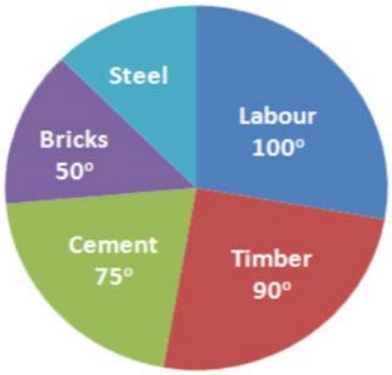
Question No. 12	What is the antonym of MOROSE			
Answer Options	A)	B)	C)	D)
	overawed	agitated	cherubic	cheerful
Right Answer	D			

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

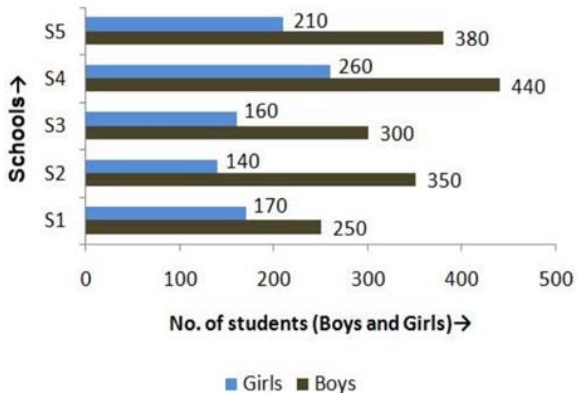
Question No. 14	A frustrated old man, Bandi thakur was never tried of (1)_____ the exploits of his ancestors, with a little (2) _____ he would lapse into a reminiscent mood, push back the loosely tied turban from his close-cropped grizzled hair and start a familiar story, improvising (3)_____ details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

<table>
<tr><td>Question No. 16</td><td colspan="4">The pie chart shows the total expense of Rs 450000 to construct a house.

The cost of steel is
 
</td></tr>
<tr><td rowspan="2">Answer Options</td><td>A)</td><td>B)</td><td>C)</td><td>D)</td></tr>
<tr><td>Rs 55000</td><td>Rs 56250</td><td>Rs 60000</td><td>Rs 62500</td></tr>
<tr><td>Right Answer</td><td colspan="4">B</td></tr>
</table>

<table>
<tr><td>Question No. 17</td><td colspan="4">The following bar graph shows the number of boys and girls of class X of 5 different schools.

Find the difference between the number of boys and girls of schools S2 and S3 together
 
</td></tr>
<tr><td rowspan="2">Answer Options</td><td>A)</td><td>B)</td><td>C)</td><td>D)</td></tr>
<tr><td>300</td><td>350</td><td>400</td><td>450</td></tr>
<tr><td>Right Answer</td><td colspan="4">B</td></tr>
</table>

<table>
<tr><td>Question No. 18</td><td colspan="4">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><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><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></table></td></tr>
<tr><td rowspan="2">Answer Options</td><td>A)</td><td>B)</td><td>C)</td><td>D)</td></tr>
<tr><td>98.41%</td><td>48.45%</td><td>95.49%</td><td>93.39%</td></tr>
<tr><td>Right Answer</td><td colspan="4">D</td></tr>
<tr><td>NOTE</td><td colspan="4">Question was displayed incorrectly at candidates' terminals. Hence '1' mark has been given to all candidates, who attempted or not.</td></tr>
</table>

<table>
<tr><td>Question No. 19</td><td colspan="4">Read the following information carefully and answer the given question.

i. Rajesh, Raju and Pijush are intelligent.
ii. Rajesh, Shib and Hari are hard-working.
iii. Shib, Pijush and Hari are honest.
iv. Rajesh, Raju and Hari are ambitious.

Which of the following person is neither honest nor hard-working but is ambitious?</td></tr>
<tr><td rowspan="2">Answer Options</td><td>A)</td><td>B)</td><td>C)</td><td>D)</td></tr>
<tr><td>Shib</td><td>Pijush</td><td>Raju</td><td>Hari</td></tr>
<tr><td>Right Answer</td><td colspan="4">C</td></tr>
</table>

<table>
<tr><td>Question No. 20</td><td colspan="4">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 ÷ R + S + Q, which of the following is true?</td></tr>
<tr><td rowspan="2">Answer Options</td><td>A)</td><td>B)</td><td>C)</td><td>D)</td></tr>
<tr><td>P is the daughter of Q</td><td>Q is the aunt of P</td><td>P is the aunt of Q</td><td>P is the mother of Q</td></tr>
<tr><td>Right Answer</td><td colspan="4">C</td></tr>
</table>

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)
	Control account	Chart of the account	Control limit	Account limit
Right Answer	A			
NOTE	Question was displayed incorrectly at candidates' terminals. Hence '1' mark has been given to all candidates, who attempted or not.			

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 			
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 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			

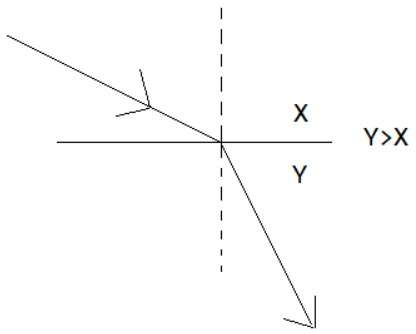
Question No. 39	What is the primary function of the Law of Tort?			
Answer Options	A)	B)	C)	D)
	Punishment of a wrong motivator	Clarification of the human rights of the parties	Compensating the claimant	Spreading of losses throughout the parties
Right Answer	C			

Question No. 40	FIDIC 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			
NOTE	Question was displayed incorrectly at candidates' terminals. Hence '1' mark has been given to all candidates, who attempted or not.			

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 '1' 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			

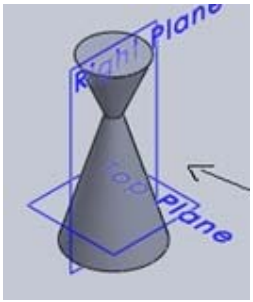
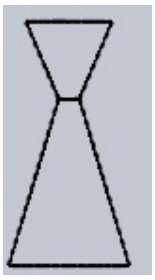
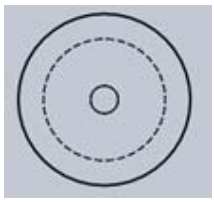
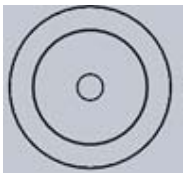
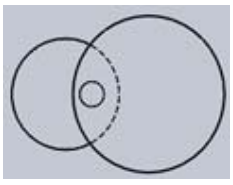
Question No. 46	Which statement is incorrect?			
Answer Options	A)	B)	C)	D)
	All the metals are good conductor of electricity.	All the metals are good conductor of heat	All the metals form positive ions	All the metals form acidic oxides
Right Answer	D			

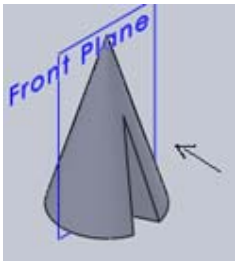
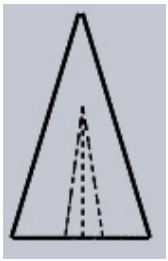
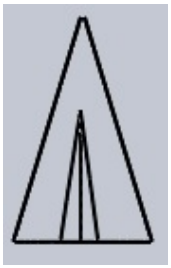
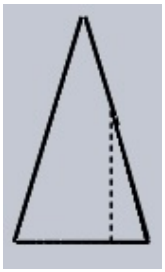
Question No. 47	Based on the first law of thermodynamics, which one of the following is correct?			
Answer Options	A)	B)	C)	D)
	For an isothermal process, q = +w	For an isochoric process, ΔU = -q	For an adiabatic process, ΔU = -w	For a cyclic process, q = -w
Right Answer	D			

Question No. 48	Among the electrolytes Na_2SO_4, $CaCl_2$, $Al_2(SO_4)_3$ and NH_4Cl, the most effective coagulating agent for Sb_2S_3 sol is			
Answer Options	A)	B)	C)	D)
	Na_2SO_4	$CaCl_2$	$Al_2(SO_4)_3$	NH_4Cl
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			

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

Question No. 52	Identify the front view of the following cone. 			
Answer Options	A) 	B) 	C) 	D) 
Right Answer	B			

Question No. 53	Curve of any shape can be drawn in perspective by enclosing it in a _____			
Answer Options	A) rectangle	B) cube	C) cylinder	D) 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) straight line, prism	B) curve, prism	C) straight line, cone	D) 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) straight line, curve, curve	B) straight line, straight line, curve	C) straight line, curve, straight line	D) curve, curve, curve
Right Answer	A			

Question No. 56	Nodular cast iron is produced by adding _____ to the molten cast iron.			
Answer Options	A)	B)	C)	D)
	Nickel	Chromium	Copper	Magnesium
Right Answer	D			

Question No. 57	The hardness of steel primarily depends on			
Answer Options	A)	B)	C)	D)
	Percentage of carbon	Percentage of alloying elements	Heat treatment employed	Shape of carbides and their distribution in iron
Right Answer	D			

Question No. 58	The main alloying elements high speed steel in order of increasing proportion are			
Answer Options	A)	B)	C)	D)
	Vanadium, chromium, tungsten	Tungsten, titanium, vanadium	Chromium, titanium, vanadium	Tungsten, chromium, titanium
Right Answer	A			

Question No. 59	Manganese in steel increases its			
Answer Options	A)	B)	C)	D)
	Tensile strength	Hardness	Ductility	Fluidity
Right Answer	A & B			
NOTE	Question was displayed incorrectly at candidates' terminals. Hence '1' mark has been given to all candidates, who attempted or not.			

Question No. 60	A Francis turbine is used when the available head of water is			
Answer Options	A)	B)	C)	D)
	0 to 25 m	25 m to 250 m	Above 250 m	None of these
Right Answer	B			

Question No. 61	Power required to drive a centrifugal pump is directly proportional to _____ of its impeller.			
Answer Options	A)	B)	C)	D)
	Diameter	Square of diameter	Cube of diameter	Fourth power of diameter
Right Answer	C			

Question No. 62	Which of the following is an example of laminar flow?			
Answer Options	A)	B)	C)	D)
	Underground flow	Flow past tiny bodies	Flow of oil in measuring instruments	All of these
Right Answer	D			

Question No. 63	When a liquid is flowing through a pipe, the velocity of the liquid is			
Answer Options	A)	B)	C)	D)
	Maximum at the centre and minimum near the walls	Minimum at the centre and maximum near the walls	Zero at the centre and maximum near the walls	Maximum at the centre and zero near the walls
Right Answer	A			

Question No. 64	Thermal diffusivity is a			
Answer Options	A)	B)	C)	D)
	Function of temperature	Physical property of a substance	Dimensionless parameter	All of these
Right Answer	B			

Question No. 65	The unit of overall coefficient of heat transfer is			
Answer Options	A)	B)	C)	D)
	kcal/m²	kcal/hr °C	kcal/m² hr °C	kcal/m hr °C
Right Answer	C			

Question No. 66	Unit of thermal conductivity in S.I. units is			
Answer Options	A)	B)	C)	D)
	J/m² sec	J/m °K sec	W/m °K	(B) and (C) above
Right Answer	D			

Question No. 67	Nusselt number (NN) is given by			
Answer Options	A)	B)	C)	D)
	NN = hl/k	NN = μ cp/k	NN = ρ V l /μ	NN = V²/t.cp
Right Answer	A			

Question No. 68	In case of pressure vessels having open ends, the fluid pressure induces			
Answer Options	A)	B)	C)	D)
	Longitudinal stress	Circumferential stress	Shear stress	None of these
Right Answer	B			

Question No. 69	A screw is specified by its			
Answer Options	A)	B)	C)	D)
	Major diameter	Minor diameter	Pitch diameter	Pitch
Right Answer	A			

Question No. 70	Resistance to fatigue of a material is measured by			
Answer Options	A)	B)	C)	D)
	Young's modulus	Coefficient of elasticity	Elastic limit	Endurance limit
Right Answer	D			

Question No. 71	The included angle for the British Association thread is			
Answer Options	A)	B)	C)	D)
	29°	55°	47.3°	60°
Right Answer	C			

Question No. 72	Steam in water tube boiler as compared to fire tube boiler			
Answer Options	A)	B)	C)	D)
	Can be raised rapidly	Is raised at slower rate	Is raised at same rate	Could be raised at fast/slow rate depending on design
Right Answer	A			

Question No. 73	Thermal equilibrium means that the flow of steam is			
Answer Options	A)	B)	C)	D)
	Isothermal	Isentropic	Hyperbolic	Polytropic
Right Answer	B			

Question No. 74	Water tube boilers are			
Answer Options	A)	B)	C)	D)
	Internally fired	Externally fired	Internally as well as externally fired	None of these
Right Answer	B			

Question No. 75	The feed check valve is used in order to			
Answer Options	A)	B)	C)	D)
	Regulate flow of boiler water	Check level of water in boiler drum	Recirculate unwanted feed water	Allow high pressure feed water to flow to drum and not allow reverse flow to take place
Right Answer	D			

Question No. 76	The curved lines on a psychrometric chart indicates			
Answer Options	A)	B)	C)	D)
	Dry bulb temperature	Wet bulb temperature	Dew point temperature	Relative humidity
Right Answer	D			

Question No. 77	Critical pressure of a liquid is the pressure			
Answer Options	A)	B)	C)	D)
	Above which liquid will remain liquid	Above which liquid becomes gas	Above which liquid becomes vapour	Above which liquid becomes solid
Right Answer	A			

Question No. 78	In a psychrometric process, the sensible heat added is 30 kJ/s and the latent heat added is 20 kJ/s. The sensible heat factor for the process will be			
Answer Options	A)	B)	C)	D)
	0.3	0.6	0.67	1.5
Right Answer	B			

Question No. 79	Environmental protection agencies advice against the use of chlorofluorocarbon refrigerants since			
Answer Options	A)	B)	C)	D)
	These react with water vapour and cause acid rain	These react with plants and cause greenhouse effect	These react with oxygen and cause its depletion	These react with ozone layer
Right Answer	D			

Question No. 80	In a coupling rod of a locomotive, each of the four pair is a _____ Pair			
Answer Options	A)	B)	C)	D)
	Sliding	Turning	Rolling	Screw
Right Answer	B			

Question No. 81	A Kinematic chain is known as mechanism when			
Answer Options	A)	B)	C)	D)
	None of the links is fixed	One of the links is fixed	Two of the links are fixed	None of these
Right Answer	B			

Question No. 82	When the nature of contact between the elements of a pair is such that it can only slide relative to the other, the pair is known as a			
Answer Options	A)	B)	C)	D)
	Screw pair	Spherical pair	Turning pair	Sliding pair
Right Answer	D			

Question No. 83	If the rotating mass of a rim type flywheel is distributed on another rim type flywheel whose mean radius is half the mean radius of the former, then energy stored in the latter at the same speed will be			
Answer Options	A)	B)	C)	D)
	Four times the first one	Same as the first one	One fourth of the first one	One and a half times the first one
Right Answer	C			

Question No. 84	Frequency of vibrations is usually expressed in			
Answer Options	A)	B)	C)	D)
	Number of cycles per hour	Number of cycles per minute	Number of cycles per second	None of these
Right Answer	C			

Question No. 85	Lap joints are employed on plates having thickness			
Answer Options	A)	B)	C)	D)
	Less than 3 mm	5 to 10 mm	12.5 mm	Above 25 mm
Right Answer	A			

Question No. 86	Thermit welding is often used in			
Answer Options	A)	B)	C)	D)
	Replacing broken gear teeth	Repairing broken shears	Joining rails, truck frames and locomotive frames etc.	All of the above
Right Answer	D			

Question No. 87	Which of the following material can be used for making patterns?			
Answer Options	A)	B)	C)	D)
	Aluminium	Wax	Lead	All of these
Right Answer	D			

Question No. 88	The purpose of a riser is to			
Answer Options	A)	B)	C)	D)
	Deliver molten metal into the mould cavity	Act as a reservoir for the molten metal	Feed the molten metal to the casting in order to compensate for the shrinkage	Deliver the molten metal from pouring basin to gate
Right Answer	C			

Question No. 89	A casting defect which occurs due to improper venting of sand is known as			
Answer Options	A)	B)	C)	D)
	Cold shuts	Blow holes	Shift	Swell
Right Answer	B			

Question No. 90	In arc welding, the electric arc is produced between the work and the electrode by			
Answer Options	A)	B)	C)	D)
	Voltage	Flow of current	Contact resistance	All of these
Right Answer	C			

Question No. 91	A file removes the metal during			
Answer Options	A)	B)	C)	D)
	Forward stroke	Return stroke	Both forward and return strokes	None of these
Right Answer	A			

Question No. 92	Spot welding is used for welding			
Answer Options	A)	B)	C)	D)
	Lap joints in plates having 0.025 mm to 1.25 mm thickness	Lap joints in plates having thickness above 3 mm	Butt joints in plates having 0.025 mm to 1.25 mm thickness	Butt joints in plates having thickness above 3 mm
Right Answer	A			

Question No. 93	Thermit, used in Thermit welding, is a mixture of			
Answer Options	A)	B)	C)	D)
	Charcoal and iron oxide	Charcoal and aluminium	Iron oxide and aluminium	Charcoal, iron oxide and aluminium
Right Answer	C			

Question No. 94	The accuracy of micrometers, calipers, dial indicators can be checked by a			
Answer Options	A)	B)	C)	D)
	Feeler gauge	Slip gauge	Ring gauge	Plug gauge
Right Answer	B			

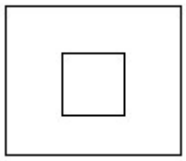
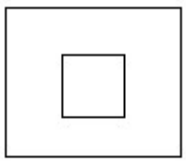
Question No. 95	Gross Calorific Value (GCV) of a Fuel gas is different from its Net Calorific Value (NCV) because			
Answer Options	A)	B)	C)	D)
	Some quantity of the fuel gas will not burn	Presence of impurity in the fuel gas	Presence of Hydrogen in the fuel gas	Presence of oxygen in the fuel gas
Right Answer	C			

Question No. 96	When Natural gas burns with air the chemical equation is $CH_4 + 2O_2 = CO_2 + 2H_2O$ + heat. How much quantity of air should be required ideally to achieve complete combustion of 1000 m^3 /hr of Natural gas.			
Answer Options	A)	B)	C)	D)
	2000 m^3/ hr	4000 m^3/ hr	8000 m^3/ hr	10000 m^3/ hr
Right Answer	D			

Question No. 97	A heavy door needs to be lifted by strong wire rope and pulley arrangement. A counterweight is attached to the door lifting arrangement			
Answer Options	A)	B)	C)	D)
	To minimise the vibration while lifting the door	To increase the sealing of the door	Reduce the power requirement to lift the door	To reduce the tendency of twisting in the door while lifting
Right Answer	C			

Question No. 98	An orifice plate is installed in a pipeline to measure the flow of fluid. Where will be the Vena Contracta located			
Answer Options	A)	B)	C)	D)
	Slightly upstream the orifice	Slightly downstream the orifice	Exactly at the surface of the orifice	Downstream the orifice where the fluid again occupies the full diameter of the pipe
Right Answer	B			

Question No. 99	If there is an alert from Metrological Dept. that there will be an unprecedented high speed storm within 48 hrs. , in order to protect the overhead steel structure community drinking water tank from abnormally high wind speed what advice should be given			
Answer Options	A)	B)	C)	D)
	To attach stiffener on the tank	To weld some additional stiffener on the tank supports	To feel the tank with water	Empty the tank
Right Answer	C			

Question No. 100	As per the Plan and elevation of an object, all dimensions are exactly same. Plan  Elevation 			
Answer Options	A)	B)	C)	D)
	The figures are incorrect. Two more dotted lines to be added in the plan view.	The figures are incorrect. Two more dotted lines to be added in the elevation view.	The figures are incorrect. Two more dotted lines to be added in both the plan and elevation view	Figures are correct
Right Answer	D			