

# CII – iPATE 1.0 (2020)

## Computer Based PAN India Examination

Category: GRADUATE ENGINEER

Engineering Discipline: AGRICULTURE ENGINEERING

### Question Paper Structure

Question Nos.	Sections & Topics		Marks
1 to 20	Section I : 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 : 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) : Technical Abilities	Physics & Chemistry (10+2 level)	10
51 to 100	Section III (B) : 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) 55 min	B) 55:38 min	C) 55:54 min	D) 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) 1/5	B) 15/91	C) 3/91	D) 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) 72 days	B) 54 days	C) 96 days	D) 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) Rs. 26.40	B) Rs. 23.20	C) Rs. 24.20	D) 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) 32	B) 43	C) 38	D) 45
Right Answer	B			

Question No. 6	Fill up the following series: 5, 25, 7, _____, 9, 19			
Answer Options	A) 23	B) 22	C) 25	D) 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.            II. The perimeter of the rectangle is 188 cm.            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.            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.</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			

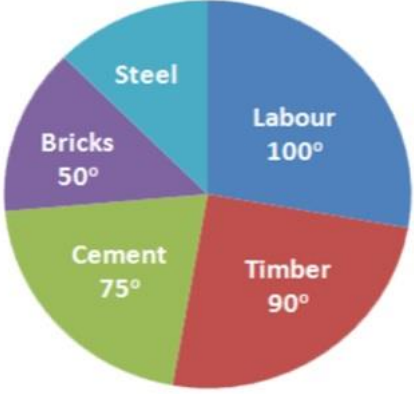
Question No. 11	<b>Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.</b>			
	A: Only natural dyes are used in Kalamkari and it involves several steps. B: There are two distinctive styles of Kalamkari in India. C: They are the Sri kalahasti style 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) CBDA	B) DABC	C) ACBD	D) DCBA
Right Answer	B			

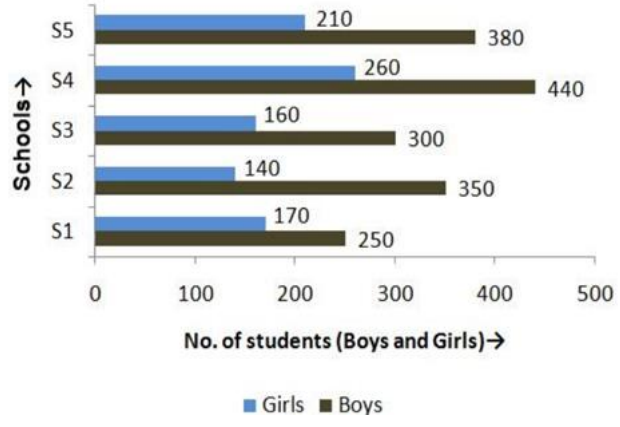
Question No. 12	What is the antonym of MOROSE			
Answer Options	A) overawed	B) agitated	C) cherubic	D) cheerful
Right Answer	D			

Question No. 13	What is the synonym of ERRONEOUS			
Answer Options	A) Enormous	B) Wrong	C) Erased	D) 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) (1) criticizing, (2) prompting, (3) sincere	B) (1) extolling, (2) advising, (3) rational	C) (1) invoking, (2) arguing, (3) fanciful	D) (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) (1) safeguarded, (2) kindness, (3) egged on	B) (1) escorted, (2) affinity, (3) toned down	C) (1) abandoned, (2) bitterness, (3) pumped up	D) (1) escorted, (2) bitterness, (3) toned down
Right Answer	D			

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

<p>Question No. 17</p>	<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> 			
<p>Answer Options</p>	<p>A) 300</p>	<p>B) 350</p>	<p>C) 400</p>	<p>D) 450</p>
<p>Right Answer</p>	<p>B</p>			

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
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Bihar	2.27	1	3																															
Answer Options	A) 98.41%	B) 48.45%	C) 95.49%	D) 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. 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?			
Answer Options	A) Shib	B) Pijush	C) Raju	D) 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) P is the daughter of Q	B) Q is the aunt of P	C) P is the aunt of Q	D) 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 			
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			

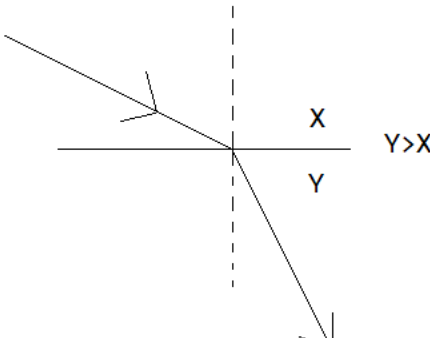
Question No. 39	What is the primary function of the Law of Tort?			
Answer Options	A)	B)	C)	D)
	Punishment of a wrong motivator	Clarification of the human rights of the parties	Compensating the claimant	Spreading of losses throughout the parties
Right Answer	C			

Question No. 40	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) 0.25g	B) 0.50g	C) 0.75g	D) g
Right Answer	D			

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

Question No. 44	When light travels from medium X to medium Y as shown: 			
Answer Options	A) both the speed and the frequency decrease	B) both the speed and the frequency increase	C) both the speed and the wavelength decrease	D) 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) only if F is larger than the weight of the object	B) only while the object suddenly changes from rest to motion	C) always	D) only if the inertia of the object decreases
Right Answer	C			

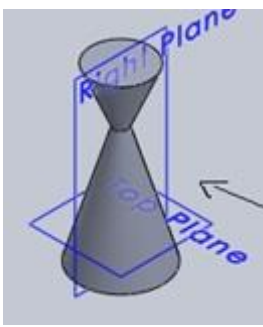
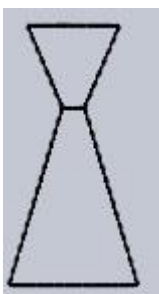
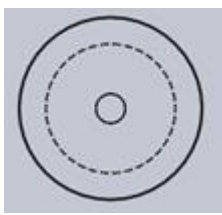
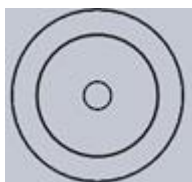
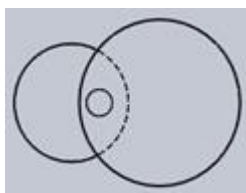
Question No. 46	Which statement is incorrect?			
Answer Options	A)	B)	C)	D)
	All the metals are good conductor of electricity.	All the metals are good conductor of heat	All the metals form positive ions	All the metals form acidic oxides
Right Answer	D			

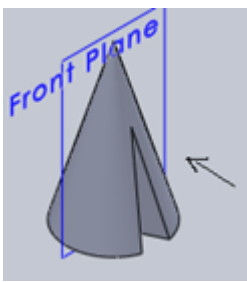
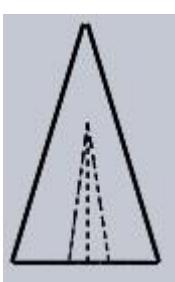
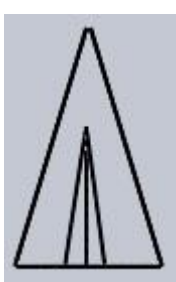
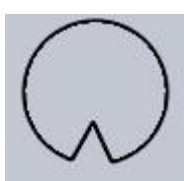
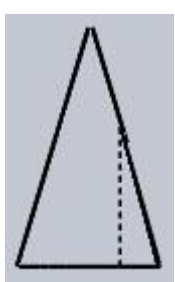
Question No. 47	Based on the first law of thermodynamics, which one of the following is correct?			
Answer Options	A)	B)	C)	D)
	For an isothermal process, $q = +w$	For an isochoric process, $\Delta U = -q$	For an adiabatic process, $\Delta U = -w$	For a cyclic process, $q = -w$
Right Answer	D			

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	EDTA (Ethylene diamine tetra acetic acid) is a popular _____ agent used in food.			
Answer Options	A)	B)	C)	D)
	chelating	colouring	flavouring	curing
Right Answer	A			

Question No. 57	Air at 20 °C blow over a hot plate 50 by 50 cm maintained at 220 °C. If the heat transferred is 1 kW, the convection heat transfer coefficient is _____ W/m <sup>2</sup> °C.			
Answer Options	A)	B)	C)	D)
	10	15	20	25
Right Answer	C			

Question No. 58	A wall is constructed of 2 cm copper ( $k= 386 \text{ W/m } ^\circ\text{C}$ ), 3 mm asbestos sheet ( $k= 0.166 \text{ W/m } ^\circ\text{C}$ ) and 5 cm fiber glass ( $k= 0.05 \text{ W/m } ^\circ\text{C}$ ). The heat flow per unit area for an overall temperature difference of 100 °C is _____ W/m <sup>2</sup> .			
Answer Options	A)	B)	C)	D)
	96.5	98.2	100.4	102
Right Answer	B			

Question No. 59	The recovery of acetic acid from a water solution by using isopropyl ether is an example of _____ process			
Answer Options	A)	B)	C)	D)
	Distillation	Liquid-liquid extraction	Leaching	Absorption
Right Answer	B			

Question No. 60	Production of sucrose from the aqueous solution of sugar beet is an example of			
Answer Options	A)	B)	C)	D)
	Crystallization	Drying	Evaporation	Filtration
Right Answer	A			

Question No. 61	In amylase, glucose units are linked by _____ bonding mechanisms.			
Answer Options	A)	B)	C)	D)
	$\alpha$ -(1→4)	$\alpha$ -(1→6)	$\beta$ -(1→4)	$\beta$ -(1→6)
Right Answer	A			

Question No. 62	_____ process is strongly depending upon the gravitational force and particle density			
Answer Options	A)	B)	C)	D)
	Filtration	Size reduction	Reverse osmosis	Sedimentation
Right Answer	D			

Question No. 63	A domestic food freezer maintains a temperature of -8 °C. The ambient air temperature is 30 °C. If heat leaks into the freezer at the continuous rate of 1.70 kJ/s, the least power necessary to pump this heat out continuously is _____ kW.			
Answer Options	A)	B)	C)	D)
	0.156	0.189	0.244	0.287
Right Answer	C			

Question No. 64	The dimensionless numbers involved in Chilton and Colburn J-factor analogy are _____.			
Answer Options	A)	B)	C)	D)
	f, NRe and NPr	f, NPr and NSh	f, NRe and NSc	f, NPr and NSc
Right Answer	D			

Question No. 65	Mango juice containing 7% solids by mass is fed to an evaporator and water is removed at a rate of 350 kg/h. If the concentrate is to contain 25% solids, the necessary feed rate is _____.			
Answer Options	A)	B)	C)	D)
	285 kg/h	385 kg/h	486 kg/h	586 kg/h
Right Answer	C			

Question No. 66	A sample of humid air has an absolute humidity of 0.02 kg water / kg dry air. If atmospheric pressure is 101.325 kPa, the partial pressure of water vapour is _____ kPa.			
Answer Options	A)	B)	C)	D)
	2.157	3.157	4.127	5.127
Right Answer	B			

Question No. 67	Water level indicator in boiler is placed _____.			
Answer Options	A)	B)	C)	D)
	2 inches below the bottom of glass gage	2 inches above the bottom of glass gage	at the level of boiler water	none of these
Right Answer	B			

Question No. 68	_____ is a water tube boiler.			
Answer Options	A)	B)	C)	D)
	Lankashire	Cochran	Texmaco	None of these
Right Answer	C			

Question No. 69	For fully saturated water, dryness fraction will be _____.			
Answer Options	A)	B)	C)	D)
	0	1	between 0 and 1	none of these
Right Answer	A			

Question No. 70	The pressure in safety valve is increased by screwing the adjusting nut _____.			
Answer Options	A)	B)	C)	D)
	up	down	sidewise	none of these
Right Answer	B			



Question No. 71	In dual cycle the expansion ratio multiplied by cut-off ratio will be equal to _____.			
Answer Options	A)	B)	C)	D)
	compression ratio	volumetric ratio	specific heat ratio	none of these
Right Answer	A			

Question No. 72	Which of the following statements are true? i) The purpose of psychrometric calculations is to fix the supply air conditions. ii) The purpose of psychrometric calculations is to fix the load on the building. iii) In a 100% re-circulation system, the coil ADP (Apparatus Dew Point) is equal to room ADP. iv) In a 100% re-circulation system, the coil ADP (Apparatus Dew Point) is less than room ADP.			
Answer Options	A)	B)	C)	D)
	i) and iv)	ii) and iii)	i) and iii)	ii) and iv)
Right Answer	C			

Question No. 73	Two infinite parallel plates are held at 900 °C and 700 °C respectively. If each plate approximates to a black body, the rate of heat exchange between them is _____ .			
Answer Options	A)	B)	C)	D)
	25.5 kW/m <sup>2</sup>	35.5 kW/m <sup>2</sup>	46.5 kW/m <sup>2</sup>	56.5 kW/m <sup>2</sup>
Right Answer	D			

Question No. 74	There are four heat exchangers named HE1 (Plate heat exchanger), HE2 (1,1 shell and tube heat exchanger), HE3 (1,2 shell and tube heat exchanger) and HE4 (Concentric double tube heat exchanger). Log mean temperature difference (LMTD) correction factor is not required for _____.			
Answer Options	A)	B)	C)	D)
	HE1 and HE2 only	HE1 and HE3 only	HE2 and HE4 only	HE3 and HE4 only
Right Answer	C			

Question No. 75	LMTD Correction factor for shell and tube heat exchanger depends on _____.			
Answer Options	A)	B)	C)	D)
	One dimensionless temperature ratio	Two dimensionless temperature ratios	Three dimensionless temperature ratios	heat exchanger effectiveness
Right Answer	B			

Question No. 76	Apple juice is to be sterilized in a plate heat exchanger. If $NRe$ for flow of juice is 2100, the friction factor is _____.			
Answer Options	A)	B)	C)	D)
	$3.81 \times 10^{-3}$	$7.62 \times 10^{-3}$	0.0114	0.0171
Right Answer	C			

Question No. 77	The liquid that exhibits a reversible decrease in shear stress with time at constant rate of shear is _____.			
Answer Options	A)	B)	C)	D)
	dilatants	pseudoplastic	thixotropic	rheopectic
Right Answer	C			

Question No. 78	In a concentric double tube heat exchanger milk is heated from $80^\circ\text{C}$ to $135^\circ\text{C}$ . Steam at $150^\circ\text{C}$ is used as heating media. LMTD (Log mean temperature difference) of the heat exchanger is _____.			
Answer Options	A)	B)	C)	D)
	$55^\circ\text{C}$	$42.5^\circ\text{C}$	$38.7^\circ\text{C}$	$35.7^\circ\text{C}$
Right Answer	D			

Question No. 79	If % of over-run is 300 %, then density of ice-cream mix is _____ times the density of ice-cream.			
Answer Options	A)	B)	C)	D)
	2	3	4	5
Right Answer	C			

Question No. 80	Density, thermal diffusivity and Prandtl number of air are $1.089 \text{ kg/m}^3$ , $2.6447 \times 10^{-5} \text{ m}^2/\text{s}$ and 0.7 respectively. The value of viscosity of air is _____ Pa-s.			
Answer Options	A)	B)	C)	D)
	$1.08 \times 10^{-5}$	$2.016 \times 10^{-5}$	$2.251 \times 10^{-5}$	$3.028 \times 10^{-5}$
Right Answer	B			

Question No. 81	In a cream separator, if the diameter of fat globules decreases by half and angular velocity becomes double, then the velocity of rising of cream _____.			
Answer Options	A)	B)	C)	D)
	becomes double	becomes same	reduces by 1/4th	increases by a factor of four
Right Answer	B			

Question No. 82	Storage coefficient depends on			
Answer Options	A)	B)	C)	D)
	elasticity of aquifer material	fluid property	permeability of aquifer	both (a) and (b).
Right Answer	D			

Question No. 83	For a 4-h UH in a catchment, excess rainfall is			
Answer Options	A)	B)	C)	D)
	1 mm	0.25 mm	1 cm	4 cm
Right Answer	C			

Question No. 84	The ratio of shearing stress to shearing strain is known as			
Answer Options	A)	B)	C)	D)
	modular ratio	Poisson's ratio	modulus of rigidity	modulus of elasticity
Right Answer	C			

Question No. 85	Unit of intrinsic permeability is			
Answer Options	A)	B)	C)	D)
	darcy/day	cm/day	cm <sup>2</sup> /hr	cm <sup>2</sup>
Right Answer	D			

Question No. 86	An ephemeral stream			
Answer Options	A)	B)	C)	D)
	is one which always carries some flow	does not have any base flow contribution	is one which carries only snow melt water	is one which has limited contribution of groundwater in wet season.
Right Answer	B			

Question No. 87	An isohyet is a line joining points having			
Answer Options	A)	B)	C)	D)
	equal evaporation line	equal barometric pressure	equal height above the datum point	equal rainfall depth in a given duration.
Right Answer	D			

Question No. 88	The 12-h unit hydrograph of a catchment is a triangular in shape with a base width of 144 hours and a peak discharge value of 23m <sup>3</sup> /s. This unit hydrograph refers to a catchment area			
Answer Options	A)	B)	C)	D)
	756 km <sup>2</sup>	596 km <sup>2</sup>	1000 km <sup>2</sup>	none of these
Right Answer	B			

Question No. 89	At drops of 3 to 4 m, which of the following structure is recommended?			
Answer Options	A)	B)	C)	D)
	drop spillway	pipe spillway	chute spillway	temporary check dams
Right Answer	A			

Question No. 90	Levelled and tabletop type bench terraces are suitable for deep permeable soils but where rainfall is			
Answer Options	A)	B)	C)	D)
	high	low	medium	excessive
Right Answer	C			

Question No. 91	The line of seepage in an earth embankment is also called the			
Answer Options	A)	B)	C)	D)
	phreatic line	lowermost flow line	runoff line	water pressure line.
Right Answer	A			

Question No. 92	At stage III of gully development			
Answer Options	A)	B)	C)	D)
	erosion is very heavy	vegetation starts growing	rill formation starts	the gully is completely established.
Right Answer	B			

Question No. 93	The letter 'P' in 'NPSH' stands for			
Answer Options	A)	B)	C)	D)
	Pressure	Permeability	Percentage	Positive
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. 94	The upper limit of area of a basin for the application of unit hydrograph is			
Answer Options	A)	B)	C)	D)
	1000 km <sup>2</sup>	1500 km <sup>2</sup>	5000 km <sup>2</sup>	10,000 km <sup>2</sup>
Right Answer	C			

Question No. 95	The undamped natural frequency of the wheeled tractor lies in the range of			
Answer Options	A)	B)	C)	D)
	1-2 Hz	3-10 Hz	11-15 Hz	16-25 Hz
Right Answer	B			

Question No. 96	An unconfined aquifer is also known as			
Answer Options	A)	B)	C)	D)
	a leaky aquifer	a water table aquifer	an artesian aquifer	a perched aquifer
Right Answer	D			

Question No. 97	Suction lift of a centrifugal pump is controlled by			
Answer Options	A)	B)	C)	D)
	Size of the pump	speed of the pump	number of vanes	atmospheric pressure
Right Answer	A			

Question No. 98	Multi-staging of centrifugal pumps in series			
Answer Options	A)	B)	C)	D)
	increases head keeping discharge unchanged	increases head and reduces discharge	increases discharge keeping head unchanged	increases discharge and reduces head
Right Answer	B			

Question No. 99	Base flow is separated from a			
Answer Options	A)	B)	C)	D)
	hyetograph	flood hydrograph	unit hydrograph	S-curve
Right Answer	B			

Question No. 100	Ten percent of the water diverted from the source is lost in conveyance. Ten percent is lost in application to the field. If 1000 units of water are diverted from the source, the amount of water retained in field is			
Answer Options	A)	B)	C)	D)
	800 unit	810 unit	910 unit	920 unit
Right Answer	B			