

The Graduate Aptitude Test in Engineering

GATE 2023 Question Paper

GATE is an entrance examination conducted in India that primarily tests the comprehensive understanding of undergraduate subjects in engineering and sciences for admission into technical postgraduate programs.

---

download pdf at:
aglasem.com

General Aptitude (GA)

Q.1 – Q.5 Carry ONE mark Each

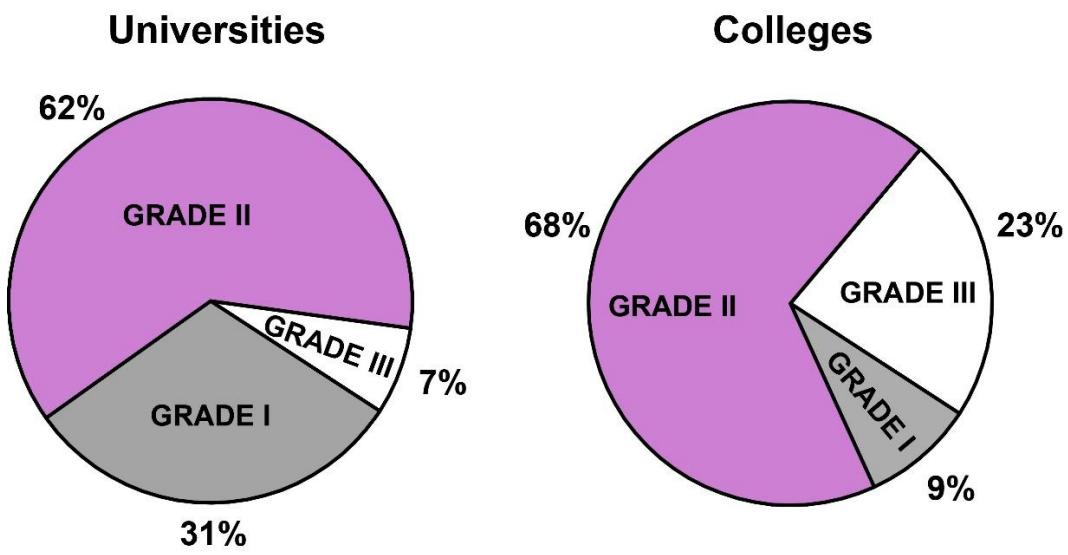
Q.1	He did not manage to fix the car himself, so he _____ in the garage.
(A)	got it fixed
(B)	getting it fixed
(C)	gets fixed
(D)	got fixed

Q.2	Planting : Seed : : Raising : _____ (By word meaning)
(A)	Child
(B)	Temperature
(C)	Height
(D)	Lift

Organizing Institute: IIT Kanpur

admission.aglasem.com

aglasem.com

Q.3	A certain country has 504 universities and 25951 colleges. These are categorised into Grades I, II, and III as shown in the given pie charts. What is the percentage, correct to one decimal place, of higher education institutions (colleges and universities) that fall into Grade III?
	
(A)	22.7
(B)	23.7
(C)	15.0
(D)	66.8

Organizing Institute: IIT Kanpur

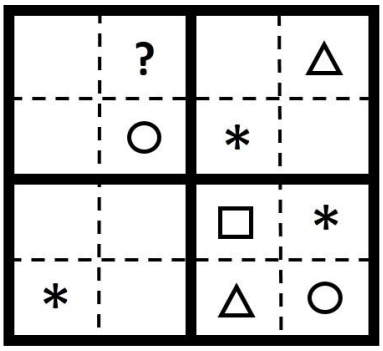
admission.aglasem.com

aglasem.com

Q.4	The minute-hand and second-hand of a clock cross each other _____ times between 09:15:00 AM and 09:45:00 AM on a day.
(A)	30
(B)	15
(C)	29
(D)	31

admission.aglasem.com

aglasem.com

Q.5	The symbols ○, ✱, △, and □ are to be filled, one in each box, as shown below. The rules for filling in the four symbols are as follows. 1) Every row and every column must contain each of the four symbols. 2) Every 2×2 square delineated by bold lines must contain each of the four symbols. Which symbol will occupy the box marked with '?' in the partially filled figure?
	
(A)	○
(B)	✱
(C)	△
(D)	□

Organizing Institute: IIT Kanpur

admission.aglasem.com

aglasem.com

Q.6 – Q.10 Carry TWO marks Each

Q.6	In a recently held parent-teacher meeting, the teachers had very few complaints about Ravi. After all, Ravi was a hardworking and kind student. Incidentally, almost all of Ravi's friends at school were hardworking and kind too. But the teachers drew attention to Ravi's complete lack of interest in sports. The teachers believed that, along with some of his friends who showed similar disinterest in sports, Ravi needed to engage in some sports for his overall development. Based only on the information provided above, which one of the following statements can be logically inferred with *certainty*?
(A)	All of Ravi's friends are hardworking and kind.
(B)	No one who is not a friend of Ravi is hardworking and kind.
(C)	None of Ravi's friends are interested in sports.
(D)	Some of Ravi's friends are hardworking and kind.

admission.aglasem.com

aglasem.com

Q.7	Consider the following inequalities $p^2 - 4q < 4$ $3p + 2q < 6$ where p and q are positive integers. The value of $(p + q)$ is _____.
(A)	2
(B)	1
(C)	3
(D)	4

admission.aglasem.com
aglasem.com

Q.8	Which one of the sentence sequences in the given options creates a coherent narrative? (i) I could not bring myself to knock. (ii) There was a murmur of unfamiliar voices coming from the big drawing room and the door was firmly shut. (iii) The passage was dark for a bit, but then it suddenly opened into a bright kitchen. (iv) I decided I would rather wander down the passage.
(A)	(iv), (i), (iii), (ii)
(B)	(iii), (i), (ii), (iv)
(C)	(ii), (i), (iv), (iii)
(D)	(i), (iii), (ii), (iv)

admission.aglasem.com

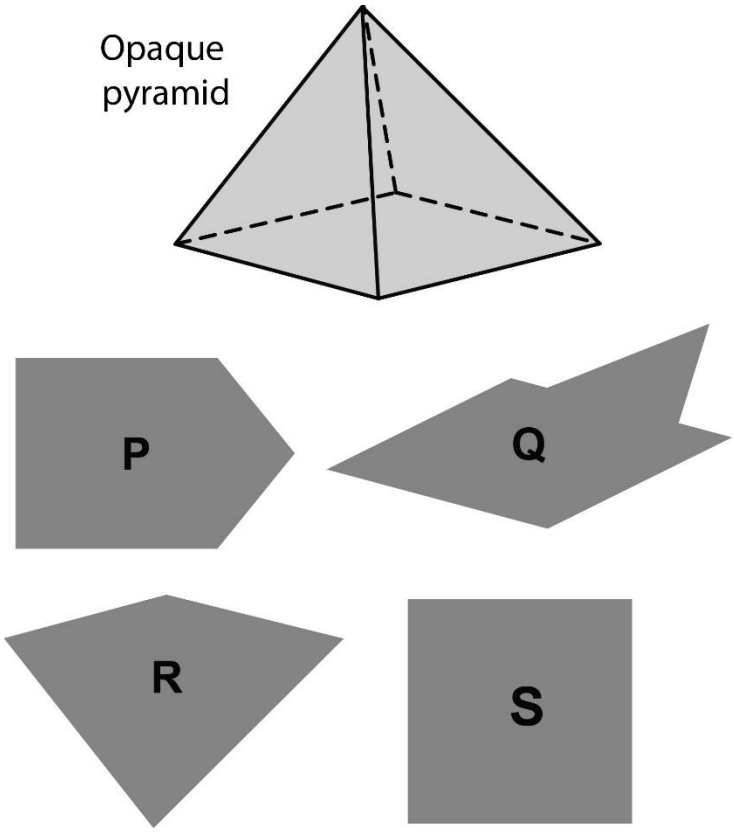
aglasem.com

Q.9	How many pairs of sets (S,T) are possible among the subsets of {1, 2, 3, 4, 5, 6} that satisfy the condition that S is a subset of T?
(A)	729
(B)	728
(C)	665
(D)	664

Organizing Institute: IIT Kanpur

admission.aglasem.com

aglasem.com

Q.10	An opaque pyramid (shown below), with a square base and isosceles faces, is suspended in the path of a parallel beam of light, such that its shadow is cast on a screen oriented perpendicular to the direction of the light beam. The pyramid can be reoriented in any direction within the light beam. Under these conditions, which one of the shadows **P**, **Q**, **R**, and **S** is NOT possible?
	
(A)	**P**
(B)	**Q**
(C)	**R**
(D)	**S**

admission.aglasem.com

aglasem.com

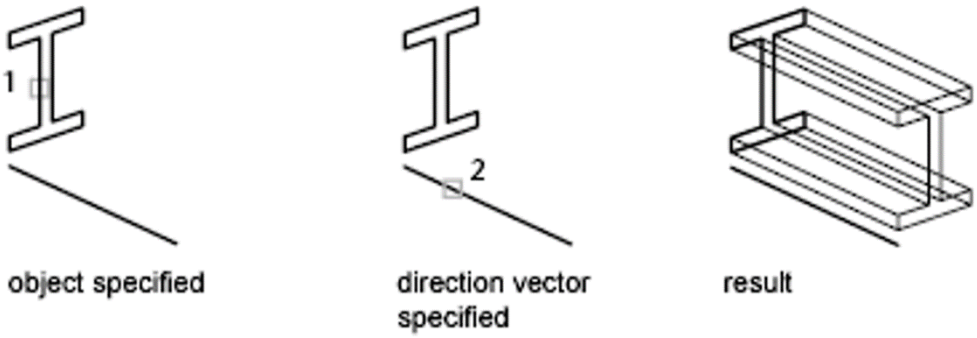
PART A: Common FOR ALL CANDIDATES

Q.11 – Q.28 Carry ONE mark Each

Q.11	The triad of secondary colours in the additive colour system is _____.
(A)	Cyan, Magenta, Yellow
(B)	Red, Green, Blue
(C)	Purple, Green, Orange
(D)	Magenta, Blue, Yellow
Q.12	The criterion that is specifically mentioned in Special Conditions of Contract (SCC) is_____.
(A)	Scope and performance of the work
(B)	Site mobilization advance
(C)	Labour regulation
(D)	Arbitration and law

admission.aglasem.com

aglasem.com

Q.13	The command employed in AutoCAD® to create a mesh from a line or curve that is swept along a straight path (as shown in the figure below) is _____.
	
(A)	TABSURF
(B)	REVSURF
(C)	RULESURF
(D)	EDGESURF
Q.14	As per the Burra Charter (2013) 'Cultural Significance' means _____ for past, present or future generations.
(A)	historic, aesthetic, scientific, social or spiritual value
(B)	archaeological, architectural, environmental, cultural value
(C)	natural, cultural, mixed, intangible heritage
(D)	heritage value, authenticity, integrity

admission.aglasem.com

aglasem.com

Q.15	As per URDPFI (2015), the density range (in persons per Hectare) suggested for overall planning approach for small towns in hill areas is _____.
(A)	20-30
(B)	45-75
(C)	100-125
(D)	125-150
Q.16	In ecology, the term ‘niche’ refers to _____.
(A)	the ways in which species interact with biotic and abiotic factors of the environment
(B)	only the abiotic factors such as temperature and rainfall
(C)	the gradient change of physiochemical characteristics between two ecosystems
(D)	the zone of junction or a transition area between two biomes
Q.17	Lowry’s model of Metropolis (1964) includes two _____ spatial interaction models.
(A)	Singly constrained
(B)	Doubly constrained
(C)	Unconstrained
(D)	Triply constrained

admission.aglasem.com
aglasem.com

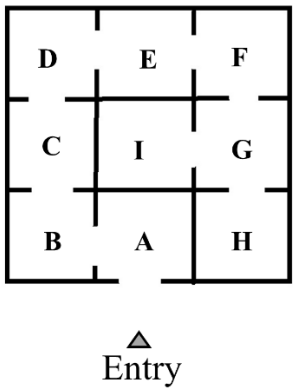
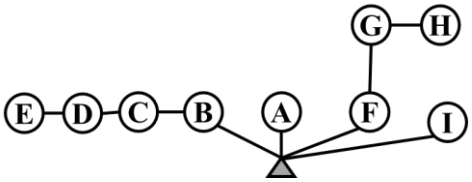
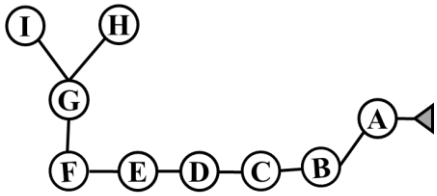
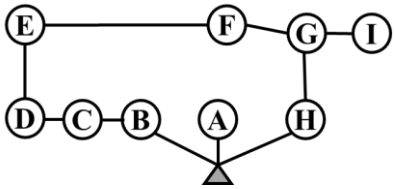
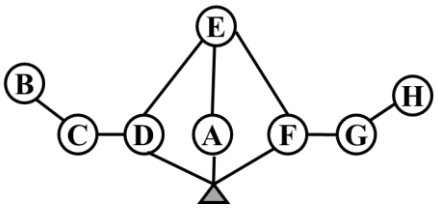
Q.18	Select the method(s) that involve(s) a pairwise comparison matrix for quantifying the weights of decision criteria.
(A)	Analytical hierarchy process
(B)	Exploratory factor analysis
(C)	Latent class analysis
(D)	Multiple linear regression
Q.19	Select the micro-organism which is **NOT** an enteric pathogen.
(A)	*Staphylococcus aureus*
(B)	*Vibrio cholerae*
(C)	*Escherichia coli*
(D)	*Salmonella typhi*
Q.20	Select the publication by Ministry of Statistics and Programme Implementation (MoSPI) related to Environmental Accounts as per UN-SEEA framework.
(A)	EnviStats India 2022
(B)	Energy Conservation Building Code 2017
(C)	Eco Niwas Samhita 2018
(D)	Climate Change 2022: Impacts, Adaptation and Vulnerability

admission.aglasem.com
aglasem.com

Q.21	Ebenezer Howard suggested the maximum population of 'Garden City' as_____ persons.
(A)	10,000
(B)	22,000
(C)	32,000
(D)	58,000
Q.22	In eighteenth century English gardens, _____was used to eliminate visual boundaries between the garden and the landscape.
(A)	Stroll garden
(B)	Sunken fence
(C)	Topiary
(D)	Qanat

admission.aglasem.com

aglasem.com

Q.23	The figure below shows the spatial arrangement of rooms in a building with access from the exterior, marked as 'entry'. Identify the appropriate diagram showing the access to rooms starting from the entry.
	
(A)	
(B)	
(C)	
(D)	

admission.aglasem.com

aglasem.com

Q.24	In high-rise buildings, the method adopted to prevent ingress of smoke in an enclosed fire staircase is _____.
(A)	Polarization
(B)	Pressurization
(C)	Perpetuation
(D)	Fumigation
Q.25	Select the Act which stipulates prohibited area of 100 m around centrally protected monuments in India.
(A)	The Antiquities and Art Treasures Act, 1972
(B)	The AMASR (Amendment and Validation) Act, 2010
(C)	Urban Land (Ceiling and Regulation) Act, 1976
(D)	Environment Protection Act, 1986
Q.26	Select the option(s) which include(s) a pair of 'Gestalt' principles.
(A)	Proximity and Similarity
(B)	Continuity and Closure
(C)	Grain and Texture
(D)	Scale and Proportion

admission.aglasem.com
aglasem.com

Q.27	Select the option(s) which is/are **NOT** considered as primary air pollutant(s).
(A)	Suspended particulate matter
(B)	Oxides of nitrogen
(C)	Volatile organic compounds
(D)	Peroxyacetyl Nitrate
Q.28	Select the Biosphere Reserve(s) in India which is/are listed in the ‘Man and the Biosphere’ program of UNESCO.
(A)	Sunderban
(B)	Sena Oura
(C)	Majang Forest
(D)	Gulf of Mannar

admission.aglasem.com

aglasem.com

Q.29 – Q.49 Carry TWO marks Each

Q.29 Match the buildings in **Group I** with their dominant spatial pattern in **Group II**.

Group I		**Group II**	
(P)	National Assembly Building, Capitol Complex, Dhaka	(1)	Centralized organization
(Q)	Secretariat Building, UNESCO Headquarters, Paris	(2)	Clustered organization
(R)	Fatehpur Sikri Palace Complex	(3)	Radial organization
(S)	Shodhan House, Ahmedabad	(4)	Linear organization
		(5)	Grid organization

(A) P-1, Q-3, R-2, S-5

(B) P-5, Q-3, R-1, S-4

(C) P-3, Q-4, R-1, S-5

(D) P-1, Q-4, R-2, S-3

admission.aglasem.com

aglasem.com

Q.30 Match the Parts of Residential Buildings in **Group-I** with their respective minimum width (in m) in **Group-II** as per the National Building Code 2016

Group-I		**Group-II**	
(P)	Habitable room	(1)	1.0
(Q)	Stair flight	(2)	3.0
(R)	Kitchen	(3)	1.2
(S)	Bathroom	(4)	1.8
		(5)	2.4

(A) P-2, Q-1, R-5, S-3

(B) P-5, Q-3, R-4, S-1

(C) P-2, Q-3, R-5, S-4

(D) P-5, Q-1, R-4, S-3

admission.aglasem.com

aglasem.com

Q.31 Match the following City Planning concepts in **Group-I** with their proponents in **Group-II**

Group-I		**Group-II**	
P	Radiant City	1	Clarence Perry
Q	Conservative surgery	2	Soria-Y-Mata
R	Broadacre City	3	Le Corbusier
S	Linear City	4	Patrick Geddes
		5	Frank Lloyd Wright

(A) P-2, Q-4, R-5, S-3

(B) P-3, Q-4, R-5, S-2

(C) P-3, Q-2, R-1, S-4

(D) P-1, Q-5, R-3, S-2

admission.aglasem.com

aglasem.com

Q.32	With reference to planning and design of housing, identify the correct statements.
	(P) Gross population density is higher than net population density (Q) Gross population density is lower than net population density (R) Net population density is directly proportional to area of the plot (S) Net population density is inversely proportional to area of the plot
(A)	Both Q and S are correct
(B)	Both Q and R are correct
(C)	Both P and R are correct
(D)	Both P and S are correct

admission.aglasem.com

aglasem.com

Q.33 Match the Mission in **Group I** with their objectives in **Group II.**

Group I		**Group II**	
(P)	National Mission on Enhanced Energy Efficiency	(1)	Gain better understanding of climate science, impacts, challenges by setting up climate research fund
(Q)	National Mission on Sustainable Habitat	(2)	Weather insurance mechanism and afforestation of 6 million hectares of degraded forest land
(R)	National Water Mission	(3)	Decrease energy consumption in large consuming industries
(S)	National Mission on Strategic Knowledge for Climate Change	(4)	20% improvement of water use efficiency through pricing
		(5)	Enforcement of automotive fuel economy standards using pricing measures

(A) P-3, Q-5, R-4, S-1

(B) P-2, Q-5, R-4, S-3

(C) P-3, Q-4, R-5, S-1

(D) P-2, Q-5, R-3, S-4

admission.aglasem.com

aglasem.com

Q.34	Select the option(s) that is/are listed among the Sustainable Development Goals as articulated by the United Nations.
(A)	Globalization and Free Trade
(B)	Sustainable Cities and Communities
(C)	Protection of Indigenous Culture and Architecture
(D)	Good Health and Well-being
Q.35	Select the statement(s) that are **TRUE** regarding 'Building Security Services'.
(A)	'Radio Frequency Identification Device' is used for electronic access control system.
(B)	'Magnetic Loop Detector' is used for fire detection system.
(C)	'Infrared Sensor' is used in public broadcasting system.
(D)	'Iris Scan' is a type of biometric access control system.

admission.aglasem.com

aglasem.com

Q.36	Select the statement(s) that are **TRUE** regarding 'Quality and Cost-Based Selection (QCBS)' system for tendering.
(A)	Financial bid is opened before technical bid.
(B)	Earnest Money Deposit (EMD) is submitted before the opening of technical bid.
(C)	Technically qualified bidder with lowest financial bid is always awarded the job.
(D)	A composite scoring system considering both the financial and technical bids is adopted for awarding the job.
Q.37	Design of septic tank requires consideration of space for the following item(s).
(A)	Settling of incoming sewage
(B)	Storage of digested sludge
(C)	Installation of liner to allow seepage of effluent
(D)	Digestion of the settled sludge
Q.38	Select the place(s) which have adopted the "star pattern" of the French Garden in the design of its /their urban form(s).
(A)	Versailles
(B)	Washington D.C.
(C)	Islamabad
(D)	Jaipur

admission.aglasem.com
aglasem.com

Q.39	Select the parameter(s) required for determining peak rates of runoff using the Rational formula.
(A)	Intensity of rainfall
(B)	Coefficient of runoff
(C)	Velocity of flow
(D)	Hydraulic mean depth of flow
Q.40	As per Solid Waste Management Rules 2016 (Ministry of Environment, Forest and Climate, Govt. of India) select the correct statement(s).
(A)	“dry waste” means waste other than bio-degradable waste and inert street sweepings.
(B)	“combustible waste” means biodegradable, recyclable, reusable, hazardous solid waste having maximum calorific value of 800 kcal/kg.
(C)	“domestic hazardous waste” includes expired medicine, CFL bulbs, discarded paint drums.
(D)	“biodegradable waste” means any inorganic material that cannot be degraded by micro-organisms into simpler stable compounds.

admission.aglasem.com

aglasem.com

Q.41	Select the correct statement(s) from the following.
(A)	Introduction of automobiles led to urban sprawl.
(B)	Compact cities show relatively higher carbon emissions.
(C)	Land use and transportation planning is inter-dependent on each other.
(D)	Addition of a transport mode in an urban area does not change accessibility.
Q.42	Choose the correct statement(s) with regard to composting.
(A)	It produces natural soil amendment and enhances the effectiveness of fertilizer.
(B)	Warm temperature of tropical regions is least suitable for composting.
(C)	Composting is an aerobic thermophilic process.
(D)	Windrow composting and in-vessel composting are two of the common composting methods.
Q.43	Select the item(s) that are **NOT** stipulated as obligatory function(s) of the urban local bodies as per the 12th Schedule of the Indian Constitution.
(A)	Urban poverty alleviation
(B)	Promotion of cultural, educational and aesthetic aspects
(C)	Special measures for disaster mitigation
(D)	Prevention of cruelty to animals

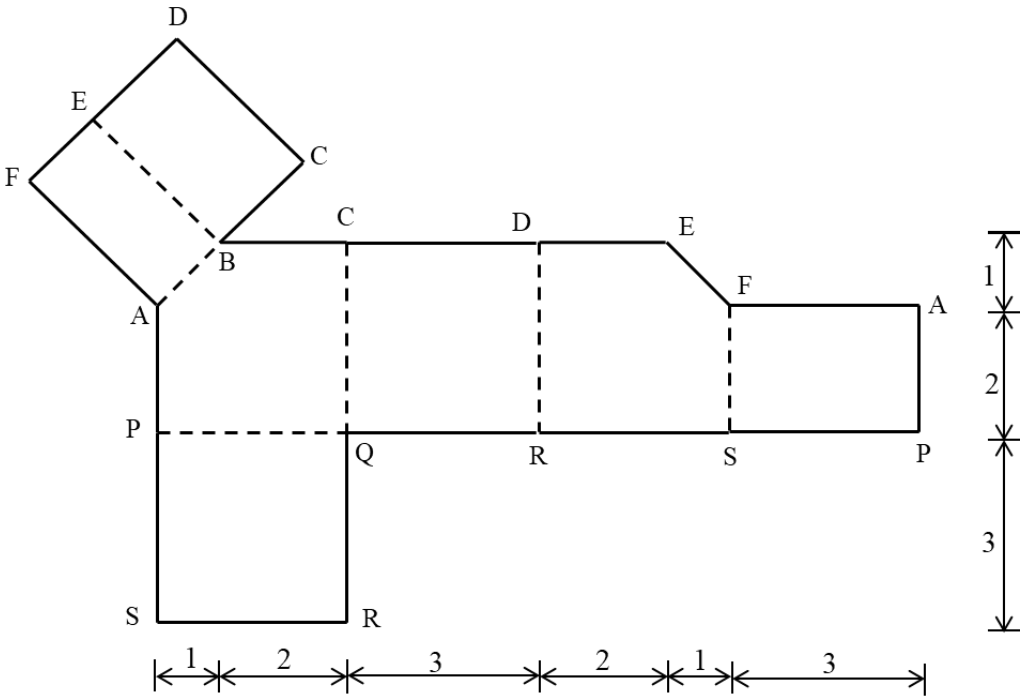
admission.aglasem.com

aglasem.com

Q.44	The annual precipitation recorded in a town is 400 mm. Rainwater is being collected from the flat roof of a building, and then treated to potable standards, and stored. Water loss due to evaporation, transmission and treatment is 40 percent of the total harvested volume. The roof area is 500 sq.m. There are 3 occupants, with average daily water demand as 200 lpcd. The stored rainwater will be adequate for the household's daily use for _____ days [*in integer*].
Q.45	A primary school is having 8 class rooms, each having internal dimensions of 15m × 10m × 4m (height). Only the internal walls of all the class rooms are proposed to be painted. Assume a deduction of 10% internal wall area due to doors, windows etc. The specification suggests two coats of paint application. The spreading rates of the selected paint during base coat and finish coat are 4.5 l/sq.m and 2.5 l/sq.m respectively. The amount of paint (in liters) required for the job will be _____ [*in integer*].
Q.46	A construction project consists of four activities. The quantity of work, manpower requirement, and the productivity of the activities are listed in the table below. The interrelationship between the activities are also mentioned in the table. The construction project will start on January 29. Assume no holidays for the entire duration of the project. The project will finish on February _____ [*mention date in number*].

Activity	Quantity (cu.m)	Manpower (persons)	Productivity (cu.m/ man-day)	Immediate Successor Activity
A	96	8	3	C
B	252	7	4	C & D
C	275	5	5	Nil
D	126	6	3	Nil

admission.aglasem.com
aglasem.com

Q.47	For a privately developed group housing project, the ratio of total number of dwelling units of HIG: MIG: LIG is 3:2:1. The proposed average size of HIG, MIG and LIG units in sq.m are 100, 60 and 30 respectively. The ratio of the total built up area between (MIG + LIG) to HIG will be 1: _____ [*in integer*].
Q.48	The surface development of a three dimensional object is shown in the figure below. The dotted lines indicate the folds. The dimensions given in the figure are in centimeter. The volume of the three-dimensional object (in cu.cm) is_____ [*rounded off to one decimal place*].
	

Organizing Institute: IIT Kanpur

admission.aglasem.com

aglasem.com

Q.49	A residential housing project is designed in a plot measuring 1 hectare. The car parking area is equally distributed between the ground floor and the basement. Considering the data given below, the number of cars accommodated in the basement will be_____ [*in integer*]. **Data:** FAR consumed = 2.0 Car parking area is exempted from built up area for FAR calculations. One car parking to be given for each 100 sq.m of built up area. Area required for accommodating each car in ground floor = 15 sq.m Area required for accommodating each car in basement = 25 sq.m

admission.aglasem.com

aglasem.com

PART B1: FOR Architecture CANDIDATES ONLY

Q.50 – Q.56 Carry ONE mark Each

Q.50	As per the CPWD Specifications (2019), the material used for cleaning marble flooring after polishing is_____.
(A)	Oxalic Acid
(B)	Caustic Soda
(C)	Bleaching Power
(D)	White Cement
Q.51	The proportion of the sides of a traditional Japanese tatami mat is _____.
(A)	1 : 1.414
(B)	1 : 1.5
(C)	1 : 2
(D)	1 : 1.618

admission.aglasem.com

aglasem.com

Q.52	As per IS:4954 – 1964, the acceptable noise level (in dB) for urban residential areas is_____.
(A)	35-45
(B)	65-75
(C)	20-30
(D)	15-25
Q.53	Identify the Indian tribe that is associated with the vernacular dwelling illustrated in the image below.
	
(A)	*Bhotia*, Uttarakhand
(B)	*Toda*, Tamil Nadu
(C)	*Naga*, Nagaland
(D)	*Kutia Kondh*, Odisha

admission.aglasem.com

aglasem.com

Q.54	Thermal diffusivity of a wall is influenced by the choice of building material. Identify the statement(s) that is/are correct.
(A)	Thermal diffusivity is inversely proportional to thermal conductivity.
(B)	Increase in specific heat capacity increases the thermal diffusivity.
(C)	Materials with low thermal diffusivity have a high amplitude dampening effect.
(D)	Thermal diffusivity is inversely proportional to the density of material.
Q.55	Select the statement(s) which are **NOT** correct with respect to burnt clay bricks.
(A)	Lime (<10% of clay) in carbonated form lowers the fusion point of bricks.
(B)	Magnesia (>1% of clay) imparts red colour to the bricks.
(C)	Iron Pyrites tend to oxidize and decompose the brick during burning.
(D)	Alkalis (alkaline salts) when present in excess (>10% of clay) decrease the probability of efflorescence.
Q.56	Select the example(s) of Art Nouveau architecture.
(A)	Basilica of the Sagrada Familia, Barcelona
(B)	Chrysler Building, New York
(C)	Eiffel Tower, Paris
(D)	Mackintosh Building of the Glasgow School of Art, Glasgow

admission.aglasem.com
aglasem.com

Q.57 – Q.65 Carry TWO marks Each

Q.57 Match the buildings in **Group I** with their architectural feature in **Group II**.

Group I		**Group II**	
(P)	Erechtheion, Athens	(1)	Hypostyle Hall
(Q)	Temple of Karnak, near Luxor	(2)	Caryatid
(R)	Hagia Sophia, Istanbul	(3)	Pendentive
(S)	Pantheon, Rome	(4)	Flying buttress
		(5)	Oculus

(A) P-2, Q-1, R-3, S-5

(B) P-1, Q-2, R-4, S-3

(C) P-3, Q-1, R-5, S-2

(D) P-2, Q-3, R-4, S-5

admission.aglasem.com

aglasem.com

Q.58 Match the architects in **Group I** with their key architectural ideas in **Group II**.

Group I		**Group II**	
(P)	Ludwig Mies van der Rohe	(1)	Bowellism
(Q)	Kisho Kurokawa	(2)	Skin-and-bones architecture
(R)	Richard Rogers	(3)	Served and servant spaces
(S)	Louis I. Kahn	(4)	Dymaxion
		(5)	Metabolism

(A) P-2, Q-5, R-1, S-3

(B) P-4, Q-1, R-3, S-5

(C) P-2, Q-1, R-5, S-3

(D) P-4, Q-5, R-1, S-2

admission.aglasem.com

aglasem.com

Q.59 Match the pump types in **Group-I** with their key components in **Group-II**.

Group-I		**Group-II**	
(P)	Centrifugal pumps	(1)	Piston rod
(Q)	Reciprocating pumps	(2)	Impeller
(R)	Rotary pumps	(3)	Gear
(S)	Impulse pumps	(4)	Eductor pipe
		(5)	Hydraulic ram

(A) P-2, Q-1, R-3, S-5

(B) P-1, Q-2, R-5, S-3

(C) P-2, Q-5, R-4, S-1

(D) P-1, Q-2, R-3, S-4

admission.aglasem.com

aglasem.com

Q.60 Match the geometric forms in **Group I** with the buildings in **Group II**.

Group I		**Group II**	
(P)	Hyperboloid	(1)	Petronas Twin Towers, Kuala Lumpur, by Cesar Pelli
(Q)	Geodesic Dome	(2)	Palazzo del Lavoro, Turin, by Pier Luigi Nervi
(R)	Diagrid structure	(3)	The Biomes at the Eden Project in Cornwall, UK, by Nicholas Grimshaw
(S)	Umbrella Structures	(4)	Hearst Tower, New York, by Norman Foster
		(5)	Cathedral of Brasilia, by Oscar Niemeyer

(A) P-5, Q-3, R-4, S-2

(B) P-3, Q-5, R-2, S-4

(C) P-5, Q-3, R-1, S-4

(D) P-3, Q-1, R-4, S-2

admission.aglasem.com

aglasem.com

Q.61 Match the instruments in **Group I** with the physical quantities they measure in **Group II**.

Group I		**Group II**	
(P)	Goniophotometer	(1)	Electromagnetic Energy at Specific Wavelengths of Light
(Q)	Pyrheliometer	(2)	Luminous Flux of Directed Light Sources
(R)	Spectrophotometer	(3)	Direct Solar Irradiance
(S)	Forward-Looking Infrared Camera	(4)	Temperature
		(5)	Global Solar Radiation

(A) P-5, Q-2, R-1, S-3

(B) P-2, Q-3, R-1, S-4

(C) P-2, Q-3, R-1, S-5

(D) P-5, Q-1, R-2, S-4

admission.aglasem.com

aglasem.com

Q.62 Match the terms in **Group I** with their associated items in **Group II**.

Group I		Group II	
(P)	Scotopic vision	(1)	ability to see under low light condition using rod cells
(Q)	Presbyopia	(2)	vision in bright light using cone cells
(R)	Emmetropia	(3)	inability to focus on distant objects
(S)	Photopic vision	(4)	ideal distance vision
		(5)	inability to focus on nearby objects

(A) P-1, Q-4, R-5, S-2

(B) P-4, Q-3, R-1, S-2

(C) P-1, Q-5, R-4, S-2

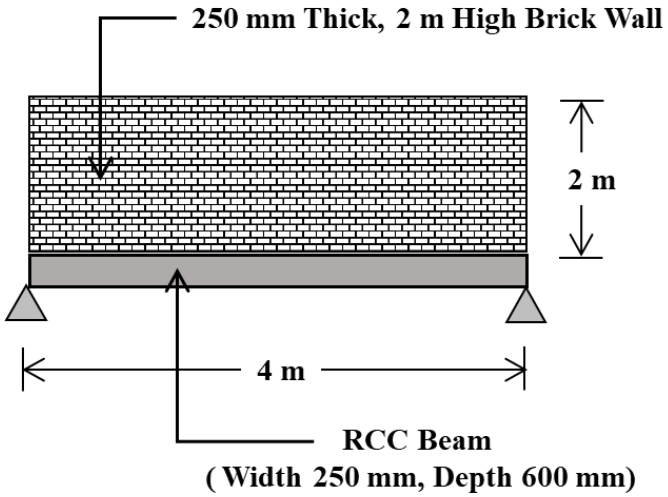
(D) P-4, Q-2, R-1, S-5

admission.aglasem.com

aglasem.com

Q.63	Choose the correct statement(s) from the following:
(A)	Waste water from sinks, baths, etc. enters through the top inlet of a gully trap, while foul water from sweeping of rooms or courtyards enters from side inlet.
(B)	Anti-siphon traps have a reduced water-way at the inlet side, while the outlet being larger prevents the pipe from filling full and causing siphonic action.
(C)	Intercepting traps prevent foul gases from street sewer to enter into the house.
(D)	P, Q and S traps are classified according to their shape.
Q.64	A steel wire of 5.65 mm diameter and 50 m length is used for a hoisting crane. The wire is used to vertically lift a weight of 200 kg attached to its lowest end. Assume the Young's Modulus of Elasticity of Steel as 2×10^5 N/mm^2 and gravitational acceleration as 10 m/sec^2. The elongation of the steel wire (in mm) will be ____ [*rounded off to two decimal places*].

admission.aglasem.com
aglasem.com

Q.65	A simply supported RCC beam of span 4 m is supporting a brick wall over its entire span. The brick wall is 250 mm thick and 2 m high. The RCC beam has a depth of 600 mm and width of 250 mm. The density of brick masonry and RCC can be assumed as 18 KN/m^3 and 25 KN/m^3 respectively. Considering the load of the wall and self-weight of the RCC beam, the maximum bending moment in the beam (in KN-m) will be _____ [*rounded off to two decimal places*].
	

admission.aglasem.com

aglasem.com

PART B2: FOR Planning CANDIDATES ONLY

Q.66 – Q.72 Carry ONE mark Each

Q.66	Select the most appropriate scale to measure Attitude, Opinion and Perception.
(A)	Likert scale
(B)	Ratio scale
(C)	Richter scale
(D)	Armstrong scale
Q.67	Jal Shakti Abhiyan initiated by the Ministry of Jal Shakti does **NOT** include ____.
(A)	Water conservation and rain water harvesting
(B)	Renovation of traditional water bodies
(C)	Hydroelectric power generation
(D)	Intensive afforestation

admission.aglasem.com

aglasem.com

Q.68	Select the correct sequence of activities for transit-operation planning process.
(A)	Network Route Design → Timetable Development → Vehicle Scheduling → Crew Scheduling
(B)	Timetable Development → Crew Scheduling → Vehicle Scheduling → Network route design
(C)	Vehicle Scheduling → Crew Scheduling → Network Route Design → Timetable Development
(D)	Crew Scheduling → Vehicle Scheduling → Timetable Development → Network Route Design
Q.69	Select the correct sequence of steps for designing the operation of a signalized intersection.
(A)	Signal Phasing → Green Allocation → Cycle Length Selection
(B)	Green Allocation → Cycle Length Selection → Signal Phasing
(C)	Cycle Length Selection → Signal Phasing → Green Allocation
(D)	Signal Phasing → Cycle Length Selection → Green Allocation

Organizing Institute: IIT Kanpur

admission.aglasem.com

aglasem.com

Q.70	Considering the following statements (P, Q, and R), select the correct option. (P) Prediction of travel demand depends on target year modal alternatives. (Q) Prediction of travel demand depends on target year population. (R) Prediction of travel demand depends on target year land use.
(A)	Only P is correct
(B)	Only P & R are correct
(C)	Only Q & R are correct
(D)	P, Q, and R are all correct
Q.71	During Covid-19 pandemic, the ARHC scheme was launched in 2021 by the Government of India to address the problems of poor urban migrants. The term ARHC refers to_____.
(A)	Accessible Rural Health Centre
(B)	Affordable Rental Housing Complexes
(C)	Affordable Rentals for Homeless Citizens
(D)	Accessible Rural Housing Complexes

admission.aglasem.com

aglasem.com

Q.72	Choose the non-probability sampling method where the sample is taken from a group of people easy to contact or reach.
(A)	Simple random sampling
(B)	Snowball sampling
(C)	Convenience sampling
(D)	Stratified random sampling

admission.aglasem.com

aglasem.com

Q.73 – Q.81 Carry TWO marks Each

Q.73 Match the items in **Group-I** with the most appropriate stages of travel demand modelling in **Group-II**.

Group-I		**Group-II**	
(P)	US-EPA's MOVES	(1)	Trip Assignment
(Q)	Fratar Model	(2)	Trip Production
(R)	Growth Factor Model	(3)	Trip Distribution
(S)	User Equilibrium	(4)	Mobile source emission estimation
		(5)	Destination Choice

(A) P-4, Q-3, R-2, S-1

(B) P-3, Q-4, R-5, S-1

(C) P-4, Q-3, R-1, S-5

(D) P-3, Q-4, R-2, S-5

admission.aglasem.com

aglasem.com

Q.74 Match the Acts in **Group-I** with the corresponding organizations empowered by the Act in **Group-II**.

Group-I		**Group-II**	
(P)	RERA 2016	(1)	Chief Information Commission
(Q)	RTI Act 2005	(2)	Land Registration Board
(R)	Town and Country Planning Act	(3)	Real Estate Regulatory Authority
(S)	Municipal Act	(4)	Development Authority
		(5)	Board of Councillors

(A) P-4, Q-1, R-2, S-3

(B) P-2, Q-3, R-4, S-5

(C) P-3, Q-1, R-4, S-5

(D) P-3, Q-1, R-5, S-2

admission.aglasem.com

aglasem.com

Q.75	As per IRC 11:1962, separate bicycle tracks may be provided when the peak hour _____. Which of the following statement(s) can be used to correctly fill in the blank? (P) Bicycle traffic is 400 bicycles/hour or more and the volume of motorized vehicles is 100-200 vehicles/hour (Q) Bicycle traffic is 100 bicycles/hour or more and the volume of motorized vehicles exceed 200 vehicles/hour (R) Bicycle traffic is 100-200 bicycles/hour and the volume of motorized vehicle is 100-200 vehicles/hour
(A)	Only P & Q
(B)	Only P & R
(C)	Only R
(D)	P, Q & R

admission.aglasem.com

aglasem.com

Q.76 As per URDPFI Guidelines (2015), match the following settlement types in **Group-I** to their population range in **Group-II**.

Group-I		**Group-II**	
(P)	Large city	(1)	50,000 to 1 lakh
(Q)	Metropolitan city II	(2)	50 lakh to 1 crore
(R)	Small town II	(3)	20,000 to 50,000
(S)	Medium Town I	(4)	More than 1 crore
		(5)	5 lakh to 10 lakh

(A) P-5, Q-2, R-3, S-1

(B) P-2, Q-4, R-1, S-5

(C) P-5, Q-4, R-1, S-2

(D) P-4, Q-2, R-3, S-5

admission.aglasem.com

aglasem.com

Q.77 Match the application areas in **Group I** with the Satellites/Satellite sensors in **Group II**.

Group I		Group II	
(P)	Cyclone prediction	(1)	IRNSS 11
(Q)	Communication	(2)	HySIS
(R)	High resolution mapping	(3)	GSAT 30
(S)	Navigation	(4)	CARTOSAT 3
		(5)	SCATSAT 1

(A) P-5, Q-3, R-4, S-1

(B) P-3, Q-5, R-1, S-4

(C) P-5, Q-2, R-4, S-3

(D) P-2, Q-3, R-5, S-1

Q.78 Select the institution(s) that are mandated as per the 73rd Constitutional Amendment Act, 1992 of India.

(A) Panchayat

(B) Municipal council

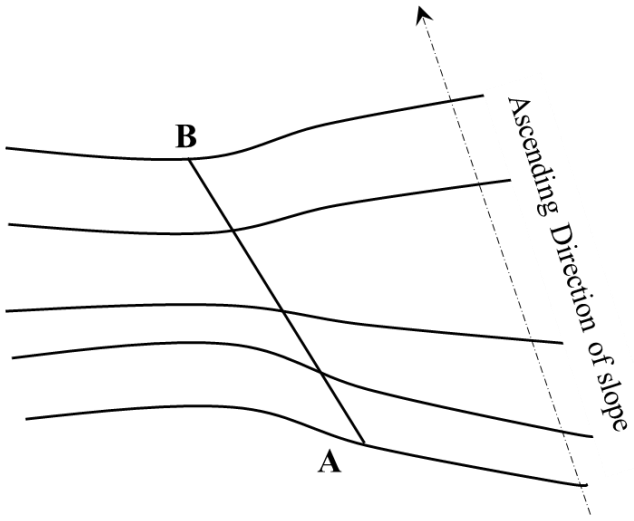
(C) Ward committee

(D) Gram Sabha

admission.aglasem.com

aglasem.com

Q.79	Select the method(s) that can be used for landuse classification based on satellite images.
(A)	Maximum Likelihood
(B)	Northwest Corner Method
(C)	K Means
(D)	ANN

Q.80	The figure below shows a contour diagram and two points (A & B) on the continuously ascending surface. The horizontal projection of AB is 200 m long, and the gradient of AB is 1 in 25. The constant contour interval (in m) is _____ [*in integer*].
	

admission.aglasem.com

aglasem.com

Q. 81 A given zone is characterized in the following tables in terms of household size, and vehicle ownership. Table I shows the trip rates of households, and Table II shows the household composition. For households of size two and above, having one or more vehicles, the total daily home-based trips made are _____ [*in integer*].

Table I: Trip rate of households
(unit: number of daily home-based trips per household)

	Persons / household		
Vehicles / household	One (1)	Two (2)	Three & above (3+)
Zero (0)	0.5	2	4
One (1)	0.6	2.5	5
Two & above (2+)	1	3	6

Table II: Household composition of zone
(unit: number of households)

	Persons / household		
Vehicles / household	One (1)	Two (2)	Three & above (3+)
Zero (0)	100	200	150
One (1)	200	300	200
Two & above (2+)	50	100	50

END OF QUESTION PAPER

admission.aglasem.com
Aglasem Exam Wiki Learn Program. Send your papers and get paid.
Contact: support@aglasem.com
aglasem.com