AglaSem Admission

GATE 2012 Online Examination
AR : ARCHITECTURE AND PLANNING

Duration: Three Hours *Maximum Marks*: 100

Read the following instructions carefully.

1. The computer allotted to you at the examination center runs a specialized software that permits only one answer to be selected for multiple choice questions using a mouse. Your answers shall be updated and saved on a server periodically and at the end of the examination.
2. To login, enter your Registration Number and password provided in the envelope. Go through the symbols used in the test and understand the meaning before you start the examination. You can view all questions by clicking on the View All Questions button in the screen after the start of the examination.
3. To answer a question, select the question using the selection panel on the screen and choose the correct answer by clicking on the radio button next to the answer. To change the answer, just click on another option. If you wish to leave a previously answered question unanswered, click on the button next to the selected option.
4. The examination will automatically stop at the end of 3 hours.
5. There are a total of 65 questions carrying 100 marks. Except questions Q.26 – Q.30, all the other questions are of multiple choice type with only **one** correct answer. Questions Q.26 - Q.30 require a numerical answer, and a number should be entered using the virtual keyboard on the monitor.
6. Questions Q.1 – Q.25 carry 1 mark each. Questions Q.26 – Q.55 carry 2 marks each. The 2 marks questions include two pairs of common data questions and two pairs of linked answer questions. The answer to the second question of the linked answer questions depends on the answer to the first question of the pair. If the first question in the linked pair is wrongly answered or is unattempted, then the answer to the second question in the pair will not be evaluated.
7. Questions Q.56 – Q.65 belong to General Aptitude (GA) section and carry a total of 15 marks. Questions Q.56 – Q.60 carry 1 mark each, and questions Q.61 – Q.65 carry 2 marks each.
8. Unattempted questions will result in zero mark and wrong answers will result in **NEGATIVE** marks. There is no negative marking for questions of numerical answer type, i.e., for Q.26 – Q.30. For all 1 mark questions, ⅓ mark will be deducted for each wrong answer. For all 2 marks questions, ⅔ mark will be deducted for each wrong answer. However, in the case of the linked answer question pair, there will be negative marks only for wrong answer to the first question and no negative marks for wrong answer to the second question.
9. Calculator is allowed. Charts, graph sheets or tables are **NOT** allowed in the examination hall. Do the rough work in the Scribble Pad provided.
10. You must sign this sheet and leave it with the invigilators at the end of the examination.

DECLARATION: I hereby declare that I have read and followed all the instructions given in this sheet.

Registration Number	**AR**							
Name								
Signature								

Verified that the above entries are correct. Invigilator's signature:	

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Q. 1 – Q. 25 carry one mark each.

Q.1 'Agora' was provided in Greek towns as a place of

(A) Worship (B) Drama
(C) Sports (D) Meeting

Q.2 The hue at the centre of the Munsell Colour Solid is

(A) Black (B) Grey (C) Sepia (D) White

Q.3 Which one of the following is **NOT** a traffic calming measure?

(A) Rumble strips (B) Roundabouts
(C) Pedestrian crossings (D) Roadside trees

Q.4 ECBC stands for

(A) Electrical Conduit in Building Construction
(B) Energy Conservation Building Code
(C) Electrical Credit in Building Code
(D) Energy Credit in Building Construction

Q.5 Age-Sex cohort for a state in India is obtained from

(A) Census of India (B) Election Commission of India
(C) Indian Statistical Institute (D) Survey of India

Q.6 'Cover block' is used as a building construction component in

(A) Brick wall (B) Curtain wall (C) Steel truss (D) RC beam

Q.7 'Villa Savoye', Paris is an example of

(A) Modernism (B) Post Modernism
(C) Deconstructivism (D) Eclecticism

Q.8 The **least** important measure for reducing cost of site development is

(A) Clustering the units
(B) Eliminating landscaping costs
(C) Reducing road lengths
(D) Narrowing road widths without reducing the right of way

Q.9 The role of a plasticizer in concrete is to improve

(A) Compressive strength (B) Permeability
(C) Workability (D) Tensile strength

Q.10 Which one of the following causes seismic irregularity in a building?

(A) Rectangular plan shape (B) Vertical setback
(C) Increase in height (D) Seismic joint

Q.11 The respective lengths of shadows generated for a free standing wall of given height L by sunlight incident at angles of 30°, 45°, 60°, 90° to the horizontal are

(A) L √3, L, L/√3, 0
(B) L, L √3, L/√3, 0
(C) L/√3, L, L √3, 0
(D) 0, L/√3, L, L √3

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Q.12 Which one of the following mode is **NOT** categorized as a public transit?

(A) Bus (B) Ferry (C) Taxi (D) Tram

Q.13 Aerial photography is a useful tool to obtain

(A) Land contour data
(B) Land cover data
(C) Land ownership data
(D) Landuse data

Q.14 Which one of the following is biodegradable?

(A) Detergent
(B) Leather
(C) Recycled plastic
(D) Aluminum foil

Q.15 The volume of surface runoff is **least** influenced by

(A) existing storm water drainage system
(B) amount of rainfall
(C) site slope
(D) size of watershed

Q.16 The best location for laying the main sewer line on a flat land is

(A) under the road
(B) under the sidewalk
(C) under the central verge
(D) under the open space along sidewalk

Q.17 Ponding is associated with

(A) RC column
(B) Steel column
(C) RC slab
(D) Steel truss

Q.18 Among the following, the urban open space known for its human scale is

(A) Piazza del Campo, Sienna
(B) Piazza del Popolo, Rome
(C) St. Peter's Square, Rome
(D) Place de la Concorde, Paris

Q.19 The most appropriate tree for designing a smell sensory pathway is

(A) Delonix Regia
(B) Casia Fistula
(C) Bougainvillea
(D) Jasminum Augustifolium

Q.20 Load from a slab to beam is primarily transferred through

(A) axial force (B) bending moment (C) shearing force (D) torsion

Q.21 Geographic Information System (GIS) combines maps with

(A) computer automation, statistics and topology
(B) computer graphics, databases and analytical tools
(C) computer graphics, informatics and quantitative tools
(D) computer informatics, databases and qualitative tools

Q.22 ' Glazing stop' is used

(A) as a bearing support for glass
(B) to seal the glass against water and air infiltration
(C) to provide lateral support to glass
(D) to provide a cushion between the glass and the glazing pocket

Q.23 Which one of the following is **NOT** a basic principle of designing people-friendly urban built environment?

(A) Diversity (B) Monotony (C) Adaptability (D) Legibility

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Q.24 SWOT analysis is used for examining a situation's inherent

(A) Strength, Wastefulness, Opportunity and Tactfulness
(B) Sanction, Weakness, Ownership and Threat
(C) Strength, Weakness, Opportunity and Threat
(D) Support, Wastefulness, Ownership and Transparency

Q.25 The deflection of a two way slab is primarily a function

(A) of the long span
(B) of the short span
(C) mostly of the long span, sometimes short span
(D) independent of the long or short span

Q. 26 to Q. 55 carry two marks each.

Q.26 A painting in a living room needs to be lighted at 250 lux. If the light is incident normally on the painting from a distance of 6 m, then the intensity of light source required (in candela) is

(A) 1500 (B) 3000 (C) 6000 (D) 9000

Q.27 Total land area for a plotted housing development project is 50.0 hectare, of which, area under community facilities, common open spaces and roads are 9%, 10 %, and 16 % respectively. Total number of saleable plots of 250 m^2 each will be

(A) 1100 (B) 1300 (C) 1500 (D) 1700

Q.28 A 6m long beam is fixed at its left end and is free at its right end. If a concentrated load of 25kN acts downwards at 4m from the left end, then the bending moment (in kNm) at the left end is

(A) 0.0 (B) 25.0 (C) 50.0 (D) 100.0

Q.29 A classroom of 12m x 25m x 4m requires 3 air changes per hour. At an air velocity of 2 m/s, the necessary duct cross section (in m^2) is

(A) 0.50 (B) 0.75 (C) 1.00 (D) 1.25

Q.30 If the original cost of a building is Rs. 25,00,000/- and its scrap value after 55 years is Rs.25,000/-, then its annual depreciation (in Rs.) using straight line method is

(A) 25,000 (B) 35,000 (C) 45,000 (D) 55,000

Q.31 For a pin jointed steel truss system, which of the following statements is **TRUE**?

(A) Bending moment resisting capacity at any section is zero as members carry axial forces only.
(B) Forces in members at any section align in appropriate combination of tension and compression to develop moment resisting capacity.
(C) Forces in members at any section align in such a manner as to develop zero moment resisting capacity.
(D) Shear resisting capacity at any section is zero as members carry axial forces only

Q.32 Match the books in **Group I** with their authors in **Group II**

	Group I		**Group II**
P.	Space, Time and Architecture	1.	Jane Jacob
Q.	Form, Space and Order	2.	Kevin Lynch
R.	The Death and Life of Great American Cities	3.	Ian McHarg
S.	The Image of the City	4.	Francis D K Ching
		5.	Gideon S

(A) P-5, Q-4, R-3, S-2 (B) P-5, Q-4, R-1, S-2
(C) P-4, Q-3, R-2, S-1 (D) P-4, Q-1, R-3, S-5

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Q.33 Match the schemes in **Group I** with their specific targets in **Group II**

	Group I		**Group II**
P.	JNNURM	1.	Urban Amenities for Rural Areas
Q.	IAY	2.	Infrastructure and Slum Upgradation
R.	PURA	3.	Rural Employment
S.	NREGA	4.	Land Acquisition
		5.	Housing for BPL families

(A) P-2, Q-5, R-1, S-3 (B) P-5, Q-2, R-1, S-3
(C) P-5, Q-2, R-3, S-4 (D) P-2, Q-5, R-3, S-4

Q.34 Match the concepts in **Group I** with the personalities in **Group II**

	Group I		**Group II**
P.	Linear City	1.	Le Corbusier
Q.	Radiant City	2.	Paolo Soleri
R.	Garden City	3.	Louis Kahn
S.	Arcology	4.	Soria Y Mata
		5.	Ebenezer Howard

(A) P-4, Q-3, R-5, S-1 (B) P-3, Q-1, R-4, S-2
(C) P-4, Q-1, R-5, S-2 (D) P-1, Q-5, R-2, S-4

Q.35 Match the plan drawings in **Group I** with their respective scales in **Group II**

	Group I		**Group II**
P.	Site Plan	1.	1: 4000
Q.	Perspective Plan	2.	1: 1000000
R.	Master Plan	3.	1: 500
S.	Zonal Plan	4.	1: 20000
		5.	1: 2000

(A) P-5, Q-1, R-4, S-2 (B) P-3, Q-2, R-5, S-4
(C) P-1, Q-4, R-5, S-3 (D) P-3, Q-2, R-4, S-1

Q.36 Match the terminologies of **Group I** with their corresponding meanings in **Group II**

	Group I		**Group II**
P.	Antarala	1.	Antechamber
Q.	Mandapa	2.	Palace hall
R.	Gopuram	3.	Womb chamber
S.	Prasada	4.	Gateway
		5.	Pillared sanctuary

(A) P-3, Q-2, R-4, S-5 (B) P-1, Q-5, R-4, S-2
(C) P-5, Q-3, R-1, S-2 (D) P-1, Q-2, R-3, S-5

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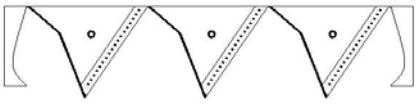
Q.37 Match the standard safety colour codes of **Group I** with their corresponding usage in **Group II**

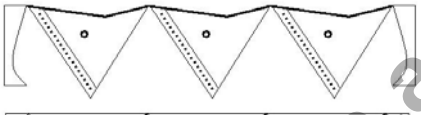
	Group I		**Group II**
P.	Blue	1.	Biodegradable waste
Q.	Green	2.	Fire protection equipment
R.	Red	3.	Recyclable waste
S.	Yellow	4.	Stumbling against hazards
		5.	Radiation standards

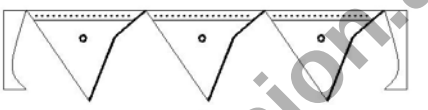
(A) P-3, Q-1, R-2, S-4
(B) P-3, Q-4, R-5, S-1
(C) P-1, Q-3, R-2, S-5
(D) P-1, Q-5, R-2, S-4

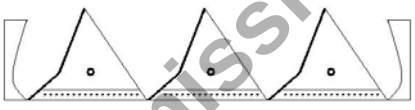
Q.38 Match the alignment of the rotating prisms in wall sections in **Group I** with their corresponding acoustic function in **Group II**

Group I

P.


Q.


R.


S.


Group II

1. Moderate diffusion
2. Moderate absorption
3. Specular diffusion
4. Specular reflection

(A) P – 4, Q – 1, R – 2, S - 3
(B) P – 4, Q – 3, R – 1, S - 2
(C) P – 2, Q – 3, R – 4, S - 1
(D) P – 2, Q – 1, R – 3, S - 4

Q.39 Match the projects in **Group I** with their architects in **Group II**

	Group I		**Group II**
P.	Milwaukee Art Museum, Wisconsin	1.	Bernard Tschumi
Q.	Kimbell Art Museum, Fortworth	2.	Richard Meier
R.	Getty Center, Los Angeles	3.	Daniel Libeskind
S.	Freedom Tower, New York	4.	Tadao Ando
		5.	Santiago Calatrava

(A) P-5, Q-4, R-2, S-3
(B) P-5, Q-1, R-2, S-4
(C) P-2, Q-1, R-4, S-3
(D) P-2, Q-5, R-4, S-3

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Q.40 Match the AutoCAD commands in **Group I** with their corresponding program in **Group II**

	Group I		**Group II**
P.	Cone	1.	Specify centre point of base or [3P/2P/Ttr/Elliptical]: Specify base radius or [Diameter] < > : Specify height or [2Point/Axis endpoint] < >:
Q.	Cylinder	2.	Specify centre point or [3P/2P/Ttr]: Specify radius or [Diameter] < > : Specify tube radius or [2Point/Diameter] < > :
R.	Sphere	3.	Specify centre point of base or [3P/2P/Ttr/Elliptical]: Specify base radius or [Diameter] < > : Specify height or [2Point/Axis endpoint/Top radius]:
S.	Torus	4.	Specify centre point of base or [3P/2P/Ttr/Elliptical]: Specify radius or [Diameter] < > : Specify tube radius or [2Point/Diameter] < > :
		5.	Specify centre point or [3P/2P/Ttr]: Specify radius or [Diameter] < > :

(A) P-1, Q-2, R-4, S-5
(B) P-3, Q-1, R-5, S-2
(C) P-1, Q-3, R-2, S-5
(D) P-3, Q-5, R-1, S-2

Q.41 Identify the hierarchy, from highest to lowest, of the number of potential conflict points at the unmanaged traffic intersections given below.



(A) P, Q, R, S
(B) R, Q, S, P
(C) R, S, Q, P
(D) P, R, S, Q

Q.42 Match the architects in **Group I** with the terms in **Group II**

Group I		**Group II**	
P.	Kisho Kurokawa	1.	Paper Tubes
Q.	Ken Yeang	2.	Deconstructivism
R.	Shigeru Ban	3.	Metabolism
S.	Mies van der Rohe	4.	Eco Skyscrapers
		5.	Minimalism

(A) P-2, Q-3, R-1, S-5
(B) P-3, Q-5, R-1, S-4
(C) P-2, Q-1, R-5, S-3
(D) P-3, Q-4, R-1, S-5

Q.43 Match the terms in **Group I** with their meanings in **Group II**

Group I		**Group II**	
P.	Mimbar	1.	Pillared assembly hall
Q.	Qibla	2.	Covered passage around central court
R.	Liwan	3.	Pulpit
S.	Baradari	4.	Parapet between wall openings
		5.	Direction of Mecca

(A) P-5, Q-1, R-4, S-2
(B) P-3, Q-5, R-1, S-2
(C) P-2, Q-3, R-4, S-5
(D) P-4, Q-5, R-2, S-1

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Q.44 Match the locations in **Group I** with the corresponding traps in **Group II**

	Group I		**Group II**
P.	Inspection chamber	1.	P-Trap
Q.	Wash basin	2.	Gully Trap
R.	Bathing space	3.	S-Trap
S.	European water closet	4.	Bottle Trap
		5.	Floor Trap

(A) P-2, Q-1, R-4, S-2
(B) P-4, Q-5, R-2, S-3
(C) P-2, Q-4, R-5, S-3
(D) P-2, Q-3, R-4, S-1

Q.45 Match the building construction components in **Group I** with their application areas in **Group II**

	Group I		**Group II**
P.	Bracket Plate	1.	Steel Column
Q.	Kick Plate	2.	Curtain Wall
R.	Pressure Plate	3.	Rolling Shutter
S.	Base Plate	4.	Stone Wall
		5.	Toilet Door

(A) P-2, Q-3, R-4, S-1
(B) P-2, Q-5, R-1, S-4
(C) P-2, Q-5, R-3, S-1
(D) P-3, Q-5, R-2, S-1

Q.46 Match the historical buildings in **Group I** with their styles in **Group II**

	Group I		**Group II**
P.	Pantheon, Rome	1.	Baroque
Q.	St. Paul's Cathedral, London	2.	Roman
R.	St. Peter's Basilica, Rome	3.	Romanesque
S.	Notre Dame, Paris	4.	Renaissance
		5.	Gothic

(A) P-3, Q-2, R-1, S-4
(B) P-2, Q-5, R-3, S-1
(C) P-2, Q-1, R-4, S-5
(D) P-3, Q-4, R-2, S-1

Q.47 Corrected Effective Temperature is an index which combines the effect of

P. Climatic zone
Q. Temperature
R. Wind velocity
S. Vegetation
T. Humidity
U. Solar radiation

(A) P, Q, R, S
(B) Q, R, T, U
(C) Q, S, T, U
(D) Q, R, U, P

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Common Data Questions

Common data for Questions 48 and 49:
An aircraft flying at an altitude of 5000 m above mean sea level takes aerial photographs of a flat terrain having an average elevation of 1000m above mean sea level. The scale of photographs is 1:20000.

Q.48 The focal length of the camera (in cm) is

(A) 15 (B) 20 (C) 25 (D) 30

Q.49 The area covered on ground (in hectare) by each photo format of 18 cm x 18 cm is

(A) 1266 (B) 1276 (C) 1286 (D) 1296

Common data for Questions 50 and 51:
2 ton of cement is used to make 10 ton of hardened concrete having a water cement ratio of 0.45. One cubic meter of this concrete has a mass of 2.5 ton.

Q.50 Quantity of water used (in kg) is

(A) 90 (B) 450 (C) 900 (D) 945

Q.51 The area of 200 mm thick slab (in sq. m) that can be cast using the entire 10 ton of concrete will be

(A) 10 (B) 15 (C) 20 (D) 25

Linked Answer Questions

Statement for Linked Answer Questions 52 and 53:
A group housing project spread over 20 hectares with FAR 1.5 has to accommodate different housing units in the following manner:`

Category	Percentage distribution	Built up area per unit in sq. m (including common areas)	Average household size
P	10	120	4.0
Q	20	80	4.6
R	40	60	5.5
S	30	45	6.0

Q.52 The respective number of housing units to be built for each category are

(A) P – 25, Q – 75, R – 200, S - 200
(B) P – 75, Q – 25, R – 200, S - 200
(C) P – 25, Q – 25, R – 75, S - 200
(D) P – 25, Q – 75, R – 200, S - 75

Q.53 The gross density of the above housing complex (in persons per hectare) is

(A) 125 - 130 (B) 130 - 135 (C) 135 - 140 (D) 140 - 145

Statement for Linked Answer Questions 54 and 55:
An unplastered brickwork has a resistivity of 0.83 m degC/W. For a 230 mm thick brick wall, the inside and outside surface resistances are 0.123 and 0.1 m^2 degC/W respectively.

Q.54 The R-value of the given wall section (in m^2 degC/W) is

(A) 0.41 (B) 0.5 (C) 0.67 (D) 1.05

Q.55 The brick wall has an overall dimension of 6m x 3m with a 1m x 2m window assembly (U-value = 2.5 W/m^2 degC) and a 1m x 2.1m door assembly (U-value = 1.25 W/m^2 degC). The overall U-value of the wall (U_O) (in W/m^2 degC) is

(A) 1.8 (B) 2.3 (C) 2.6 (D) 3.7

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General Aptitude (GA) Questions

Q. 56 – Q. 60 carry one mark each.

Q.56 Which one of the following options is the closest in meaning to the word given below?

Pacify

(A) Excite (B) Soothe (C) Deplete (D) Tire

Q.57 Choose the most appropriate pair of words from the options given below to complete the following sentence:

The high level of ___ of the questions in the test was ___ by an increase in the period of time allotted for answering them.

(A) difficulty, compensated
(B) exactitude, magnified
(C) aptitude, decreased
(D) attitude, mitigated

Q.58 Choose the grammatically **CORRECT** sentence:

(A) He laid in bed till 8 o'clock in the morning.
(B) He layed in bed till 8 o'clock in the morning.
(C) He lain in bed till 8 o'clock in the morning.
(D) He lay in bed till 8 o'clock in the morning.

Q.59 Which one of the parts (A, B, C, D) in the sentence contains an **ERROR**?

No sooner had the doctor seen the results of the blood test, than he suggested the patient to see the specialist.

(A) no sooner had
(B) results of the blood test
(C) suggested the patient
(D) see the specialist

Q.60 Ten teams participate in a tournament. Every team plays each of the other teams twice. The total number of matches to be played is

(A) 20 (B) 45 (C) 60 (D) 90

Q. 61 - Q. 65 carry two marks each.

Q.61 A value of x that satisfies the equation $\log x + \log (x - 7) = \log (x + 11) + \log 2$ is

(A) 1 (B) 2 (C) 7 (D) 11

Q.62 Let $f(x) = x - [x]$, where $x \geq 0$ and $[x]$ is the greatest integer not larger than x. Then $f(x)$ is a

(A) monotonically increasing function
(B) monotonically decreasing function
(C) linearly increasing function between two integers
(D) linearly decreasing function between two integers

Q.63 Ravi is taller than Arun but shorter than Iqbal. Sam is shorter than Ravi. Mohan is shorter than Arun. Balu is taller than Mohan and Sam. The tallest person can be

(A) Mohan (B) Ravi (C) Balu (D) Arun

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Q.64 A smuggler has 10 capsules in which five are filled with narcotic drugs and the rest contain the original medicine. All the 10 capsules are mixed in a single box, from which the customs officials picked two capsules at random and tested for the presence of narcotic drugs. The probability that the smuggler will be caught is

(A) 0.50 (B) 0.67 (C) 0.78 (D) 0.82

Q.65 **The documents expose the cynicism of the government officials – and yet as the media website reflects, not a single newspaper has reported on their existence.**

Which one of the following inferences may be drawn with the greatest accuracy from the above passage?

(A) Nobody other than the government officials knew about the existence of the documents.
(B) Newspapers did report about the documents but nobody cared.
(C) Media reports did not show the existence of the documents.
(D) The documents reveal the attitude of the government officials.

END OF THE QUESTION PAPER

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