GATE 2014: General Instructions during Examination

1. Total duration of the GATE examination is **180** minutes.
2. The clock will be set at the server. The countdown timer at the top right corner of screen will display the remaining time available for you to complete the examination. When the timer reaches zero, the examination will end by itself. You need not terminate the examination or submit your paper.
3. Any useful data required for your paper can be viewed by clicking on the **Useful Common Data** button that appears on the screen.
4. Use the scribble pad provided to you for any rough work. Submit the scribble pad at the end of the examination.
5. You are allowed to use a non-programmable type calculator, however, sharing of calculators is not allowed.
6. The Question Palette displayed on the right side of screen will show the status of each question using one of the following symbols:

1	You have not visited the question yet.
3	You have not answered the question.
5	You have answered the question.
7	You have NOT answered the question, but have marked the question for review.
9	You have answered the question, but marked it for review.

The **Marked for Review** status for a question simply indicates that you would like to look at that question again. *If a question is answered, but marked for review, then the answer will be considered for evaluation unless the status is modified by the candidate.*

Navigating to a Question :

7. To answer a question, do the following:
    a. Click on the question number in the Question Palette to go to that question directly.
    b. Select an answer for a multiple choice type question by clicking on the bubble placed before the 4 choices, namely A, B, C and D. Use the virtual numeric keypad to enter a number as answer for a numerical type question.
    c. Click on **Save & Next** to save your answer for the current question and then go to the next question.
    d. Click on **Mark for Review & Next** to save your answer for the current question and also mark it for review, and then go to the next question.

Caution: Note that your answer for the current question will not be saved, if you navigate to another question directly by clicking on a question number without saving the answer to the previous question.

You can view all the questions by clicking on the **Question Paper** button. This feature is provided, so that if you want you can just see the entire question paper at a glance.

Answering a Question :

8. Procedure for answering a multiple choice (MCQ) type question:
    a. Choose one answer from the 4 options (A,B,C,D) given below the question, click on the bubble placed before the chosen option.
    b. To deselect your chosen answer, click on the bubble of the chosen option again or click on the **Clear Response** button.
    c. To change your chosen answer, click on the bubble of another option.
    d. To save your answer, you MUST click on the **Save & Next** button.

9. Procedure for answering a numerical answer type question:
    a. To enter a number as your answer, use the virtual numerical keypad.
    b. A fraction (e.g. -0.3 or -.3) can be entered as an answer with or without '0' before the decimal point. As many as four decimal points, e.g. 12.5435 or 0.003 or -932.6711 or 12.82 can be entered.
    c. To clear your answer, click on the **Clear Response** button.
    d. To save your answer, you MUST click on the **Save & Next** button

10. To mark a question for review, click on the **Mark for Review & Next** button. *If an answer is selected (for MCQ) or entered (for numerical answer type) for a question that is* **Marked for Review***, that answer will be considered in the evaluation unless the status is modified by the candidate.*

11. To change your answer to a question that has already been answered, first select that question for answering and then follow the procedure for answering that type of question.

12. Note that ONLY Questions for which answers are *saved* or *marked for review after answering* will be considered for evaluation.

Choosing a Section :

13. Sections in this question paper are displayed on the top bar of the screen. Questions in a Section can be viewed by clicking on the name of that Section. The Section you are currently viewing will be highlighted.

14. A checkbox is displayed for every optional Section, if any, in the Question Paper. To select the optional Section for answering, click on the checkbox for that Section.

15. If the checkbox for an optional Section is not selected, the **Save & Next** button and the **Mark for Review & Next** button will NOT be enabled for that Section. You will

only be able to see questions in this Section, but you will not be able to answer questions in the Section.

16. After clicking the **Save & Next** button for the last question in a Section, you will automatically be taken to the first question of the next Section in sequence.

17. You can move the mouse cursor over the name of a Section to view the answering status for that Section.

Changing the Optional Section :

18. After answering the chosen optional Section, partially or completely, you can change the optional Section by selecting the checkbox for a new Section that you want to attempt. A warning message will appear along with a table showing the number of questions answered in each of the previously chosen optional Sections and a checkbox against each of these Sections. Click on a checkbox against a Section that you want to reset and then click on the **RESET** button. Note that RESETTING a Section will DELETE all the answers for questions in that Section. Hence, if you think that you may want to select this Section again later, you will have to note down your answers for questions in that Section. If you do not want to reset the Section and want to continue answering the previously chosen optional Section, then click on the **BACK** button.

19. If you deselect the checkbox for an optional Section in the top bar, the following warning message will appear: "Deselecting the checkbox will DELETE all the answers for questions in this Section. Do you want to deselect this Section?" If you want to deselect, click on the **RESET** button. If you do not want to deselect, click on the **BACK** button.

20. You can shuffle between different Sections or change the optional Sections any number of times.

GATE 2014 Examination

AR: Architecture & Planning

Duration: **180 minutes**   *Maximum Marks*: **100**

Read the following instructions carefully.

1. To login, enter your Registration Number and password provided to you. Kindly go through the various symbols used in the test and understand their meaning before you start the examination.
2. Once you login and after the start of the examination, you can view all the questions in the question paper, by clicking on the **View All Questions** button in the screen.
3. This question paper consists of **2 sections**, General Aptitude (GA) for **15 marks** and the subject specific GATE paper for **85 marks**. Both these sections are compulsory.
   The GA section consists of **10** questions. Question numbers 1 to 5 are of 1-mark each, while question numbers 6 to 10 are of 2-mark each.
   The subject specific GATE paper section consists of **55** questions, out of which question numbers 1 to 25 are of 1-mark each, while question numbers 26 to 55 are of 2-mark each.
4. Depending upon the GATE paper, there may be useful common data that may be required for answering the questions. If the paper has such useful data, the same can be viewed by clicking on the **Useful Common Data** button that appears at the top, right hand side of the screen.

5. The computer allotted to you at the examination center runs specialized software that permits only one answer to be selected for multiple-choice questions using a mouse and to enter a suitable number for the numerical answer type questions using the virtual keyboard and mouse.
6. Your answers shall be updated and saved on a server periodically and also at the end of the examination. The examination will **stop automatically** at the end of **180 minutes**.
7. In each paper a candidate can answer a total of 65 questions carrying 100 marks.
8. The question paper may consist of questions of **multiple choice type** (MCQ) and **numerical answer type**.
9. Multiple choice type questions will have four choices against A, B, C, D, out of which only **ONE** is the correct answer. The candidate has to choose the correct answer by clicking on the bubble (◯) placed before the choice.
10. For numerical answer type questions, each question will have a numerical answer and there will not be any choices**. For these questions, the answer should be entered**by using the virtual keyboard that appears on the monitor and the mouse.
11. All questions that are not attempted will result in zero marks. However, wrong answers for multiple choice type questions (MCQ) will result in **NEGATIVE** marks. For all MCQ questions a wrong answer will result in deduction of⅓ marks for a 1-mark question and ⅔ marks for a 2-mark question.
12. There is **NO NEGATIVE MARKING** for questions of **NUMERICAL ANSWER TYPE**.

13. Non-programmable type Calculator is allowed. Charts, graph sheets, and mathematical tables are **NOT** allowed in the Examination Hall. You must use the Scribble pad provided to you at the examination centre for all your rough work. The Scribble Pad has to be returned at the end of the examination.

Declaration by the candidate:

"I have read and understood all the above instructions. I have also read and understood clearly the instructions given on the admit card and shall follow the same. I also understand that in case I am found to violate any of these instructions, my candidature is liable to be cancelled. I also confirm that at the start of the examination all the computer hardware allotted to me are in proper working condition".

Q. 1 – Q. 5 carry one mark each.

Q.1   A student is required to demonstrate a high level of <u>comprehension</u> of the subject, especially in the social sciences.

The word closest in meaning to <u>comprehension</u> is

(A) understanding   (B) meaning   (C) concentration   (D) stability

Q.2   Choose the most appropriate word from the options given below to complete the following sentence.

One of his biggest _____ was his ability to forgive.

(A) vice   (B) virtues   (C) choices   (D) strength

Q.3   Rajan was not happy that Sajan decided to do the project on his own. On observing his unhappiness, Sajan explained to Rajan that he preferred to work independently.

Which one of the statements below is logically valid and can be inferred from the above sentences?

(A) Rajan has decided to work only in a group.
(B) Rajan and Sajan were formed into a group against their wishes.
(C) Sajan had decided to give in to Rajan's request to work with him.
(D) Rajan had believed that Sajan and he would be working together.

Q.4   If $y = 5x^2 + 3$, then the tangent at $x = 0$, $y = 3$

(A) passes through $x = 0$, $y = 0$ (B) has a slope of $+1$
(C) is parallel to the x-axis   (D) has a slope of -1

Q.5   A foundry has a fixed daily cost of Rs 50,000 whenever it operates and a variable cost of Rs 800Q, where Q is the daily production in tonnes. What is the cost of production in Rs per tonne for a daily production of 100 tonnes?

Q. 6 – Q. 10 carry two marks each.

Q.6   Find the odd one in the following group: ALRVX, EPVZB, ITZDF, OYEIK

(A) ALRVX   (B) EPVZB   (C) ITZDF   (D) OYEIK

Q.7   Anuj, Bhola, Chandan, Dilip, Eswar and Faisal live on different floors in a six-storeyed building (the ground floor is numbered 1, the floor above it 2, and so on). Anuj lives on an even-numbered floor. Bhola does not live on an odd numbered floor. Chandan does not live on any of the floors below Faisal's floor. Dilip does not live on floor number 2. Eswar does not live on a floor immediately above or immediately below Bhola. Faisal lives three floors above Dilip. Which of the following floor-person combinations is correct?

	Anuj	Bhola	Chandan	Dilip	Eswar	Faisal
(A)	6	2	5	1	3	4
(B)	2	6	5	1	3	4
(C)	4	2	6	3	1	5
(D)	2	4	6	1	3	5

Q.8 The smallest angle of a triangle is equal to two thirds of the smallest angle of a quadrilateral. The ratio between the angles of the quadrilateral is 3:4:5:6. The largest angle of the triangle is twice its smallest angle. What is the sum, in degrees, of the second largest angle of the triangle and the largest angle of the quadrilateral?

Q.9 One percent of the people of country X are taller than 6 ft. Two percent of the people of country Y are taller than 6 ft. There are thrice as many people in country X as in country Y. Taking both countries together, what is the percentage of people taller than 6 ft?

(A) 3.0   (B) 2.5   (C) 1.5   (D) 1.25

Q.10 The monthly rainfall chart based on 50 years of rainfall in Agra is shown in the following figure. Which of the following are true? (*k* percentile is the value such that *k* percent of the data fall below that value)
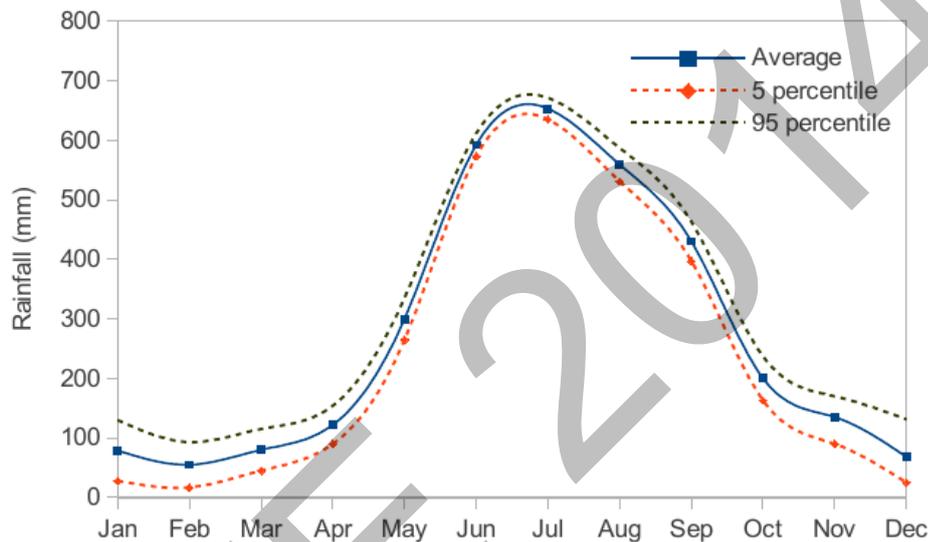
(i) On average, it rains more in July than in December
(ii) Every year, the amount of rainfall in August is more than that in January
(iii) July rainfall can be estimated with better confidence than February rainfall
(iv) In August, there is at least 500 mm of rainfall

(A) (i) and (ii)   (B) (i) and (iii)
(C) (ii) and (iii)   (D) (iii) and (iv)

END OF THE QUESTION PAPER

Q. 1 – Q. 25 carry one mark each.

Q.1   Toothing is a construction technique used in

(A) Wood construction   (B) Steel construction

(C) Reinforced cement concrete construction   (D) Brick masonry

Q.2   'Skeleton and Skin' concept in building design and construction evolved during the

(A) Roman period   (B) Renaissance period

(C) Gothic period   (D) Greek period

Q.3   As per the IRC standards, the minimum width (in m) of a two lane urban carriageway without a raised kerb is

(A) 6.0   (B) 6.5   (C) 7.0   (D) 8.0

Q.4   Pritzker Architecture Prize 2013 has been awarded to

(A) Mario Botta   (B) Toyo Ito   (C) Rem Koolhaas   (D) Arata Isozaki

Q.5   Hip roof is formed by surfaces sloping in

(A) One direction   (B) Two directions   (C) Three directions   (D) Four directions

Q.6   Hiroshima Peace Memorial Museum in Japan has been designed by

(A) Kenzo Tange   (B) Kisho Kurokawa   (C) Tadao Ando   (D) I M Pei

Q.7   In AutoCAD, the maximum number of points which can be snapped in a circle using OSNAP command is

(A) 1   (B) 3   (C) 4   (D) 5

Q.8   Development authorities in India are established under the provision of

(A) Municipal Act   (B) 74th Constitutional Amendment Act

(C) Town and Country Planning Act   (D) Land Acquisition Act

Q.9   In escalators, the angle of inclination with the horizontal plane should be in the range of

(A) 10°-20°   (B) 20°-30°   (C) 30°-35°   (D) 35°-45°

Q.10   As per the Census of India 2011, ' Metropolitan Urban Agglomeration' is a contiguous spread of several urban settlements where the minimum population size (in Lakh) is

(A) One   (B) Five   (C) Ten   (D) Fifty

Q.11   BEES is an acronym for

(A) Building for Environmental and Economic Sustainability

(B) Built Environment and Ecological Society

(C) Building for Energy and Environment Sustainability

(D) Built Environment and Engineering Services

Q.12   In a single-stack system of plumbing

(A) All the appliances and traps are fully ventilated

(B) Only WC branches are connected with anti-siphonage pipes

(C) Anti-siphonage pipes are omitted

(D) Only the stack is vented above the branch connection at each floor level

Q.13   The maximum bending moment (kNm) in a simply supported beam of 8 m span subjected to a uniformly distributed load of 20 kN/m (inclusive of its self-weight) over the entire span is

(A) 40   (B) 160   (C) 240   (D) 380

Q.14   Criteria for background noise (in NC) in hospitals and apartments is

(A) 10 - 20   (B) 20 - 30   (C) 30 - 40   (D) 40 - 50

Q.15   As per the National Building Code, the minimum width (in m) of a staircase flight in an educational building above 24 m height should be

(A) 1.0   (B) 1.5   (C) 2.0   (D) 2.5

Q.16   Among the following, the one that is **NOT** a land assembly technique is

(A) Land Use Zoning   (B) Accommodation Reservation

(C) Town Planning Scheme   (D) Transfer of Development Right

Q.17   The Grand Gallery in Egyptian Architecture is provided only at

(A) Great Pyramid   (B) Temple   (C) Mastaba   (D) Bent Pyramid

Q.18   In the Taipei 101 building, the steel sphere as TMD (Tuned Mass Damper) is suspended to reduce horizontal sway due to

(A) Settlement & Wind Load   (B) Wind & Geothermal Load

(C) Seismic & Geothermal Load   (D) Seismic & Wind Load

Q.19   'Finger Plan' concept of urban planning was initially adopted in

(A) Canberra   (B) Paris

(C) Copenhagen   (D) Tokyo

Q.20   The most important property of concrete in its fresh state is

(A) Compressive strength   (B) Tensile strength

(C) Elastic modulus   (D) Workability

Q.21   An element constructed at intervals along the length of a wall to stabilize it against overturning is

(A) Barrel Vault   (B) Pilaster   (C) Squinch Arch   (D) Buttress

Q.22   Landscape design of Shakti Sthal, the 'Samadhi' of late Prime Minister Smt. Indira Gandhi, was done by architect

(A) Ram Sharma   (B) Mohammad Shaheer

(C) Ravindra Bhan   (D) Raj Rewal

Q.23   Horizontally Wedge-shaped Treads in stairways are termed as

(A) Stringers   (B) Winders   (C) Scotia   (D) Newel

Q.24   The sequence of development in a Site-and-Services scheme is

(A) Land – Service – House – Occupant   (B) Occupant – Land – House – Service

(C) Occupant – Land – Service – House   (D) Land – Occupant – House – Service

Q.25   Which of the following is **NOT** a classical spatial theory of land use planning?

(A) Concentric Zone theory   (B) Multiple Nuclei Theory

(C) Centripetal Theory   (D) Sector Theory

Q. 26 – Q. 55 carry two marks each.

Q.26   A housing project is proposed to be designed in a plot of 2 hectare. Maximum permissible FAR is 2. The share of the numbers of dwelling units (DU) for MIG, LIG and EWS is 1:2:3 having sizes of 55, 35 and 25 sq.m respectively. The maximum number of DU which can be accommodated in the plot is _____

Q.27   Arrange the following in ascending order of width

P. Collector Street

Q. Arterial Road

R. Local Street

S. Sub-Arterial Road

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

Q.28   Out of the following, the maximum points in the LEED (New construction) rating system can be earned through

(A) Sustainable Sites   (B) Water Efficiency

(C) Materials and Resources   (D) Energy and Atmosphere

Q.29   Which of the following is **NOT** a mechanism of bond resistance in reinforced concrete?

(A) Chemical adhesion   (B) Friction

(C) Mechanical interlock   (D) Aggregate interlock

Q.30   A neighborhood has 250 units of 80 sq.m each and 200 units of 100 sq.m each. If the mandatory parking requirement is one per 100 sq.m of built space then, the total area(sq.m) required for parking considering 30 percent additional area for circulation is _____

Q.31   A brick wall 19 cm thick has a thermal conductivity 0.811 W/m °C. The outside and inside surface conductance of the wall are 16 W/m^2 °C and 8 W/m^2 °C respectively, then the U-value of the wall in W/m^2 °C is _____

Q.32   Match the contemporary buildings in **Group I** with their architects in **Group II**

	Group I		**Group II**
P.	Vitra Design Museum, Basel	1.	Adrian Smith
Q.	Turning Torso, Malmö	2.	Jean Nouvel
R.	Burj Khalifa, Dubai	3.	Herzog de Meuron
S.	Tate Modern, London	4.	Santiago Calatrava
		5.	Frank O Gehry

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

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

Q.33   From the following cost components of a building construction project which is not a direct cost combination?

P. Labour cost

Q. Equipment cost

R. Material cost

S. Establishment cost

T. Supervision cost

(A) P and Q   (B) Q and R   (C) P and R   (D) S and T

Q.34   A house located in Delhi has 111 m^2 of flat terrace area (runoff coefficient = 0.85) and 55 m^2 of ground area covered with grass (runoff coefficient = 0.15). If annual average rainfall is 611.8 mm, then rain water harvesting potential (L/year) from runoff will be _____

Q.35   Match the elements in **Group I** with the structures in **Group II**

	Group I		**Group II**
P.	Harmika	1.	Dilwara Temple, Mount Abu
Q.	Sixteen Vidyadevis	2.	Sun Temple, Modhera
R.	Lat pillar	3.	Stupa of Sanchi
S.	Urushringa	4.	Lauriya, Nandangarh
		5.	Great Kailash Temple, Ellora

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

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

Q.36   At a site, based on percolation test, the allowable rate of treated sewage application was determined as 65 $L/m^2/day$. The effective depth (m) of a soak pit with a diameter of 2.5 m for the disposal of 1020 L/day of septic tank effluent is _____

Q.37   Match the AutoCAD command in **Group I** with their functions in **Group II**

	Group I		**Group II**
P.	OOPS	1.	Creates solid lines
Q.	RAY	2.	Restores an erased drawing
R.	TRACE	3.	Manages customized user interface elements
S.	CUI	4.	Creates semi-infinite line
		5.	Creates a five sided 3D solid with a sloped face tapering along the X axis

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

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

Q.38   Match the bridges in **Group I** with their structure type in **Group II**

	Group I		**Group II**
P.	Harbour Bridge, Sydney	1.	Simply Supported
Q.	Golden Gate Bridge, San Francisco	2.	Cable Stayed
R.	Howrah Bridge, Kolkata	3.	Arch
S.	Millau Viaduct, Millau	4.	Suspension
		5.	Cantilever

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

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

Q.39   The arithmetic average value of the sound absorption coefficient for a specific material and particular mounting condition for four frequencies is

(A) Transmission coefficient   (B) Noise reduction coefficient

(C) Absorption coefficient   (D) Reflection coefficient

Q.40   A single span simply supported reinforced concrete beam (250 mm wide and 480 mm effective depth) is subjected to a concentrated load of 120 kN at its mid-span. Neglecting self-weight of the beam, the nominal shear stress (MPa) at the support section is _____

Q.41   The optimistic time, the pessimistic time and the most likely time of a job are 6, 13 and 8 days respectively. The variance for this job is _____

Q.42   A refuse collection system consisting of two chutes is to be provided in a 20 storied residential building with 2 flats/floor (average family size = 5) and with each chute serving one flat on each floor. Average quantity of refuse and its density are 880 g/person/day and 240 kg/m^3 respectively. If the cleaning interval is two days, then the minimum size of the refuse container (litre) at the bottom of each chute is _____

Q.43   Match the features in **Group I** with their architectural periods in **Group II**

	Group I		**Group II**
P.	Caryatids	1.	Roman
Q.	Hypocaust	2.	Gothic
R.	Pylons	3.	Greek
S.	Lofty Pinnacles	4.	Egyptian
		5.	Romanesque

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

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

Q.44   Match the following terminologies in **Group I** with their descriptions in **Group II**

	Group I		**Group II**
P.	Pruning	1.	Useful in reproducing plants that would not breed true if propagated by seed
Q.	Topiary	2.	A live bud from a desired plant inserted into a host plant
R.	Grafting	3.	Cutting of evergreen shrubs into abstract or geometric shapes
S.	Budding	4.	Trimming and cutting of lawns
		5.	Selective cutting of plant branches for better growth

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

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

Q.45   In a dance hall the indoor and outdoor temperatures are 28°C and 18°C respectively. There is an internal heat gain of 5 kW and the specific heat of air (on volume basis) is 1300 J/m³ °C, then the necessary cross sectional area (m²) of a duct with an air velocity of 2 m/s required for cooling by ventilation is _____

Q.46   Assuming full compaction, strength of concrete is inversely proportional to

(A) Water - cement ratio   (B) Water - sand ratio

(C) Water - coarse aggregate ratio   (D) Water - plasticiser ratio

Q.47   Match the terms in **Group I** with their examples in **Group II**

	Group I		**Group II**
P.	Incentive zoning	1.	Boardwalk, Atlantic City
Q.	Universal design	2.	Minneapolis, USA
R.	Promenading	3.	Broadway Theatre District, New York
S.	Skyway system	4.	Pruitt Igoe Housing, St. Louis, Missouri
		5.	Curitiba, Brazil

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

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

Q.48   If yield stress of steel is 415 MPa, then strain in tensile reinforcement at the limit state of collapse shall be at least _____. For steel, the Young's Modulus, E = 2 X 10⁵ MPa.

Q.49   Match the books in Group I with their authors in Group II

        Group I   Group II

        P.   Architecture Now!   1.   Ian Mc Harg

        Q.   Intentions in Architecture   2.   Robert Venturi

        R.   Design with Nature   3.   Christopher Alexander

        S.   Complexity & Contradictions in Architecture   4.   Philip Jodidio

                                                             5.   Christian Norberg Schulz

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

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

Q.50   Match the common names of the trees in **Group I** with their botanical names in **Group II**

        Group I   **Group II**
        P.   Gulmohar   1.   Dalbergia Sissoo

        Q.   Palash   2.   Ficus Benghalensis

        R.   Indian Mahogany   3.   Delonix Regia

        S.   Banyan   4.   Toona Ciliata

                                             5.   Butea Monosperma

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

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

Q.51   A room of internal dimension 4m x 5m x 3.5m (LxBxH) has 20 cm thick walls and two doors of
        size 1m x 2m. The required area of Damp Proof Course (sq.m) is _____

Q.52   A load of 30 kN is applied vertically downward at the free end of a cantilever of span 5 m. If the
        elastic modulus of the cantilever is 30 GPa and the section has a width of 0.3 m and a depth of 0.6 m,
        then, the elastic deflection (in mm) is _____

Q.53   Associate the plans in **Group I** with the options in **Group II**

        Group I   **Group II**
        P.   City Development Plan   1.   PMGSY

        Q.   Slum Free City Plan   2.   JNNURM

        R.   Transport Network Plan   3.   RAY

        S.   Disaster Management Plan   4.   NDMA

                                             5.   RSVY

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

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

Q.54   The capacity of a hall is 600 persons and its volume is 3000 cu.m. If an optimum reverberation time of 1.0 second is to be achieved then the required total absorption (m^{2}sabine) is _____

Q.55   A solid straight steel rod of diameter 100 mm is bent in single curvature into a circular arc by a moment of 50 kNm applied at its ends. If elastic modulus, E, for steel is 2×10^5 MPa, the radius of curvature (mm) of the arc assuming π=3.14 is _____

END OF THE QUESTION PAPER