# GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

## SYLLABUS BREAK-UP  (SESSION 2015-16)

SUBJECT CODE  :  **CE305**          SUBJECT NAME : **WATER SUPPLY AND SANITARY ENGINEERING**

FACULTY NAME  :  **BHARTI LATA GHUDELA**          DESIGNATION : **LECTURER (CIVIL)**

| TOPIC | LECTURE / PRACTICAL CLASSES REQUIRED TO COVER TOPIC | MONTHS IN WHICH THE TOPIC WILL BE COVERED | ACTUAL DATE OF COVERING OF THE TOPIC | REASON FOR NOT COVERING THE TOPIC IN DUE TIME | E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC |
|---|---|---|---|---|---|
| 1. Water Demand and Quantity : <br> 1.1 Water demand per capita for domestic and other uses <br> 1.2 Population forecast | 2 | Aug-15 | | | |
| 1.3 Fire demand <br> 1.4 Design period <br> 1.5 Demands as per B.I.S <br> 1.6 Sources of Water <br> 1.7 Quality of water obtained from different sources | 2 | Aug-15 | | | |
| 2. Quality of Water : <br> 2.1 Examination of water <br> 2.1.1 Physical <br> 2.1.2 Chemical                2.1.3 Bacteriological | 2 | 3AUGUST, SEPTEMBER | | | |
| 2.2 Potability of water <br> 2.3 Impurities of water <br> 2.3.1 Suspended <br> 2.3.2 Colloidal <br> 2.3.3 Dissolved impurities <br> 2.4 Permissible standard for potable water <br> 2.5 Effects of impurities if they are more than permissible limits | 2 | Sep-15 | | | |
| 3. Treatment of Water : <br> 3.1 Flow diagrams of treatment plants <br> 3.2 Function, constructional details, working of <br> 3.2.1 Aeration unit                3.2.2 Feeding and mixing devices of chemicals | 2 | Sep-15 | | | |
| 3.2.3 Sedimentation <br> 3.2.4 Coagulation and flocculation unit <br> 3.2.5 Filtration unit <br> 3.2.5.1 Slow sand filter <br> 3.2.5.2 Rapid sand filter | 2 | Sep-15 | | | |
| 3.2.5.3 Pressure filter <br> 3.3 Chlorination <br> 3.4 Chemicals used in treatment <br> 3.5 Desalination and defluoridation | 2 | SEPT-15, OCT-15 | | | |
| 4. Regulatory Valves : <br> 4.1 Sluice valve (gate valve) <br> 4.2 Reflux valve <br> 4.3 Air release valve <br> 4.4 Scour valve <br> 4.5 Safety valves <br> 4.6 Pressure relief valves <br> 4.7 Fire hydrants | 2 | Oct-15 | | | |

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| 5. Distribution of Water :<br>5.1 Systems of supply<br>5.1.1 Intermittent<br>5.1.2 Continuous<br>5.2 Service reservoirs<br>5.3 Advantages and disadvantages of metered water supply     5.4<br>Types of layouts<br>5.4.1 Dead end system and its design as per PHED practice | 2 | 0CT-15 | | | |
| 5.4.2 Grid system<br>5.4.3 Radial system<br>6. Rural Water Supply :<br>6.1 Important aspects<br>6.2 Sources<br>6.3 Treatment | 2 | Oct-15 | | | |
| 7. System of Sanitation :<br>7.1 Necessity of systematic collection and disposal of waste<br>7.2 Dry waste<br>7.3 Semi-liquid waste<br>7.4 Liquid waste<br>7.5 Terminology related to sanitary engineering | 2 | Oct-15 | | | |
| 8. Quantity of Sewage :<br>8.1 Domestic sewage<br>8.2 Industrial waste<br>8.3 Storm water<br>8.4 Volume of domestic sewage dry weather flow (D.W.F.) and equivalent DWF<br>8.5 Variation of flow | 2 | Nov-15 | | | |
| 8.6 Limiting velocities<br>8.6.1 Non-silting velocity<br>8.6.2 Non-scouring velocity<br>8.6.3 Self cleansing velocity<br>8.6.4 Transporting velocity<br>8.7 Depth of flow     9.<br>Characteristics and Composition of Sewage : | 2 | Nov-15 | | | |
| CT-I | | NOV-15 | | | |
| 9.1 Decomposition of sewage<br>9.2 Sewage sampling<br>9.3 Physical and chemical analysis<br>9.4 Testing of sewage<br>9.4.1 Physical test     9.4.2<br>Biological test<br>9.4.3 Chemical test | 2 | NOV-15,DEC-15 | | | |
| 10. Building Drainage :<br>10.1 Aims and requirements<br>10.2 Fittings and arrangements in single and multi storied buildings<br>10.3 Different sanitary fitting and their installation<br>10.4 Traps, seal in traps<br>10.5 Gulley trap | 2 | Dec-15 | | | |

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| 10.6 Intercepting trap<br>10.7 Grease trap<br>10.8 Causes of breaking seal in the traps and precautions<br>10.9 Testing of house drainage system<br>10.10 Septic tank<br>10.11 Soak pit | 2 | Jan-16 | | | |
| CT-II | | Jan-16 | | | |
| 11. Sewerage Systems :<br>11.1 Types<br>11.1.1 Separate system<br>11.1.2 Combined system<br>11.1.3 Partially separate system<br>11.2 Stone ware sewers<br>11.3 Cast iron sewers                    11.4 Concrete sewers<br>11.5 Sewer Joints<br>11.6 Different shapes of sewers | 2 | Jan-16 | | | |
| 12. Appurtenances :<br>12.1 Manholes<br>12.1.1 Location<br>12.1.2 Location<br>12.1.3 Construction<br>12.2 Drop manhole<br>12.3 Inlets<br>12.4 Catch basin | 2 | Jan-16 | | | |
| 12.5 Inverted syphon<br>12.6 Flushing tanks<br>12.7 Ventilating shaft<br>12.8 Lamp holes | 2 | Feb-16 | | | |
| 13. Laying of Sewers :<br>13.1 Setting out alignment<br>13.2 Excavation<br>13.3 Checking the gradient using boning rod<br>13.4 Preparation of bed<br>13.5 Lowering, laying and jointing<br>13.6 Testing<br>13.7 Back filling<br>13.8 Construction of masonry sewers<br>13.9 Construction of surface drains | 2 | Feb-16 | | | |
| 14. Maintenance :<br>14.1 Inspection of mains<br>14.2 Cleaning of sewers<br>14.3 Precautions during cleaning operations<br>14.4 Maintenance of traps | 2 | Feb-16 | | | |
| 14.5 Cleaning of house drainage line<br>14.6 Ventilation of sewers<br>14.7 Tools and equipment needed for maintenance | 2 | Feb-16 | | | |
| 15. Sewage Disposal :<br>15.1 General composition of sewage<br>15.2 Strength of sewage<br>15.3 Land disposal<br>15.4 Dilution method of disposal | 2 | FEB-16,MAR-16 | | | |

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| 15.5 Nuisance due to disposal<br>15.6 Self purification of streams<br>16. Treatment and Disposal :<br>16.1 Primary treatment<br>16.2 Secondary treatment<br>16.3 Function and construction of<br>16.3.1 Screening chambers<br>16.3.2 Grit chambers | 2 | Mar-16 | | | |
| 16.3.3 Clarifier chambers<br>16.3.4 Trickling filters<br>16.3.5 Aeration tank<br>16.3.6 Activated sludge process<br>16.4 Sludge treatment<br>16.5 Sludge digestion<br>16.6 Sludge disposal | 2 | Mar-16 | | | |
| 17. Rural Sanitation :<br>17.1 Introduction<br>17.2 Dry and wet latrines : selection, location, design life<br>17.3 Latrine for waterlogged high flood areas.<br>17.4 Aqua privies<br>17.5 Storm water and sludge problem | 2 | Mar-16 | | | |
| CT-III | | MAR-16,APRIL16 | | | |
| TOTAL | 52 | | | | |

# GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)
## SYLLABUS BREAK-UP  (SESSION 2015-16)

SUBJECT CODE   :   **CE106**                        SUBJECT NAME : **APPLIED MECHANICS**

FACULTY NAME   :   **BHARTI LATA GHUDELA**                        DESIGNATION : **LECTURER (CIVIL)**

| TOPIC | LECTURE / PRACTICAL CLASSES REQUIRED TO COVER TOPIC | MONTHS IN WHICH THE TOPIC WILL BE COVERED | ACTUAL DATE OF COVERING OF THE TOPIC | REASON FOR NOT COVERING THE TOPIC IN DUE TIME | E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC |
|---|---|---|---|---|---|
| 1. Force: 2 1<br>1.1 Definition<br>1.2 Units<br>1.3 Different Types of Forces. | 2 | Aug-15 | | | |
| 2. Coplanar Forces<br>2.1 Resolution of Forces<br>2.2 Law of Parallelogram of Forces | 2 | Aug-15 | | | |
| 2.3 Resultant of two or more Forces<br>2.4 Basic Conditions of Equilibrium<br>2.5 Lami's Theorem (No Proof) | 2 | 3AUGUST, SEPTEMBER | | | |
| 2.6 Jib Crane<br>2 .7 Law of Polygon of Forces (Only Statement) | 2 | Sep-15 | | | |
| 3. Moment<br>3.1 Definition, Units & Sign Convention<br>3.2 Principle of Moments<br>3.3 Application of Equilibrium Conditions for non-concurrent Forces | 2 | Sep-15 | | | |
| 4. Application of Principles of Forces & Moments<br>4.1 Levers & their Types. | 2 | Sep-15 | | | |
| 4.2 Reactions of Simply Supported Beams (Graphical &<br>Analytical Method)<br>4.3 Steel Yard. | 2 | SEPT-15, OCT-15 | | | |
| 4.4 Lever Safety Valve<br>4.5 Foundry Crane | 2 | Oct-15 | | | |
| 5. Centre of Gravity:<br>5.1 Concept<br>5.2 Centroid<br>5.3 Calculation of C.G. of Regular Bodies | 2 | 0CT-15 | | | |
| 5.4 Calculation of C.G. of Plain Geometrical Figures                              6.<br>Friction<br>6.1 Types of Friction<br>6.2 Laws of Friction<br>6.3 Angle of Friction<br>6.4 Angle of Repose | 2 | Oct-15 | | | |
| 6.5 Friction on Horizontal and Inclined Plains<br>6.6 Application of Laws of Friction Related to Wedge, Ladder and<br>Screw Jack. | 2 | Oct-15 | | | |
| 7. Simple Machines<br>7.1 Basic Concepts<br>7.2 Loss in Friction<br>7.3 Inclined Plane | 2 | Nov-15 | | | |
| 7.4 Simple & Differential Wheel and Axle (Neglecting Rope thickness)              7.5<br>Screw Jack                     7.6 Lifting Crabs | 2 | Nov-15 | | | |
| CT-I | | NOV-15 | | | |

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| 7.7 Systems of Pulleys<br>7.8 Worm and Worm Wheel | 2 | NOV-15,DEC-15 | | | |
| 8. Rectilinear Motion:<br>8.1 Concept<br>8.2 Motion under Constant Velocity | 2 | Dec-15 | | | |
| 8.3 Motion under Constant Acceleration<br>8.4 Velocity-time graph and its uses. | 2 | Jan-16 | | | |
| CT-II | 2 | Jan-16 | | | |
| 9.Motion under Gravity:<br>9.1 Concept<br>9.2 Vertical Motion          9.3 Smooth Inclined Plane | 2 | Jan-16 | | | |
| 10. Projectiles<br>10.1 Concept          10.2 Range, Maximum Height and Time of Flight | 2 | Jan-16 | | | |
| 10.3 Equation of Trajectory          10.4 Calculation of Velocity of Projectile at Certain Height<br>And at Certain instant | 2 | Feb-16 | | | |
| 11.Newton's Laws of Motion:<br>11.1 Definitions<br>11.2 Momentum and it's Unit | 2 | Feb-16 | | | |
| 11.3 Application of Second Law of Motion<br>12. Impact and Collision:<br>12.1 Concept<br>12.2 Impulse and Impulsive Force | 2 | Feb-16 | | | |
| 12.3 Law of Conservation of Momentum<br>12.4 Collision Between Two Rigid Bodies<br>12.5 Newton's Experimental Law of Collision, Coefficient of Restitution | 2 | Feb-16 | | | |
| 13. Circular Motion<br>13.1 Concept<br>13.2 Motion under Constant Velocity<br>13.3 Motion under Constant Acceleration<br>13.4 Relationship between Linear Velocity and Angular Velocity13.5 Centrifugal and Centripetal Forces, their Applications<br>1 | 2 | FEB-16,MAR-16 | | | |
| 4. Work, Power and Energy<br>14.1 Work Done by a Constant Force<br>14.2 Work Done by Uniform Variable Force | 2 | Mar-16 | | | |
| 14.2.1 Power<br>14.2.1.1 Indicated Power.<br>14.2.1.2 Brake Power.<br>14.2.1.3 Efficiency | 2 | Mar-16 | | | |
| 14.2.1.4 Power required for an Engine on Horizontal and<br>Inclined (smooth and rough) Planes   14.2.2 Energy<br>14.2.2.1 Potential Energy<br>14.2.2.2 Kinetic Energy of Rectilinear Motion<br>14.2.2.3 Kinetic Rnergy of Circular Motion | 2 | Mar-16 | | | |
| CT-III | | MAR-16,APRIL-16 | | | |
| TOTAL | 54 | | | | |

# GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)
## SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **CE203**          SUBJECT NAME : **BUILDING TECHNOLOGY**

FACULTY NAME : **BHARTI LATA GHUDELA**          DESIGNATION : **LECTURER (CIVIL)**

| TOPIC | LECTURE / PRACTICAL CLASSES REQUIRED TO COVER TOPIC | MONTHS IN WHICH THE TOPIC WILL BE COVERED | ACTUAL DATE OF COVERING OF THE TOPIC | REASON FOR NOT COVERING THE TOPIC IN DUE TIME | E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC |
|---|---|---|---|---|---|
| 1. Introduction :<br>1.1 Definition of a building<br>1.2 Classification of building based on occupancy<br>1.3 Explanation of different parts of a building | 2 | Aug-15 | | | |
| 2. Foundation :<br>2.1 Concept of foundation<br>2.2 Factors affecting selection of foundations<br>2.3 Definition and importance of bearing capacity, Average bearing capacity of common soils. | 2 | Aug-15 | | | |
| 2.4 Types of foundations- shallow and deep foundations<br>2.5 Shallow foundation- spread footings, raft and inverted arch foundation. Rankine's formula for depth of foundations | 2 | 3AUGUST, SEPTEMBER | | | |
| 2.6 Deep Foundation - Pile foundation, their suitability, Classification of piles according to function, material and installation<br>2.7 Causes of failure of foundation and remedial measures.          3. Walls :<br>3.1 Purpose of walls          3.2 Types of walls- Load bearing, non-load bearing | 2 | Sep-15 | | | |
| 3.3 Partition walls - construction details, suitability and use of brick and wooden partition walls.          3.4 Cavity walls - Brief description and constructional detail of cavity walls<br>4. Brick Masonry :<br>4.1 Definition related to brick masonry<br>4.2 Bond, necessity of bond | 2 | Sep-15 | | | |
| 4.3 Types of bonds- English, Flemish, header and stretcher, T-junction, corner junction.<br>4.4 Sketches for 1, 1½ and 2-brick thick wall and square pillars<br>4.5 Construction of brick walls-method of laying brick in walls and precautions to be taken for it.<br>5. Stone Masonry :<br>5.1 Definition related to stone masonry | 2 | Sep-15 | | | |

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| 5.2 Dressing of stones - Hammer dressing, chisel dressing<br>5.3 General principles for construction of stone masonry         5.4<br>Brief description and sketches of different types of stone masonry- Ashlar, random rubble and coursed<br>rubble. Ashlar facing to coursed, rubble and brick masonry. | 2 | SEPT-15, OCT-15 | | | |
| 5.5 Brief description, sketches and uses of joggles, dowells and cramps in stone masonry.         6.<br>Scaffolding, Shoring and Underpinning :<br>6.1 Brief description and application of different types of scaffolding and shores. | 2 | Oct-15 | | | |
| 6.2 Meaning and need for underpinning.<br>7. Dampness and its Prevention:<br>7.1 Causes of dampness in buildings and principles of its prevention.<br>7.2 Materials commonly used for damp proofing. | 2 | 0CT-15 | | | |
| 7.3 Damp proof course<br>7.4 Anti termite treatment of buildings before and after construction<br>8. Arches and Lintels :<br>8.1 Meaning and uses of arches and lintels | 2 | Oct-15 | | | |
| 8.2 Glossary of terms related to arch and lintels<br>8.3 Thickness of lintels, Effective span<br>8.4 Type of arches e.g. semi circular, segmental arches, elliptical, pointed, relieving arch, flat arch.<br>8.5 Thickness of semi-circular and segmental arches by empirical rules | 2 | Oct-15 | | | |
| 9. Doors :<br>9.1 Types of door frames - stone, timber, steel, concrete<br>9.2 Description and sketches of different types of doors ledged, battened and braced door, framed and<br>panelled door, glazed and panelled doors, louvered doors, flush doors. | 2 | Nov-15 | | | |
| 9.3 Use of collapsible door, rolling steel doors, side sliding doors, wire mesh doors.<br>10. Windows :<br>10.1 Names, uses and sketches of - fully panelled window, fully glazed windows<br>10.2 Casement and pivoted window, dormer window, clearstory window, skylight, fanlight and ventilators         10.3 Window frames of different materials- wood, steel, aluminium. | 2 | Nov-15 | | | |
| CT-I, | | NOV-15 | | | |

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| 11. Stairs and Stair Cases :<br>11.1 Glossary of terms related to stairs<br>11.2 Brief description and sketches of common types of staircase : Straight flight, Quarter turn, Half turn dog legged and open newel, Bifurcated, Circular, Spiral<br>11.3 Classification of staircases according to materials used.<br>11.4 Rise, Tread & Going of the different type of stair. | 2 | Nov-15 | | | |
| 12. Roofs :<br>12.1 Functions of roofs and ceilings. Brief description, constructional details and suitability of common types of roofs.<br>12.2 Definition of terms for pitched roofs, principal rafter, common rafter, jack rafter, hip rafter, valley rafter,<br>ridge piece, caves, purlins, cleats, wall plates, valley gutter, side gutter, gable, facia board. | 2 | NOV-15,DEC-15 | | | |
| 12.3 Roof coverings for pitched roofs - Asbestos cement and C.G.I. method of arranging and fixing to battens,<br>rafters, purlins both steel and wooden.<br>12.4 Drainage arrangement for pitched and flat roofs. | 2 | Dec-15 | | | |
| 13. Floors :<br>13.1 Ground floors<br>13.2 Brief description, uses and construction of ground floors - Brick on edge; tiles, stone slab, marble and<br>glazed tiles, lime concrete, cement concrete, terrazzo and mosaic. | 2 | Jan-16 | | | |
| CT-II | | Jan-16 | | | |
| 14. Finishing of buildings :<br>14.1 Different types of plastering, rendering and painting<br>14.2 Methods of plastering, and curing<br>14.3 Defects in plasters and repairs of the defects. | 2 | Jan-16 | | | |
| 14.4 Different types of painting uses and methods of painting<br>14.5 White washing, colour washing and distempering- water and oil bound distempers. Application of cement<br>plastic paints | 2 | Jan-16 | | | |
| 14.6 Provision of expansion joints in building floors, walls and roofs                15. Building Bye Laws :                15.1 Study of building bye laws as per IS 1256-1967 | 2 | Feb-16 | | | |

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| 15.2 Terminology related to residential building, building permit occupancy certificate, unsafe buildings, enforcement code, offences and penalties. 15.3 Health sanitation and other requirements, means of access, open space requirements, plinth area, projections, covered area in residential plots. | 2 | Feb-16 | | | |
| 16. Basic Principles of Building Planning: 16.1 Aspect, prospect its internal circulation, privacy grouping (i) living areas (ii) sleeping areas and (iii) working areas 16.2 Roominess, flexibility, furniture setting, sanitation elegance and economy | 2 | Feb-16 | | | |
| 16.3 Arrangement of doors, windows, cupboards etc for a residential building 17. Orientation : 17.1 Orientation of buildings as per I.S. 7662 in relation to sun and wind directions, rain, internal circulation and placement of room, commensurate with available areas and requirements. | 2 | Feb-16 | | | |
| 17.2 Preparation and study of sun chart on polar graphs. Sun shading devices-types sketches suitability, for different orientations. 18. Site Selection : 18.1 Selection of site for a building and building complex | 2 | FEB-16,MAR-16 | | | |
| 18.2 Comparative study of sites with respect to local topography, flooding, soil access, location 18.3 Communication links, with surroundings availability of water and electricity, prevailing wind, made up ground, water table, trees etc. | 2 | Mar-16 | | | |
| 19. Design of Buildings : 19.1 Common standards for floor space and cubical contents for residential building and public building (Schools, Hostels, Dispensaries, Panchayatghars).                   19.2 Economical design of single room tenements | 2 | Mar-16 | | | |
| 19.3 Design of a residential building and public buildings (School, Hostel, Dispensary, Panchayatghar) including location of water supply line, drainage line and placing of electrical fittings. 19.4 Details of a toilet, kitchen and staircase for modern residential buildings. | 2 | Mar-16 | | | |
| CT-III | | MAR-16,APRIL-16 | | | |
| TOTAL | 54 | | | | |

# GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

## SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **CE207**          SUBJECT NAME : **CONCRETE TECHNOLOGY**

FACULTY NAME : **BHARTI LATA GHUDELA**          DESIGNATION : **LECTURER (CIVIL)**

| TOPIC | LECTURE / PRACTICAL CLASSES REQUIRED TO COVER TOPIC | MONTHS IN WHICH THE TOPIC WILL BE COVERED | ACTUAL DATE OF COVERING OF THE TOPIC | REASON FOR NOT COVERING THE TOPIC IN DUE TIME | E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC |
|---|---|---|---|---|---|
| 1. Cement : <br> 1.1 Manufacture of Portland cement <br> 1.2 Chemical composition <br> 1.3 Hydration of cement | 2 | Aug-15 | | | |
| 1.4 Types of cement <br> 1.4.1 Ordinary Portland cement <br> 1.4.2 Rapid hardening cement <br> 1.4.3 Extra rapid hardening cement <br> 1.4.4 Sulphate resisting cement <br> 1.4.5 Blast furnace cement | 2 | Aug-15 | | | |
| 1.4.6 Quick setting cement <br> 1.4.7 Super sulphate cement <br> 1.4.8 Low heat cement <br> 1.4.9 Portland pozzolana cement <br> 1.4.10 White cement <br> 1.4.11 Hydrophobic cement <br> 1.4.12 Oil-well cement <br> 1.4.13 High alumina cement | 2 | 3AUGUST, SEPTEMBER | | | |
| 1.5 Testing of cement <br> 1.5.1 Field testing <br> 1.5.2 Fineness test <br> 1.5.3 Specific gravity of cement <br> 1.5.4 Standard consistency test | 2 | Sep-15 | | | |
| 1.5.5 Setting time test <br> 1.5.6 Strength test <br> 1.5.7 Soundness test | 2 | Sep-15 | | | |
| 2. Aggregates : <br> 2.1 Classification of aggregates according to sources <br> 2.2 Shape, size and texture <br> 2.3 Bulk density | 2 | Sep-15 | | | |
| 2.4 Specific gravity <br> 2.5 Water absorption and moisture content <br> 2.6 Bulking of aggregate <br> 2.7 Alkali - aggregate reaction <br> 2.8 Grading of aggregates | 2 | SEPT-15, OCT-15 | | | |
| 2.9 Sieve analysis <br> 2.10 Standard grading curve <br> 2.11 Specified grading <br> 2.12 Gap grading <br> 2.13 Flakiness index | 2 | Oct-15 | | | |
| 2.14 Elongation index <br> 2.15 Fineness modulus <br> 2.16 Crushing value <br> 2.17 Ten percent Fines value | 2 | 0CT-15 | | | |
| 3. Water : <br> 3.1 Indian Standards for quality of water for use in cement concrete. <br> 3.2 Effect of impurities in water on concrete. | 2 | Oct-15 | | | |

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| 4. Admixtures and Construction Chemical :<br>4.1 General<br>4.2 Admixtures<br>4.2.1 Plasticizers<br>4.2.2 Super plasticizers<br>4.2.3 Retarders<br>4.2.4 Accelerators | 2 | Oct-15 | | | |
| 4.2.5 Air entraining admixtures<br>4.2.6 Pozzolanic or mineral admixtures<br>4.2.7 Air detraining admixtures<br>4.2.8 Alkali aggregate expansion inhibitors<br>4.2.9 Workability admixtures<br>4.2.10 Grouting admixtures<br>4.2.11 Bonding admixtures | 2 | Nov-15 | | | |
| 4.3 Construction chemicals<br>4.3.1 Concrete curing compounds<br>4.3.2 Polymer bonding agents<br>4.3.3 Floor hardener and dust proofers<br>4.3.4 Surface retarders<br>4.3.5 Bond aid for plastering<br>4.3.6 Ready to use plaster<br>4.3.7 Guiniting agents<br>4.3.8 Water proofing | 2 | Nov-15 | | | |
| CT-III | | NOV-15 | | | |
| 5. Fresh Concrete :<br>5.1 Workability<br>5.2 Factors affecting workability<br>5.3 Measurement of workability<br>5.3.1 Slump test | 2 | Nov-15 | | | |
| 5.3.2 Compacting factor test<br>5.3.3 Vee-Bee consistometer test<br>5.4 Segregation<br>5.5 Bleeding<br>5.6 Process of manufacture of concrete | 2 | NOV-15,DEC-15 | | | |
| 6. Concrete Operation :<br>6.1 Batching<br>6.1.1 Volume batching<br>61.2 Weight batching<br>6.2 Mixing<br>6.2.1 Hand mixing<br>6.2.2 Machine mixing | 2 | Dec-15 | | | |
| 6.3 Transporting of concrete<br>6.3.1 Mortar pan<br>6.3.2 Wheel barrow<br>6.3.3 Bucket and rope way<br>6.3.4 Truck mixer and dumpers<br>6.3.5 Belt conveyors<br>6.3.6 Chute<br>6.3.7 Skip and hoist<br>6.3.8 Pumps and pipeline          6.4 Placing concrete<br>6.5 Compaction of concrete<br>6.5.1 Hand compaction | 2 | Jan-16 | | | |
| CT-II | | Jan-16 | | | |

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| 6.5.2 Compaction by vibrators<br>6.6 Types of vibrators and its uses<br>6.7 Curing of concrete<br>6.7.1 Water curing<br>6.7.2 Membrane curing<br>6.7.3 Steam curing<br>6.8 Finishing<br>6.8.1 Formwork finishes | 2 | Jan-16 | | | |
| 6.9 Joints in concrete<br>6.9.1 Construction joints<br>6.9.2 Expansion joints<br>6.9.3 Contraction joints<br>6.9.4 Isolation joints | 2 | Jan-16 | | | |
| 7. Strength of Concrete :<br>7.1 Water cement ratio<br>7.2 Gain of strength with age<br>7.3 Relation between compressive and tensile strength<br>7.4 Bond strength<br>7.5 Aggregate cement bond strength | 2 | Feb-16 | | | |
| 8. Special Concrete :<br>8.1 Light weight concrete<br>8.2 No fines concrete<br>8.3 Aerated concrete<br>8.4 High density concrete | 2 | Feb-16 | | | |
| 8.5 Fiber reinforced concrete<br>8.6 Polymer concrete<br>8.7 Gunite or shot concrete<br>8.8 RMC (ready mixed concrete)<br>8.9 Ferro cement<br>8.10 High Performance concrete | 2 | Feb-16 | | | |
| 9. Formwork :<br>9.1 Requirements of formwork<br>9.2 Types of formwork<br>9.3 Time for stripping formwork | 2 | Feb-16 | | | |
| 10. Quality Control at Site :<br>10.1 Factors causing variations in the quality of concrete<br>10.2 Field control<br>10.3 Stastical quality control<br>10.4 Frequency of test | 2 | FEB-16,MAR-16 | | | |
| 11. Concrete Mix Design :<br>11.1 Concept<br>11.2 Variables in proportioning<br>11.3 Indian Standard recommended method for concrete mix design IS10262-1982 | 2 | Mar-16 | | | |
| 12. Deterioration and Restoration of Concrete :<br>12.1 Introduction<br>12.2 Internal and external causes of deterioration of concrete          12.3 Prevention of deterioration of concrete.<br>12.4 Corrosion of reinforcing steel – causes & prevention. | 2 | Mar-16 | | | |
| 12.5 Maintenance & repair –<br>12.5.1 Repair materials – mortar, grouts, shotcrete, gunite, bonding agent, protective coating on concrete<br>surface and protective coating on reinforcement<br>12.5.2 Repair measures – assessment of damage, possible repair measures, structural strengthening<br>12.5.3 Repair of cracks and honey combs. | 2 | Mar-16 | | | |

| CT-III | | MAR-16,APRIL-16 | | | |
|---|---|---|---|---|---|
| TOTAL | 54 | | | | |