

## B.TECH. SECOND YEAR

### (CIVIL ENGINEERING)

(Batch 2016)

(Session 2017-2018)

### SCHEME OF PAPERS

#### THIRD SEMESTER (Civil Engineering)

Sr.No.	Course No.	Title	L	T	P	Credits
1.	CVE-201	Survey-1	3	1	0	3.5
2.	CVE 202	Building Materials	3	1	0	3.5
3.	CVE203	Fluid Mechanics	3	1	0	3.5
4.	CVE 204	Building Construction	3	1	0	3.5
5.	CVE 205	Hydrology and Dams	3	1	0	3.5
6.	HSS 201	Management Practices & Organisational Behaviour	3	1	0	3.5
7.	CVE 251	Survey-I Lab *	0	0	2	1.0
8.	CVE 252	Building Materials Lab *	0	0	2	1.0
9.	CVE 253	Fluid Mechanics Lab *	0	0	2	1.0
			<b>18</b>	<b>6</b>	<b>6</b>	<b>24.0</b>
10.		Punjabi**	3	0	0	0
<b>Total Contact Hours: 33</b>						

\* CVE 251, CVE 252 and CVE 253 are practical papers only.

There will not be any theory examination for these papers.

\*\* In addition to above mentioned subjects, there will be an additional course on Punjabi as a qualifying subject

# Department of Civil Engineering

Punjabi University, Patiala.

## General Instructions to the Paper Setters

(Common for B.Tech. in Computer Engineering, Electronics and communication Engineering, Mechanical Engineering, Civil Engineering and Integrated BTech/MBA Branches)

### Applicable to 2016 Batch

The B. Tech paper structure will be as shown below:

<b>Pattern of Question Paper</b>	
TITLE OF SUBJECT (CODE----)	
Bachelor of Technology (Branch) Section: .....	
End Semester Exam	
TIME ALLOWED: 3 Hour	Roll. No.....
Maximum Marks: 50	
Note:- Attempt any Six questions selecting three questions from each section A and B. Section C is compulsory.	
<b>Section-A (From Section A of the syllabus)</b>	
Q1. ....	
Q2. ....	
Q3. ....	
Q4. ....	3x5
Q5. ....	
<b>Section-B (From Section A of the syllabus)</b>	
Q6. ....	
Q7. ....	
Q8. ....	
Q9. ....	
Q10. ....	3x5
<b>Section-C (Common from Whole of the Syllabus)</b>	
Q11	
a).....	
b).....	
c).....	
d).....	
e).....	
f).....	
g).....	
h).....	
i).....	
j).....	10x2=20

#### **Note for the paper setter:**

1. Numbers of questions to be set are eleven (11) as per the above format.
2. Section A and B contain 10 questions of (5) marks each.
3. Section C is compulsory and contains ten sub-parts of two mark each. The answers for each question should preferably be of 2 to 3 lines.
4. The maximum limit on numerical questions to be set in the paper is 35% while minimum limit is 20% except theoretical, analysis and design papers
5. The paper setter shall provide detailed marking instructions and solution to numerical problems for evaluation purpose in the separate white envelopes provided for solutions.
6. The paper setters should seal the internal & external envelope properly with signatures & cello tape at proper place.
7. Log tables, charts, graphs, Design data tables etc. should be specified, whenever needed.
8. Use of Scientific calculator should be clearly specified.
9. There are some MBA subjects (*like BAS 202 Operational Research, MBA 5011 Foundation of Financial Accounting, MBA 5012 Foundation of Managerial Accounting, MBA 5022 Foundations of Marketing, MBA 5023 Foundations of Law, MBA 5031 Foundations of Macroeconomics, MBA 5032 Foundations of Microeconomics, MBA-5033 Foundations of International Business, MBA 5013 Foundations of Finance*) where syllabus is not divided among four sections namely A, B,C,D then Question paper must be set by without specifying section in it and giving proper weightage to the respective portions.

## CVE 201 SURVEY-I

L	T	P	Credits
3	1	0	3.5

### Section-A

Introduction: Different types of surveys.

Chain Surveying: Principal of chain surveying, description of different equipment, Methods of chaining & booking, selection of base line and stations, obstacles in chaining. Location of inaccessible points by chain, tape & ranging rods.

Prismatic compass survey: Description of Prismatic & surveyors compass methods of traversing, local attraction and its elimination adjustment of closing error by graphical method.

### Section-B

Plane Table Survey: Description of different equipment, different methods of plane tabling, Strength of Fix, Two point and three point problems and their solutions.

Leveling: Description of Dumpy and Tilting levels & leveling staves, methods of leveling sensitivity of bubble tube, setting out grade lines permanent adjustment of above mentioned leveling instruments.

Contouring: Setting out contour gradient, different methods of contouring. Simple earth work calculations of areas and volumes.

Minor Instruments: Box sextant, hand level, Abney level, Planimeter, ghat tracer, tangent clinometer etc.

### Recommended Books:

1. Kanetkar, T. P., Surveying Vol. I & II, Pune Vidhyarthi Griha Prakashan (1985).
2. P.B. Sahiwny, Surveying
3. Singh, Narinder, Surveying, Tata McGraw Hill (1992).
4. Punmia, B. C., Surveying Vol. I and II, Luxmi Publications (1998).
5. Agor, R., Surveying, Khanna Publishers (1982).
6. Venkataramiah, C., A Text Book of Surveying, Universities Press (1996).

## CVE 202 BUILDING MATERIALS

<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>3.5</b>

### **Section-A**

Building Stones: General, classification of rocks, Qualities of a good building stone-Deterioration of stones-Preservation of stones, Uses of stones, Artificial stones, Test for stones.

Bricks: General, Constituents of bricks, classification of bricks, desirable and harmful ingredients in brick earth, qualities of good bricks,testing of bricks, strength, Absorption, weathering of bricks, Manufacturing of bricks.

Lime: Cementing material, Characteristics of good quality lime, classifications & testing of Lime, Hydraulic test, acid test, setting & slaking of lime, uses of different varieties of lime, Manufacturing process of lime.

### **Section-B**

Cement: General, Composition of cement, functions of cement ingredients, Manufacturing process of cement, Classification of cement, Test on cement, storage and uses of cement.

Timber: Advantages of timber construction, timber trees-exogenous and endogenous trees; soft and hard woods,structure of tree, felling of trees, defects in timber, characteristics of good timber, uses and testing of timber.

Miscellaneous Materials: Paints and varnishes; Distempering; white and color washing; Asphalt and Bitumen, Use of plastics in civil Engineering.

### **Recommended Books:**

1. Rangawala, S. C., Engineering Materials, Charotar Publishing House (1992).
2. Gambhir, M. L., Concrete Technology, Tata McGraw Hill Publishing Co. Ltd. (2004).
3. Kumar, Sushil, Engineering Materials, Metropolitan Press (1994).
4. Kumar, Sushil, Building Construction, Standard Publishers and Distributors (1990).

## CVE 203

### FLUID MECHANICS

L	T	P	Credits
3	1	0	3.5

#### Section-A

Fluid and their properties: Concept of fluid, difference between solids, liquids and gases; ideal and real fluids; Continuum concept of fluid: density, specific weight and relative density; viscosity and its dependence on temperature; surface tension and capillarity, vapour pressure and cavitation, compressibility and bulk modulus; Newtonian and non-Newtonian fluids.

Fluid Statics: Concept of pressure, Pascal's law and its engineering hydrostatic paradox. Action of fluid pressure on plane (horizontal, vertical and inclined) submerged surface, resultant force and center of pressure, force on a curved surface due to hydrostatic pressure. Buoyancy and floatation, stability of floating and submerged bodies, Metacentric height and its determination, rotation of liquid in a cylindrical container.

Fluid Kinematics: Classification of fluid flows, velocity and acceleration of fluid particle, local and convective acceleration, normal & tangential acceleration streamline, pathline and streakline, flow rate and discharge mean velocity continuity equation in Cartesian co-ordinates.

Rotational flows-Rotational velocity and circulation, stream & velocity potential functions.

#### Section-B

Fluid Dynamics: Euler's equation, Bernoulli's equation and steady flow energy equation; representation of energy changes in fluid system, impulse momentum equation, kinetic energy and momentum correction factors, flow along a curved streamline, free and forced vortex motions.

Dimensional Analysis and Similitude: Fundamental and derived units and dimensions, dimensional homogeneity, Rayleigh's and Buckingham's Pi method for dimensional analysis, dimension less number and their significance, geometric, kinematic and dynamic similarity, model studies.

Laminar and turbulent Flows: Flow regimes and Reynolds number, critical velocity and critical Reynolds number, laminar flow in circular cross section pipes. Turbulent flows and flow losses in pipes, Darcy equation minor head losses in pipe fittings, hydraulic and energy gradient lines.

Flow Measurement: Manometers, Pitot tubes, venturimeter and orifice meters, orifices, mouth pieces, notches and weirs.

#### Recommended Books:

1. D.S. Kumar, Fluid Mechanics and Fluid Power Engineering, S.K. Kataria & Sons Publishes, New Delhi.
2. A.K. Jain, Fluid Mechanics, Khanna Publishers, New Delhi.
3. Wylie and Streeter, Fluid Mechanics, McGraw Hill Book Company, New York.
4. Fox and McDonald, Introduction of Fluid Mechanics, John Wiley & Sons (SEA) PTE Ltd., New York.
5. Shams, Mechanics of Fluid, McGraw Hill Book Company, New York.
6. K. Subramanya, Theory and application of Fluid Mechanics, Tata McGraw-Hill Publishing Company, New Delhi.
7. S.C. Gupta, Fluid Mechanics & Hydraulic Machines, Pearson Education Asia, N. Delhi
8. Douglas JF, Gasiorek JM, Swaffield JP, Fluid Mechanics, Pitman

## CVE 204 BUILDING CONSTRUCTION

L	T	P	Credits
3	1	0	3.5

### Section-A

Masonry: Stone & Brick: Brick masonry, Bonds and junctions, Walling, Mud wall, Sun-dried bricks, burnt bricks, stones walling, load bearing & non load bearing brick masonry for multistoried constructions, brick panel walling, reinforced masonry. Bonds & junctions

Prefabricated Construction: Prefabricated components, Assembly at site, Low cost housing & hollow blocks.

Damp Proof Course: Points of its requirement in buildings, D.P.C. at Plinth level, in basement and roof tops etc. joints in prefabricated construction. Anti termite treatment

Lintels & Arches: Location and construction details in wood, brick, stone and R.C.C.

Stairs & Stair cases: Suitability of location, stairs in multistoried buildings, Residential and public buildings, Fire escape, Stairs in timber, stone, brick, RCC and Metal Drawings in Plan elevation and sections. Hand rail & railings, description and sketches of lifts escalators.

### Section-B

Doors & Windows: Details, location in buildings, sizes & construction for wooden & metal, Battened braced, framed, flush and paneled, sliding, folding telescopic, with louvers, collapsible. Windows in timber & Metal casement, double hung, Dormer, Corner, Fanlight, skylight, clear storey etc. Low cost ideas, Revolving doors, Aluminum door and windows

Roofing and Flooring: Types of Flooring, Flat roofs: Waffle floor, channels, cored units etc., inclined roofs, Form Work and Scaffolding

Foundations: Types and suitability, spread, arch, combined, cantilevered, Raft, Grillage, Piles & wells, Footings in block cotton soil, Basement & Retaining walls

### Recommended Books:

1. Singh, Gurcharan, Building Construction Engineering, Standard Book House (1994).
2. Sharma, S. K., Building Construction, S. Chand and Company (1994).
3. Kumar, Sushil, Building Construction, Standard Publisher and Distributors (1990).
4. Punima, B. C., Building Construction, Laxmi Publishing House (1993).
5. Sharma and Kaul, A Text Book of Building Construction, S. Chand and Company (1985).

## CVE 205 HYDROLOGY AND DAMS

L	T	P	Credits
3	1	0	3.5

### Section-A

Introduction: Hydrologic cycle, Scope and Applications Precipitation: Types Forms, Measurement by rain gauge and other methods, Design of rain gauges station, Mean precipitation, Presentation of rainfall data, Estimation of missing rainfall data. Test for consistency of record, Intensity-duration-frequency curves, Mass curves, Depth-Area-Duration curves.

Abstractions from Precipitation: Evaporation, Factors affecting evaporation, Measurement by different methods, Evaporation measurement, infiltration, Factors affecting infiltration Measurement, Infiltration capacity curve, Infiltration indices.

Run Off: Factors affecting run off, Estimation of run-off (various methods), Rainfall-runoff correlations.

Hydrographs: Components, Base flow separation, Derivation of unit hydrograph and its applications & limitations, Distribution graph, Synthetic and Instantaneous unit hydrograph, s-curve.

### Section-B

Gravity Dams-Non Overflow Section: Forces acting, Stability factors, stresses on the faces of dam, Design of profile by the method of zoning, Elementary profile of a dam.

Gravity Dams Spillways: Creagers profiles neglecting velocity of approach, profile taking velocity of approach into account, upstream lip and approach ramp, Advantages of gated spillways, Discharge characteristics of spillways.

Arch and Buttress Dams: Classification of arch dam-constant radius constant angle and variable radius types, cylinder theory, expression relating central angle and cross-sectional area of arch. Types of buttress dams, advantages of buttress dams.

Earth Dams: Components of earth dams and their functions, Phreatic line determination by analytical and graphical methods.

### Books Recommended:

- 1.Subramanya, K., "Engineering Hydrology" Tata McGraw-Hill Publications, 2008.
- 2.Wilson E M "Engineering Hydrology" ELBS, English Language Book Society/Macmillan EducationLtd.
- 3.Raghunath H M "Hydrology" New age international publishers, 2007.
- 4.Garg, S.K Irrigation Engineering and hydraulic structures
5. Karanth K R "Hydrology" Tata McGraw Hill publications.

## HSS 201 MANAGEMENT PRACTICES & ORGANISATIONAL BEHAVIOUR

L	T	P	Credits
3	1	0	3.5

### Section A

Introduction to Management: Definition, Importance and functions of Management. Theories of Management; Classical, Neo-classical and Modern. Planning: Nature of planning, planning process, types of plans, Importance and Limitations of Planning. Introduction to MBO (Management by Objectives). Social responsibility of business.

Decision Making: Importance and Process. Organization: Process of Organizing, Organizing Principles, Organization Chart, Authority and Responsibility relationship, Steps in Delegation of Authority. Communication: Process, channels, medium of communication, communication barriers. Controlling: Steps, types of control system, essentials of effective control system.

### Section-B

Organizational Behaviors: Concept, features and importance. Personality: determinants and development. Role of Values and Attitudes in individual's behavior. The concept of motivation and its theories. Perception: Concept, Process, Errors in perceptual accuracy, Role of perception in decision making.

Learning: Classical and Operant conditioning theory, Reinforcement-kinds and administration. Concept of group dynamics. Leadership theories and styles. Organizational conflict: Concept, Dimensions, conflict management techniques. Introduction to concept of power and politics in work related organization. Organization culture and effectiveness.

### Recommended Books:

1. Aswathappa, K and Reddy G. Sudarsana, Management and Organisation Behaviour, Himalya Publishing House.
2. Pierce John L., Gardner Donald, Gardner Donald, Management and Organisational Behavior: An Integrated Perspective, Ed.1, Cengage Learning India
3. Laurie Mullins, Management and Organisation Behaviour, 7/e, Pearson Education.
4. Stephen, P. Robbins, Seema Sanghi and Timothy A Judge, Organizational Behavior 13/e, Pearson Education.
5. Stephen P. Robbins, Mary Coulter and Neharika Vohra, Management 10/e, Pearson Education.
6. Heinz, Weihrich and Harold Koontz, Essentials of Management, Tata McGraw Hill.
7. Gene Burton and Manab Thakur, Management Today: Principles and Practice, Tata McGraw-Hill.
8. P.C. Tripathy, P.N. Reddy, Principles of Management, Tata McGraw-Hill.
9. Neeru Vashishth, Principles of Management with case studies, Taxmann Publication.
10. L.M. Prasad, Principles & Practice of Management, Sultan Chand & Sons N Delhi
11. James Stoner, R Edward Freeman and Daniel R Gilbert, Management 6/e, Pearson Education.



## **CVE 251 SURVEY-I LAB**

<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1.0</b>

- 1 Measurement of distance, ranging a line, plotting of details in chain survey.
- 2 Measurement of bearing and angles with compass, adjustment of traverse by graphical method.
- 3 Different methods of leveling, height of instrument, rise & fall methods.
- 4 Plane table survey, different methods of plotting two point & three point problem.

## **CVE 252 BUILDING MATERIALS LAB**

<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1.0</b>

**Laboratory Work:** Tests on: Cement, Fine aggregates, Coarse aggregate, Tests on bricks.

## **CVE 253 FLUID MECHANICS LAB**

<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1.0</b>

1. To determine the Reynolds's number and hence the type of flow
2. To determine co-efficient of discharge ( $c_d$ ) for venturimeter and orifice meter & calibrate Rota meter
3. To determine the co-efficient of discharge ( $c_d$ ) through different types of notches i.e. Rectangular & V- notch
4. To verify the Bernoulli's theorem
5. To determine the losses due to friction in pipes
6. To determine the coefficient of Pitot tube and plot the velocity profile across the cross section of pipe
7. To determine the Metacentric height & position of the metacenter with angle of heel for the ship model
8. To determine the co-efficient of discharge and co-efficient of velocity for Orifice & Mouthpiece

ਸਿਲੇਬਸ

ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ (ਮੁੱਢਲਾ ਗਿਆਨ)

ਅੰਡਰ ਗ੍ਰੈਜੂਏਟ ਪੱਧਰ ਤੇ ਪ੍ਰੋਫੈਸ਼ਨਲ ਕੋਰਸਾਂ ਲਈ ਕੁਆਲੀਫਾਇੰਗ ਪੰਜਾਬੀ (ਬੈਚ 2014 ਤੋਂ ਲਾਗੂ)

For Other State Students of

**B. Tech & 5 Yr. Engineering Management Integrated Program Only**

ਕੁੱਲ ਅੰਕ: 100 (ਮੋਖਿਕ ਪ੍ਰੀਖਿਆਂ 40 ਅੰਕ; ਬਾਹਰੀ ਪ੍ਰੀਖਿਆਂ 60 ਅੰਕ)

ਪਾਸ ਅੰਕ 35

ਸਮਾਂ : 3 ਘੰਟੇ

ਪੀਰੀਅਡ: 3 ਪ੍ਰਤੀ ਹਫ਼ਤਾ

ਭਾਗ ਓ

- 1) ਗੁਰਮੁਖੀ ਵਰਣਮਾਲਾ ਤੇ ਲੇਖਣ ਪ੍ਰਬੰਧ  
ਓ) ਅੱਖਰ ਸਿੱਖਿਆ: ਤਰਤੀਬਵਾਰ ਤੇ ਭੁਲਾਵੇਂ ਅੱਖਰ  
ਅ) ਅੱਖਰ ਬਣਤਰ: ਅੱਖਰ ਰੂਪ ਤੇ ਲਿਖਣ ਦੇ ਨਿਯਮ
- 2) ਗੁਰਮੁਖੀ ਅੱਖਰ ਤੇ ਪੰਜਾਬੀ ਧੁਨੀਆਂ ਦਾ ਪ੍ਰਬੰਧ  
ਓ) ਸਵਰ ਤੇ ਵਿਅੰਜਨ: ਵਰਗੀਕਰਨ ਦੇ ਸਿਧਾਂਤ ਤੇ ਉਚਾਰਨ  
ਅ) ਲਗਾਮਾਤਰਾਂ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋ

ਭਾਗ ਅ

- 1) ਲਿਪੀ ਦੇ ਅੱਖਰਾਂ ਦੀ ਵਰਤੋ ਦੇ ਨਿਯਮ  
ਓ) ਪੂਰੇ ਤੇ ਅੱਧੇ ਅੱਖਰ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋ  
ਅ) ਸਵਰ ਸੂਚਕ ਅੱਖਰਾਂ ਦੀ ਪਛਾਣ ਤੇ ਵਰਤੋ
- 2) ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ ਨਾਲ ਜਾਣਪਛਾਣ।  
ਓ) ਹਫ਼ਤੇ ਦੇ ਦਿਨ  
ਅ) ਮਹੀਨਿਆਂ ਦੇ ਨਾਮ  
ੲ) ਰੰਗਾਂ ਦੇ ਨਾਮ  
ਸ) ਪੰਜਾਬੀ ਰਿਸ਼ਤਾਨਾਤਾ ਪ੍ਰਬੰਧ ਸ਼ਬਦਾਵਲੀ

ਭਾਗ ਏ

- 1) ਸ਼ਬਦ ਪ੍ਰਬੰਧ: ਸ਼ਬਦ ਜੋੜਾਂ ਦੀ ਵਰਤੋ  
ਓ) ਦੇ ਅੱਖਰੀ ਸ਼ਬਦਾਂ ਦੇ ਸ਼ਬਦਜੋੜ  
ਅ) ਤਿੰਨ ਅੱਖਰੀ ਸ਼ਬਦਾਂ ਦੇ ਸ਼ਬਦ ਜੋੜ
- 2) ਸ਼ਬਦਾਂ ਦੀਆਂ ਸ਼੍ਰੇਣੀਆਂ ਤੇ ਵਿਆਕਰਨਕ ਵਰਗਾਂ ਦੀ ਪਛਾਣ  
ਓ) ਸ਼ਬਦਾਂ ਦੀਆਂ ਸ਼੍ਰੇਣੀਆਂ ਦਾ ਸਿਧਾਂਤ, ਪਛਾਣ ਤੇ ਵਰਤੋ, (ਨਾਵ, ਪੜਨਾਵ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ ਆਦਿ)

ਭਾਗ ਸ

- 1) ਸ਼ਬਦ ਬਣਤਰਾਂ ਤੇ ਵਿਆਕਰਨਕ ਇਕਾਈਆਂ ਦਾ ਸਿਧਾਂਤ ਤੇ ਵਰਤੋ  
ਓ) ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰਾਂ ਦਾ ਸਿਧਾਂਤ, ਪਛਾਣ ਤੇ ਵਰਤੋ  
(ਅਗੇਤਰ, ਪਿਛੇਤਰ, ਸਮਾਸ, ਦੁਹਰਕਤੀ)  
ਅ) ਵਿਆਕਰਨਕ ਇਕਾਈਆਂ ਦਾ ਸਿਧਾਂਤ, ਪਛਾਣ ਤੇ ਵਰਤੋ  
(ਵਾਕਾਂਸ਼, ਉਪਵਾਕ ਤੇ ਵਾਕ)

ਅੰਡਰ ਗ੍ਰੈਜੂਏਟ ਪੱਧਰ ਤੇ ਪ੍ਰੋਫੈਸ਼ਨਲ ਕੋਰਸਾਂ ਲਈ ਕੁਆਲੀਫਾਇੰਗ ਪੰਜਾਬੀ  
2013, 2014 ਅਤੇ 2015 ਪ੍ਰੀਖਿਆਵਾਂ ਲਈ  
ਸਿਲੇਬਸ

ਕੁਲ ਸਮਾਂ:100

ਲਿਖਤੀ:60 ਅੰਕ

ਸਮਾਂ:3 ਘੰਟੇ

ਮੌਖਿਕ ਪ੍ਰੀਖਿਆ:40 ਅੰਕ

ਪੀਰੀਅਡ: 3 ਪ੍ਰਤੀ ਹਫ਼ਤਾ

ਪਾਸ ਅੰਕ:35%

1. ਪੰਜਾਬੀ ਦੀ ਪਾਠਪੁਸਤਕ

(ਮੁੱਖ ਸੰਪਾਦਕ: ਬਲਦੇਵ ਸਿੰਘ ਚੀਮਾ, ਪ੍ਰਕਾਸ਼ਕ ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ)

ਭਾਗ ਪਹਿਲਾ ਪੰਜਾਬੀ ਸਾਹਿਤ

(ੳ) ਕਵਿਤਾ

(ਅ) ਕਹਾਣੀ

(ੲ) ਨਾਟਕ

ਭਾਗ ਦੂਜਾ ਪੰਜਾਬ ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ

ਭਾਗ ਤੀਜਾ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ

ਅੰਕ ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈਟਰ ਲਈ ਹਦਾਇਤਾਂ

ਪੁਸਤਕ ਦੇ ਤਿੰਨ ਭਾਗ ਹਨ। ਪ੍ਰੰਤੂ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਭਾਗਾਂ ਵਿਚ ਹੋਵੇਗਾ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦਾ ਪਹਿਲਾ ਭਾਗ ਪੁਸਤਕ ਦੇ ਪਹਿਲੇ ਭਾਗ ਉਤੇ ਆਧਾਰਿਤ ਹੋਵੇਗਾ। ਇਸ ਭਾਗ ਦੇ ਕੁਲ 36 ਅੰਕ ਹਨ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦਾ ਦੂਜਾ ਭਾਗ ਪੁਸਤਕ ਦੇ ਦੂਜੇ ਅਤੇ ਤੀਜੇ ਭਾਗ ਉਤੇ ਆਧਾਰਿਤ ਹੋਵੇਗਾ। ਇਸ ਭਾਗ ਦੇ ਕੁਲ 24 ਅੰਕ ਹੋਣਗੇ ਅਤੇ ਇਸ ਵਿਚ ਪੁਸਤਕ ਦੇ ਦੂਜੇ ਅਤੇ ਤੀਜੇ ਭਾਗ ਦੇ 1212 ਅੰਕ ਹੋਣਗੇ।

(1) ਪੁਸਤਕ ਦੇ ਪਹਿਲੇ ਭਾਗ ਦੇ ਤਿੰਨ ਉਪਭਾਗ ੳ, ਅ ਅਤੇ ੲ ਹਨ। ਇਨ੍ਹਾਂ ਤਿੰਨਾਂ ਉਪਭਾਗਾਂ ਵਿੱਚੋਂ ਹੇਠ ਅਨੁਸਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣ।

(ੳ) ਇਸ ਵਿਚ ਕੁਲ 12 ਪ੍ਰਸ਼ਨ ਐਬਜੈਕਟਿਵ ਟਾਈਪ/ਮਲਟੀਪਲ ਚੋਣ ਵਾਲੇ ਹੋਣਗੇ। ਹਰ ਉਪਭਾਗ ਵਿੱਚੋਂ 4 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ। ਅੰਕ  $3 \times 4 = 12$

(ਅ) ਹਰ ਉਪ ਭਾਗ ਵਿੱਚੋਂ 5--5 ਲਘੂ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ ਜਿਨ੍ਹਾਂ ਵਿੱਚੋਂ ਹਰ ਭਾਗ ਵਿੱਚੋਂ 3 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ। ਉੱਤਰ ਪੰਜ ਲਾਈਨਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ। ਅੰਕ  $9 \times 2 = 18$

(ੲ) ਹਰ ਉਪ ਭਾਗ ਵਿੱਚੋਂ 1 ਪ੍ਰਸ਼ਨ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਨ੍ਹਾਂ ਵਿੱਚੋਂ ਕੋਈ ਇਕ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨਾ ਹੋਵੇਗਾ। ਉੱਤਰ ਇਕ ਸਫੇ ਤੱਕ ਸੀਮਤ ਹੋਵੇ। ਅੰਕ = 06

(2) ਪੁਸਤਕ ਦੇ ਦੂਜੇ ਅਤੇ ਤੀਜੇ ਭਾਗ ਵਿੱਚੋਂ ਪ੍ਰਸ਼ਨ ਇਸ ਪ੍ਰਕਾਰ ਪੁੱਛੇ ਜਾਣਗੇ।

(ੳ) ਹਰ ਭਾਗ ਵਿੱਚੋਂ 4 ਪ੍ਰਸ਼ਨ ਐਬਜੈਕਟਿਵ ਟਾਈਪ/ਮਲਟੀਪਲ ਚੋਣ ਵਾਲੇ ਹੋਣਗੇ। ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ। ਅੰਕ  $4+4 = 8$

(ਅ) ਹਰ ਇਕ ਭਾਗ ਵਿਚ 4 ਸੰਖੇਪ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। 8 ਪ੍ਰਸ਼ਨਾਂ ਵਿੱਚੋਂ ਕੁਲ 5 ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ 2 ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹਨ। ਅੰਕ  $5 \times 2 = 10$

(ੲ) ਹਰ ਇਕ ਭਾਗ ਵਿੱਚੋਂ 1 ਪ੍ਰਸ਼ਨ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਨ੍ਹਾਂ ਵਿੱਚੋਂ ਕੋਈ ਇਕ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨਾ ਹੋਵੇਗਾ। ਉੱਤਰ ਇਕ ਸਫੇ ਤੱਕ ਸੀਮਤ ਹੋਵੇ। ਅੰਕ = 06

ਨੋਟ: ਮੌਖਿਕ ਪ੍ਰੀਖਿਆ ਪਾਠਪੁਸਤਕ ਤੇ ਹੀ ਆਧਾਰਿਤ ਹੋਵੇਗੀ। ਇਸ ਦੀ ਵਿਧੀ ਪ੍ਰੈਕਟੀਕਲ ਵਾਲੀ ਹੋਵੇਗੀ।

## **B.TECH. SECOND YEAR**

### **(CIVIL ENGINEERING)**

(Batch 2016)

(Session 2017-2018)

### **SCHEME OF PAPERS**

#### **FOURTH SEMESTER (Civil Engineering)**

<b>Sr.No.</b>	<b>Course No.</b>	<b>Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1.	CVE 206	Solid Mechanics	3	1	0	3.5
2.	CVE 207	Survey-II	3	1	0	3.5
3.	CVE 208	Transportation Engineering-I	3	1	0	3.5
4.	CVE 209	Rock Mechanics & Engineering Geology	3	1	0	3.5
5.	CVE 210	Concrete Technology	3	1	0	3.5
6.	CVE 211	Construction Machinery and Works Management	3	1	0	3.5
7.	CVE 256	Solid Mechanics Lab	0	0	2	1.0
8.	CVE 257	Survey –II Lab	0	0	2	1.0
9.	CVE 258	Transportation Engineering Lab-I	0	0	2	1.0
			<b>18</b>	<b>6</b>	<b>6</b>	<b>24.0</b>
10.		Environmental and road safety awareness**	3	0	0	0
<b>Total Contact Hours: 33</b>						

\* CVE 254, CVE 255 and CVE 256 are practical papers only.

There will not be any theory examination for these papers.

\*\* In addition to above mentioned subjects, there will be an additional course on Environmental and road safety awareness as a qualifying subject

# Department of Civil Engineering

Punjabi University, Patiala.

## General Instructions to the Paper Setters

(Common for B.Tech. in Computer Engineering, Electronics and communication Engineering, Mechanical Engineering, Civil Engineering and Integrated BTech/MBA Branches)

### Applicable to 2016 Batch

The B. Tech paper structure will be as shown below:

<b>Pattern of Question Paper</b>	
TITLE OF SUBJECT (CODE----)	
Bachelor of Technology (Branch) Section: .....	
End Semester Exam	
TIME ALLOWED: 3 Hour	Roll. No.....
Maximum Marks: 50	
Note:- Attempt any Six questions selecting three questions from each section A and B. Section C is compulsory.	
<b>Section-A (From Section A of the syllabus)</b>	
Q1. ....	
Q2. ....	
Q3. ....	
Q4. ....	3x5
Q5. ....	
<b>Section-B (From Section A of the syllabus)</b>	
Q6. ....	
Q7. ....	
Q8. ....	
Q9. ....	
Q10. ....	3x5
<b>Section-C (Common from Whole of the Syllabus)</b>	
Q11	
a).....	
b).....	
c).....	
d).....	
e).....	
f).....	
g).....	
h).....	
i).....	
j).....	10x2=20

#### **Note for the paper setter:**

1. Numbers of questions to be set are eleven (11) as per the above format.
2. Section A and B contain 10 questions of (5) marks each.
3. Section C is compulsory and contains ten sub-parts of one mark each. The answers for each question should preferably be of 2 to 3 lines.
4. The maximum limit on numerical questions to be set in the paper is 35% while minimum limit is 20% except theoretical, analysis and design papers
5. The paper setter shall provide detailed marking instructions and solution to numerical problems for evaluation purpose in the separate white envelopes provided for solutions.
6. The paper setters should seal the internal & external envelope properly with signatures & cello tape at proper place.
7. Log tables, charts, graphs, Design data tables etc. should be specified, whenever needed.
8. Use of Scientific calculator should be clearly specified.
9. There are some MBA subjects (*like BAS 202 Operational Research, MBA 5011 Foundation of Financial Accounting, MBA 5012 Foundation of Managerial Accounting, MBA 5022 Foundations of Marketing, MBA 5023 Foundations of Law, MBA 5031 Foundations of Macroeconomics, MBA 5032 Foundations of Microeconomics, MBA-5033 Foundations of International Business, MBA 5013 Foundations of Finance*) where syllabus is not divided among four sections namely A, B,C,D then Question paper must be set by without specifying section in it and giving proper weightage to the respective portions.

## CVE 206 SOLID MECHANICS

L	T	P	Credits
3	1	0	3.5

### Section-A

Simple Stresses and Strains: Introduction, stress-strain curves for elastic materials, different types of stresses and strains, elastic limit, Hooke's Law, Young's modulus of elasticity, Bulk modulus, modulus of rigidity, Lateral strain, Elongation due to self weight bars of tapering sections, bars of varying sections, equivalent area of composite sections, temperature stresses, relation between elastic constants. Volumetric strain.

Complex Stress: Introduction, rectangular block subjected to normal stresses along and across two planes, combination of normal and tangential stresses, pure shear, principal stresses and Principal planes, Mohr's Circle, Principal strains, Computation of Principal stresses from Principal strains.

Bending moment & shear force diagrams: Introduction, Types of beams, supports and loading, sign conventions for bending moments and shear forces, Shear force and Bending moment diagrams for simply supported, cantilever and overhanging beams for different types of loading. Relationship between Bending moment, Shear Force and loading Graphical method of plotting Bending Moment & Shear Force Diagrams.

Bending and Shear Stresses: Introduction, Assumption made in theory of simple bending, derivation of basic equation, determination of stresses in simple sections, built up sections and composite sections. (flitched Beams), Introduction to theory of unsymmetrical bending beams of uniform strength, variation of shear stress across depth of various beam sections.

### Section-B

Torsion: Introduction, torsion of shafts and springs, derivation of basic torsion equation, Power transmitted, sections subjected to combined bending and torsion, Principal stresses, equivalent Bending Moment & Torque, Helical spring, analysis of closed Coil helical spring.

Deflection of Beams: Derivation of basic equation of elastic curve, deflection in beams with different end conditions and different loadings by double integration method, Macaulay's method, moment area theorem, conjugate beam method, unit method and strain energy method. Maxwell's reciprocal theorem.

Columns and Struts: Introduction, Euler's buckling loads for columns with different end conditions, limitations of Euler's formula, column carrying eccentric loads, laterally loaded columns, empirical formula.

Strain Energy: Introduction, Strain Energy due to axial Loads, Bending shear and Torsional stress, Impact load, strain energy due to Principal stress & strains, theories of failure.

### Recommended Books:

1. E.P. Popov, Engineering Mechanics of Solids, Prentice-Hall of India Pvt. Ltd., New Delhi, 1996.
2. Timoshenko and Gere, Mechanics of Materials, CBS publishers and Distributors, N Delhi
3. Pytel & Kiusalaas, Mechanics of Materials, Cengage Learning, New Delhi
4. Gere, Mechanics of Materials, Cengage Learning, New Delhi
5. D.K. Singh, Mechanics of Solids, Pearson Education Asia, N Delhi
6. Irning H Shames, James M Pitarresi, Solid Mechanics, PHI, N Delhi
7. Sadhu Singh, Strength of Materials, Khanna Publishers, Delhi.
8. S.M.A. Kazimi, Strength of Materials



## CVE 207 SURVEY – II

<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>3.5</b>

### Section-A

Theodolite: Different types of Theodolites, temporary & permanent adjustment, traversing with a Theodolite, adjustment of closing error by Bowditch & transit rules.

Curves: Different types of curves, their degree and calculation of ordinates, and angles, their layout obstacles in curves.

Tachometric Survey: Different types of tachometer, calculation of vertical and horizontal distances, substance bar. Tachometric leveling with both angle of depression and elevation, errors due to curvature & refraction.

### Section-B

Triangulation: Measurement of baseline, corrections for the baseline, selection of stations.

Trigonometric Levelling: Height & distance of inaccessible objects.

GIS: Introduction, concepts and terminology, Utility of GIS, Essential components of a GIS, Data acquisition through scanners and digitizers, Data storage, Data manipulation and analysis Applications of GIS.

GPS: Introduction, working principle, various application of GPS related to Civil Engg., components of GPS – Point positioning and differential positioning.

Remote Sensing: Introduction, interaction of EMR with Earth Surface Working Principles and Instrumentation.

### Recommended Books:

1. C.L. Kochher, Surveying, Danpat Rai & Sons
2. Kanetkar, T. P., Surveying Vol. I & II, Pune Vidhyarthi Griha Prakashan (1985).
3. P.B. Sahiwny, Surveying
4. Singh, Narinder, Surveying, Tata McGraw Hill (1992).
5. Punmia, B. C., Surveying Vol. I and II, Luxmi Publications (1998).
6. Agor, R., Surveying, Khanna Publishers (1982).
7. Venkataramiah, C., A Text Book of Surveying, Universities Press (1996).
8. Kaplan, E.D., Understanding GPS : Principles and applications
9. Campbell, J.B. Taylvor and Francis, "Introduction to Remote Sensing".

## CVE 208 TRANSPORTATION ENGINEERING-I

L	T	P	Credits
3	1	0	3.5

### Section-A

Introduction: Transportation and its important. Different modes of transportation. Brief review of history of road development in India and abroad: Roman, Tresagne, Telford and Macadam constructions. Road patterns. Classification of roads, Objectives of highway planning, Planning surveys. Saturation system of planning.

Highway Plans, Highway Alignment and Surveys: Main features of 20 years road development plans in India. Requirements of an ideal highway alignment. Factors affecting alignment. Surveys for highway alignment.

Cross Section Elements and Sight Distant Considerations: Cross section elements: friction, carriageway, formation width, land width, camber, IRC recommended values. Types of terrain Design speed. Sight distant, stopping sight distant, overtaking sight distant, overtaking zones, intermediate sight distant, sight distant at intersections, head light sight distant, set back distant. Critical locations for sight distant.

Design of Horizontal and Vertical Alignment: Effects of centrifugal force. Design of superelevation. Providing superelevation in the field. Radius of circular curves. Extra-widening. Type and length of transition curves. Gradient, types, values. Summit curves and valley curves, their design criterion. Grade compensation on curves.

### Section-B

Traffic Characteristics And Traffic Surveys: Road user and vehicular characteristics. Traffic studies such as volume, speed and O & D study. Parking and accident studies. Fundamental diagram of traffic flow. Level of service. PCU. Capacity for non-urban roads. Causes and preventive measures for road accidents. Traffic Control Devise: Traffic control devise: signs, signals, markings and islands. Types of signs. Types of signals. Design of an isolated fixed time signal by IRC method. Intersections at grade and grade separated intersections. Design of a rotary. Types of grade separated intersections.

Highway Materials:Soil And Aggregates: Index properties of soil, soil classification, CBR test, plate bearing test. Desirable properties of aggregates. Various tests, testing procedures and IRC/IS specification for suitability of aggregates. Proportioning of aggregates for road construction by trial and error and Routhfuch method.

Bituminous Materials and Bituminous Mixes: Types of bituminous materials: bitumen, tar, cutback and emulsions. Various tests, testing procedures and IRS/IS specifications for suitability of bituminous materials in road construction. Marshall method of mix design. Basic concept of use of polymers and rubber modified bitumen in bituminous mixes.

### Recommended Books:

1. S.K.Khanna & C.E.G.Justo, Highway Engg , Nem Chand & Bros,Roorkee
2. G.V.Rao Principles of Transportation and Highway Engg. by,Tata McGraw Hill Pub., N.Delhi.
3. L.R.Kadiyali ,Traffic Engg. And Transport Planning ,Khanna Pub.Delhi.
4. Matson, T.M.,Smith,W.S. and Hurd,P.W , Traffic Engg. by.McGraw Hill Book Co., New York.
5. L.R.Kadyali and N.B.Lal, Principles and PractiCEs of Highway Engineering, Khanna Publishers.

## CVE 209 ROCK MECHANICS & ENGINEERING GEOLOGY

L	T	P	Credits
3	1	0	3.5

### Section-A

General Geology: Importance of Engg. Geology applied to Civil Engg. Practices. Weathering, definition, types and effect. Geological works of rivers, wind, glaciers as agents of erosion, transportation and deposition.

Rocks & Minerals: Minerals, their identification igneous, sedimentary & metamorphic rocks. classification of rocks for engineering purposes. Rock quality designation (ROD)

Structural Geology: Brief idea about stratification, apparent dip, true dip, strike and in conformities.

Folds, faults & joints: definition, classification relation to engg. Operations.

Engineering Geology: Geological considerations in the Engg. Projects like tunnels, highways, foundation, dams, reservoirs.

### Section-B

Earthquake: Definition, terminology, earthquake waves, intensity, recording of earthquake.

Engineering properties of rocks and laboratory measurement: Uniaxial compression test, tensile tests, permeability test, shear tests, size and shape of specimen rate of testing. Confining pressure, stress strain curves of typical rocks.

In-situ determination of Engg. Properties of Rock masses: Necessity of in-situ tests, uniaxial load tests in tunnels and open excavations, cable tests, flat jack test, shear test, pressure tunnel test. Simple methods of determining in situ stresses bore hole inercoring technique-bore hold deformation gauges.

Improvement in properties of Rock masses: Pressure grouting for dams and tunnels, rock reinforcement rock bolting.

### Recommended Books:

- 1 Richard E. Goodman, Introduction to Rock Mechanics
- 2 Farmar, I.W., Engg. Behaviour of rocks
- 3 Jaager C., Rock Mechanics and Engg.
- 4 Jaager and Cook, Fundamentals of Rock Mechanics
- 5 D.S. Arora, Engineering Geology
- 6 Parbin Singh, Engineering Geology
- 7 B.P. Verma, Rock Mechanics for Engineering

## **CVE -210 CONCRETE TECHNOLOGY**

<b>L</b>	<b>T</b>	<b>P</b>	<b>Crédits</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>3.5</b>

### **Section-A**

Introduction - Concrete materials - Cement: Physical tests on cement - Concrete materials - Tests on aggregates - Quality of Water for mixing and curing - use of sea water for mixing concrete

Mix Design - factors influencing mix proportion - Mix design by ACI method and I.S. code method.

Admixtures - accelerating admixtures - Retarding admixtures - water reducing admixtures - Air entraining admixtures - coloring agent - Plasticizers. Batching - Mixing -Transportation - Placing of concrete - curing of Concrete

Repair technology: - symptoms, evaluation of crack, repair of crack, types of repair, underwater repair.

### **Section-B**

Strength of Concrete - Shrinkage and temperature effects - creep of concrete - Corrosion - Causes and effects - remedial measures- Thermal properties of concrete - Micro cracking of concrete. Quality control of concrete

Introduction on Special Concrete - light weight concrete, Fiber reinforced concrete, Polymer-polymer modified concrete, ready mix concrete, Self compacting concrete.

Permeability and Durability: Permeability, sulphate attack, action of frost, frost resistance concrete.

Introduction on Pre stressed Concrete:- Basic concepts, classification and types of prestressing, prestressing systems, pretensioned and post-tensioned concrete elements. (No numerical)

### **BOOKS RECOMMENDED:**

1. Shetty, M.S., Concrete Technology, Theory & Practice, S.Chand and Co, 2004.
2. Gambhir, M.L., Concrete Technology, Tata McGraw Hill, 2004.
3. Neville, Properties of Concrete, Longman Publishers, 2004.
4. Santakumar A.R., Concrete Technology, Oxford University Press, New Delhi, 2007.

## CVE -211 CONSTRUCTION MACHINERY & WORKS MANAGEMENT

L	T	P	Crédits
3	1	0	3.5

### Section-A

Introduction: Need for project planning & management, time, activity & event, bar chart, Milestone chart, uses & draw backs.

PERT: Construction of PERT network, time estimates, network analysis, forward pass & backward pass, slack, critical path, data reduction, suitability of PERT for research project, numerical problems.

CPM: Definitions, network construction, critical path, fundamental rules, determination of project schedule, activity time estimates, float types, their significance in project control, numerical problems.

### Section - B

Cost Analysis and Contract: Type of costs, cost time relationships, cost slopes, conducting a crash programme, determining the minimum total cost of project, numerical problems. updating a project, when to update, time grid diagram, resource scheduling. planning of different components of civil engineering projects such as a house, workshop, dam, tunnel.

Construction Equipment and Machinery: Tractors, bull dozers, rippers, scrapers, power shovels, dragline, hoes. Line diagram of each, sizes, output, uses, factors affecting selection of each equipment, economic life of equipment, maintenance and repair cost.

Hoisting & Transporting Equipments: Hosts, Winches, Cranes, Belt conveyors, Ropeways, trucks & Wagons.

Plants for grading, batching, mixing, types of mixers, concrete pumps, bitumen plants.

#### BOOKS RECOMMENDED:

Construction Planning and Equipment - R.L.Peurifoy - Tata McGraw Hill, New Delhi

PERT and CPM - L.S.Srinath, East West Press

Management Guide to PERT & CPM - Wiest & levy; Prentice Hall

Construction Equipment & Planning and Application. - Mahesh Verma Artec Publication.

Construction Planning and Management by U. K. Shrivastava; Galgotia Publications Pvt. Ltd.

## **CVE 256 SOLID MECHANICS LAB**

<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1.0</b>

1. To determine Rockwell hardness number of the specimen of steel / soft metal
  2. To determine Brinell hardness number of the specimen of steel / soft metal
  3. To determine Vicker's hardness number of the specimen of steel / soft metal
  4. To determine the modulus of rigidity of a bar on torsion testing machine (destructive test)
  5. To determine the impact strength of a specimen on Izod / Charpy impact testing machine
  6. To determine the Young's modulus of the material of a beam simply supported at the ends and carrying a concentrated load at the center
  7. To determine the Young's modulus of the a strip on tensile testing machine
- To study the behaviour of the material on universal testing machine

## CVE – 257 Survey –II LAB

<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
0	0	2	1.0

- 1.Measurement of horizontal angles using theodolite
- 2 Measurement of Vertical angles using theodolite.
3. Base line measurement.
- 4 Tachometric survey.
5. Gale's Traverse Table.
6. Use of Total Station (Demonstration).

## CVE 258 TRANSPORTATION ENGINEERING-I LAB

L	T	P	Credits
0	0	2	1.0

### LIST OF EXPERIMENTS

1. Aggregate Impact Test.
2. Los-Angeles Abrasion Test on Aggregates.
3. Crushing Strength Test on Aggregates.
4. Flakiness and Elongation Index of aggregates.
5. Specific gravity and water absorption test on aggregates.
6. Penetration Test on Bitumen.
7. Ductility Test on Bitumen.
8. Flash and Fire Point Test on Bitumen.
9. Specific gravity of bitumen
10. Softening Point Test on Bitumen.



## **Environmental and Road Safety Awareness**

Time Allowed : 3 hours

Total Marks : 100

Total lectures : 50

Pass marks : 35

### **Instructions**

- a) The paper has been introduced from the session 2013-14.
- b) The paper will be taught in the Second year/fourth Semester of all the U.G. Courses (B.A., B.Com., B.Sc., Law, Engineering, Commerce, Agriculture etc.) except LL.B. three year course and will be a qualifying paper only. The marks of this paper will not be counted towards final score of the under graduate degree.
- c) This will cover only preliminary and basics of the subject and the paper will be set accordingly.
- d) The written paper will have two parts. Each part of the paper will be of 50 marks and will contain ten questions. The candidates will attempt five questions out of each part. The answer to each question should not exceed 500 words. Each question will carry ten marks.

### **Section – I**

**Unit 1 :** The multidisciplinary nature of environmental studies. Definition, scope and importance

- Concept of Biosphere – Lithosphere, Hydrosphere, Atmosphere.
- Need for public awareness (6 lectures)

**Unit – 2** Natural Resources – Renewable and non-renewable resources.

- Natural resources and associated problems.
  - a) Forest resources : use and over exploitation, deforestation and its impact.
  - b) Water resources ; use and overutilization of surface and ground water and its impact.
  - c) Mineral resources : use and effects on environment on over exploitation.
  - d) Food resources : Effects modern agriculture, fertilizer-pesticide problem, water logging and salinity.
  - e) Energy resources : Growing energy needs, renewable and non-renewable energy sources, use of alternate energy resources.
  - f) Role of an individual in conservation of natural resources for sustainable development. (7 lectures)

**Unit 3 :** Ecosystems

- Ecosystem and its components : Definition, structure and function; producer, consumer and decomposer.
- Types of Ecosystem (Introduction only)
- Food Chains, food web and ecological pyramids (6 lectures)

#### **Unit – 4 : Biodiversity and conservation**

- Introduction – Definition : genetic, species and ecosystem diversity, value of biodiversity.
- Hot spots of biodiversity
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India.
- Conservation of Biodiversity. (6 lectures)

### **Section – II**

#### **Units 5 : Environmental Pollution**

- Definition, causes, effects and control measures of
  - a) Air pollution
  - b) Water pollution
  - c) Soil pollution
  - d) Marine pollution
  - e) Noise pollution
  - f) Thermal pollution
  - g) Nuclear hazard
- Role of an individual in prevention of pollution.
- Solid waste management : vermicomposting.
- Disaster management : Floods, earthquake, cyclone and landslides (7 lectures)

#### **Unit 6 : Social Issues and the Environment**

- Urban problems related to energy.
- Water conservation rain water harvesting, water shed management.
- Resettlement and rehabilitation of people : its problems and concerns.
- Climate changes, global warming, acid rain, ozone layer depletion.
- Consumerism and waste products.
- Population explosion – Family welfare programme (6 lectures)

#### **Unit 7 : Introduction to Environmental Protection Laws in India**

- Environmental Protection Act.
- Air (Prevention and control of pollution) Act.
- Water (Prevention and Control of pollution) Act.
- Wild life Protection Act.
- Forest Conservation Act.
- Issues involved in the enforcement of environmental legislation. (6 lectures)

#### **Unit 8 : Road safety Awareness**

- Concept and significance of Road safety.
- Traffic signs.
- Traffic rules.

- Traffic Offences and penalties.
- How to obtain license.
- Role of first aid in Road Safety.

(6 lectures)