Code No: RT22011 **R13** SET - 1

II B. Tech II Semester Regular Examinations, May/June - 2015
BUILDING PLANNING AND DRAWING
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer any **Three** questions in **PART-A**
3. Answer **One** question from **PART-B**

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PART-A

(14 × 3 = 42M)

1. a) Explain the importance of building bye laws?
   b) What is meant by aspect, prospect, circulation and grouping? Explain its importance? (7M+7M)

2. a) Write classification of buildings? Also explain any three types of buildings? (5M+9M)

3. a) Explain different principles used while planning a hospital in rural areas?
   b) Design the layout of a hotel building constructed in a city? (7M+7M)

4. a) Classify doors? Explain about any four type of doors
   b) Clearly differentiate between king post and queen post truss? Explain different features. (7M+7M)

5. a) Draw Flemish bond of 1½, 2 brick way (rough sketch only)
   b) Draw sign convention for the following materials:
   i) Brick ii) Stone iii) Zinc iv) Earth (7M+7M)

PART-B

(1 × 28 = 28M)

6. a) Draw odd and even courses elevation and Isometric view of English bond of 2 brick wall.
   b) Draw elevation and sectional plan of 0.partly paneled and partly glazed door of size 1200X2000 mm. size. (14M+14M)

7. Draw plan, elevation and section of a building by using given line diagram and assume suitable dimensions for foundation, slab thickness, lintel thickness, parapet wall thickness etc. (28M)
~~~~~~

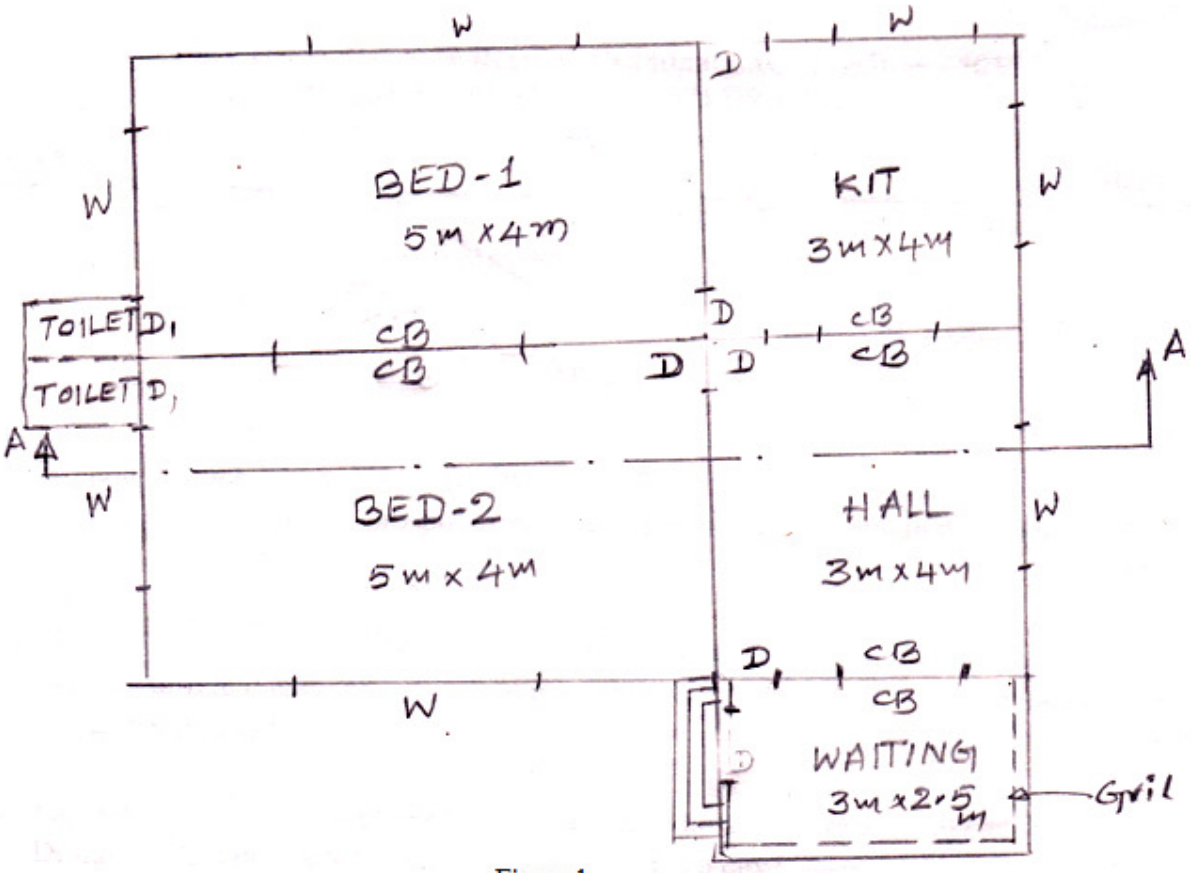
W
W
D
BED-1
5m x 4m
KIT
3m x 4m
W
W
TOILET
D1
TOILET
D1
CB
CB
D
D
D
CB
CB
A
A
W
BED-2
5m x 4m
HALL
3m x 4m
W
W
D1
CB
CB
D
WAITING
3m x 2.5m
Grill

Figure 1

Code No: RT22011 **R13** SET - 2

II B. Tech II Semester Regular Examinations, May/June - 2015
BUILDING PLANNING AND DRAWING
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer any **Three** questions in **PART-A**
3. Answer **One** question from **PART-B**

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PART-A

(14 × 3 = 42M)

1. a) How height of building is evaluated? Explain the factor associated with this?
   b) What is meant by flexibility, circulation and sanitation? Explain its importance? (7M+7M)

2. a) Explain different features of hospitals, institutional, and buildings for recreation?
   b) Explain different standards and requirements of different parts of a residential house? (7M+7M)

3. a) Explain different principles used while planning a dispensary in rural areas?
   b) Draw a plan (for not to scale) of a Bank with all the facilities constructed in a town? (7M+7M)

4. a) Classify windows? Explain about any four type of doors
   b) Explain different features of king post truss? (7M+7M)

5. a) Draw English bond of 1½, 2 brick wall (rough sketch only)?
   b) Draw sign convention for the following materials:
   i) Lead ii) Rock iii) Timber iv) Concrete (7M+7M)
~~~~~~

Code No: RT22011 **R13** SET - 2

PART-B

(1 × 28 = 28M)

6. a) Draw odd and even courses elevation and Isometric view of Flemish bond of 2 brick wall.
   b) Draw elevation and sectional plan of Panelled door of size 1200X2100 mm. size.

(14M+14M)

7. Draw plan, elevation and section for the below Figure 1 line diagram and use suitable dimensions

(28M)

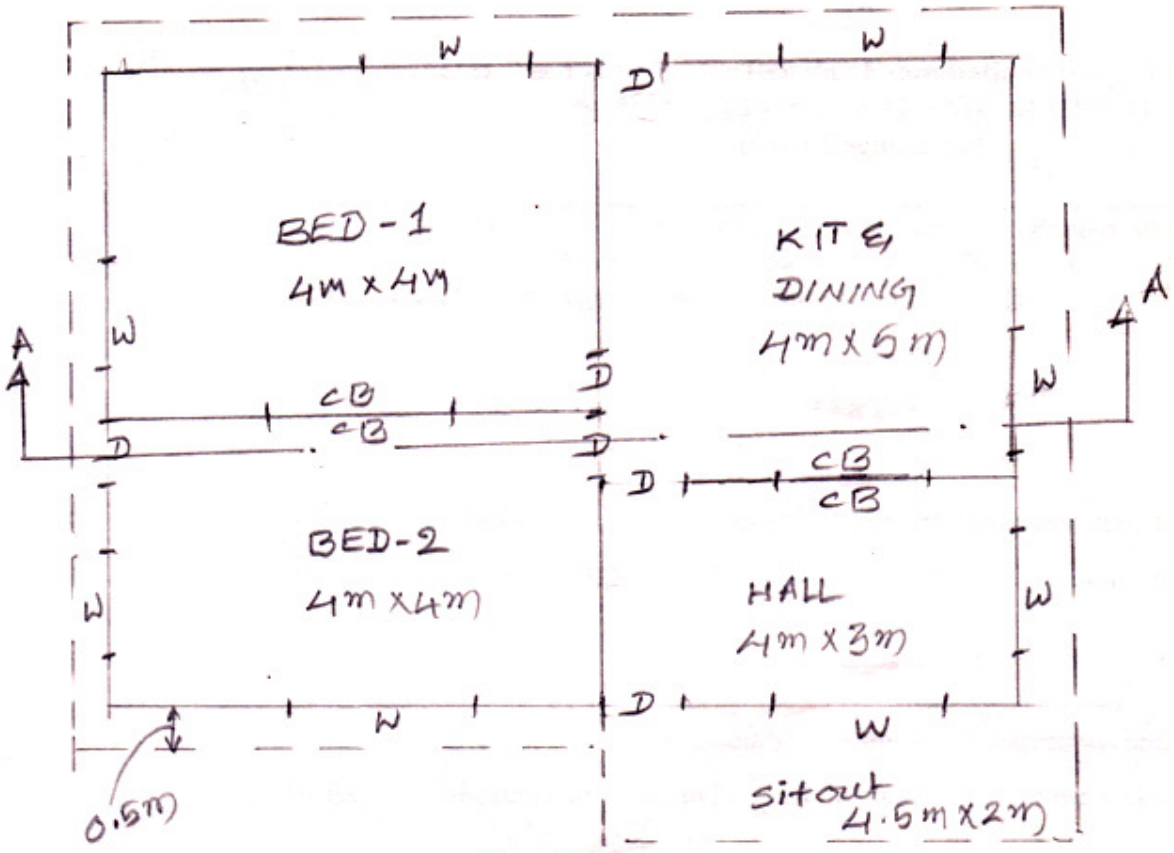

Figure 1

Code No: RT22011 **R13** SET - 3

II B. Tech II Semester Regular Examinations, May/June - 2015
BUILDING PLANNING AND DRAWING
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer any **Three** questions in **PART-A**
3. Answer **One** question from **PART-B**

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PART-A

(14 × 3 = 42M)

1. a) What is meant by FSI? State the importance of this factor?
   b) List out different principles in planning a building? Explain any four factors in detail? (7M+7M)

2. a) Explain different features of residential, and educational buildings?
   b) Explain different principles used in planning a residential building along with minimum dimensions of each room? (7M+7M)

3. a) Explain different principles used while planning a cenema theatre in city?
   b) Draw a rough plan of a post office building in village? (7M+7M)

4. a) Explain clearly difference between Battened, paneled and flush doors?
   b) Explain the different features of Queen post truss? (7M+7M)

5. a) Draw rough sketch of English Bond for 1½, 2 brick wall
   b) Draw sign convention for the following materials:
   i) Cast iron ii) Glass iii) Sand filling iv) Marble (7M+7M)
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Code No: RT22011 **R13** SET - 3

PART-B

(1 × 28 = 28M)

6. a) Draw odd and even courses elevation and Isometric view of Flemish bond of one and half brick wall.
   b) Draw elevation and sectional plan of Panelled window of size 1200X1000 mm. size.

(14M+14M)

7. Draw plan, elevation and section for the below line diagram and assume suitable dimension

(28M)

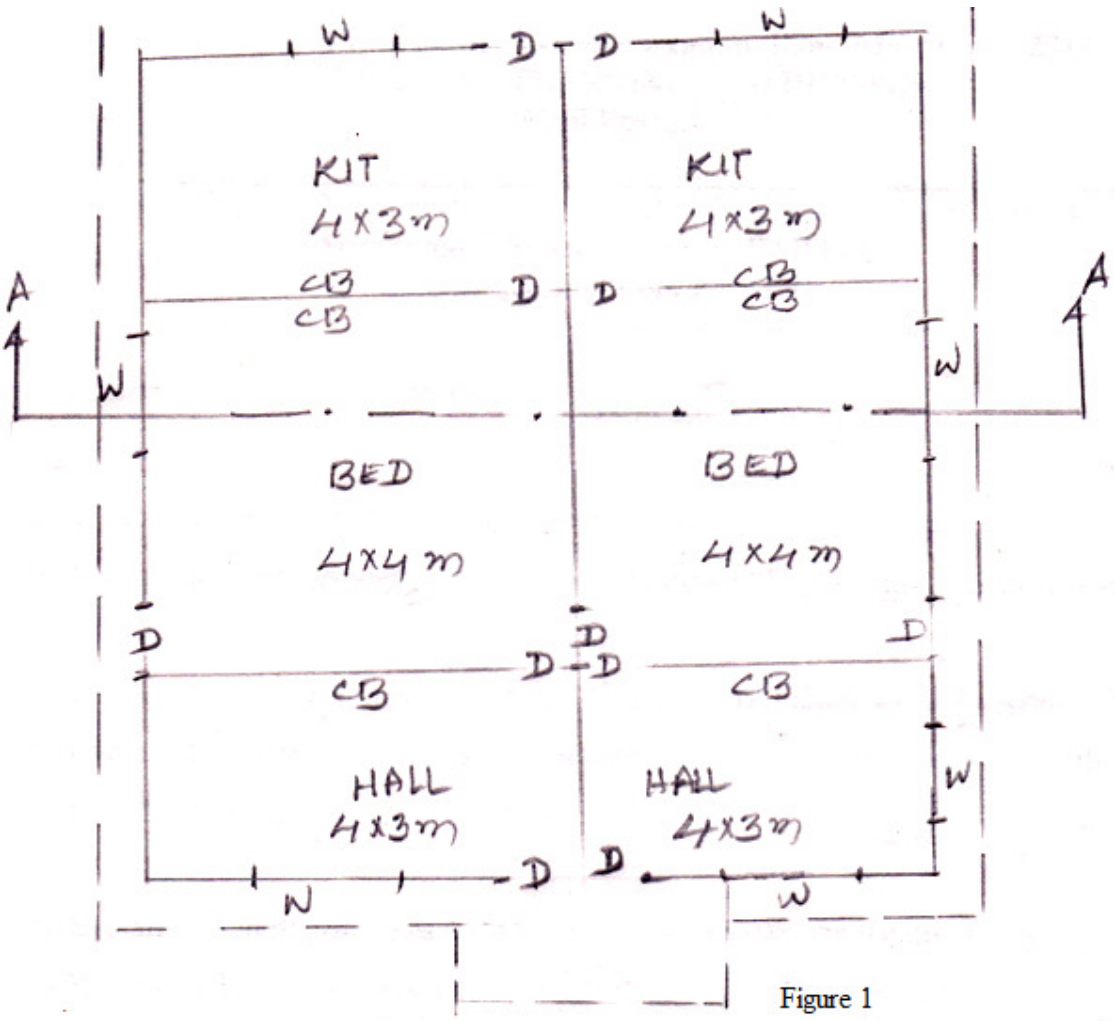

Figure 1

Code No: RT22011 **R13** SET - 4

II B. Tech II Semester Regular Examinations, May/June - 2015
BUILDING PLANNING AND DRAWING
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer any **Three** questions in **PART-A**
3. Answer **One** question from **PART-B**

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PART-A

(14 × 3 = 42M)

1. a) What are different lighting and ventilation requirements in a building based on building bye laws?
   b) Explain in detail two terms FAR and FSI? (7M+7M)

2. a) Clearly differentiate between, Business building and Educational, buildings?
   b) Explain different principles used in planning a residential building along with minimum dimensions of each room? (7M+7M)

3. a) Explain different principles used while planning a dispensary?
   b) Design the layout of a school building constructed in a village (for not to scale)? (7M+7M)

4. a) Explain clearly difference between Flush and glassed doors?
   b) Explain the different features of King post truss? (7M+7M)

5. a) Draw English Bond of 1½, 2 brick (rough sketch only).
   b) Draw sign convention for the following materials:
   i) Cast iron ii) Glass iii) Sand filling iv) Marble (7M+7M)

PART-B

(1 × 28 = 28M)

6. a) Draw odd and even courses elevation and Isometric view of Flemish bond of one and half brick wall.
   b) Draw elevation and sectional plan of Panelled window of size 1200X1000 mm. size. (14M+14M)

7. Draw plan and Elevation and section for the given line diagram by using suitable assumed dimensions. (20M)
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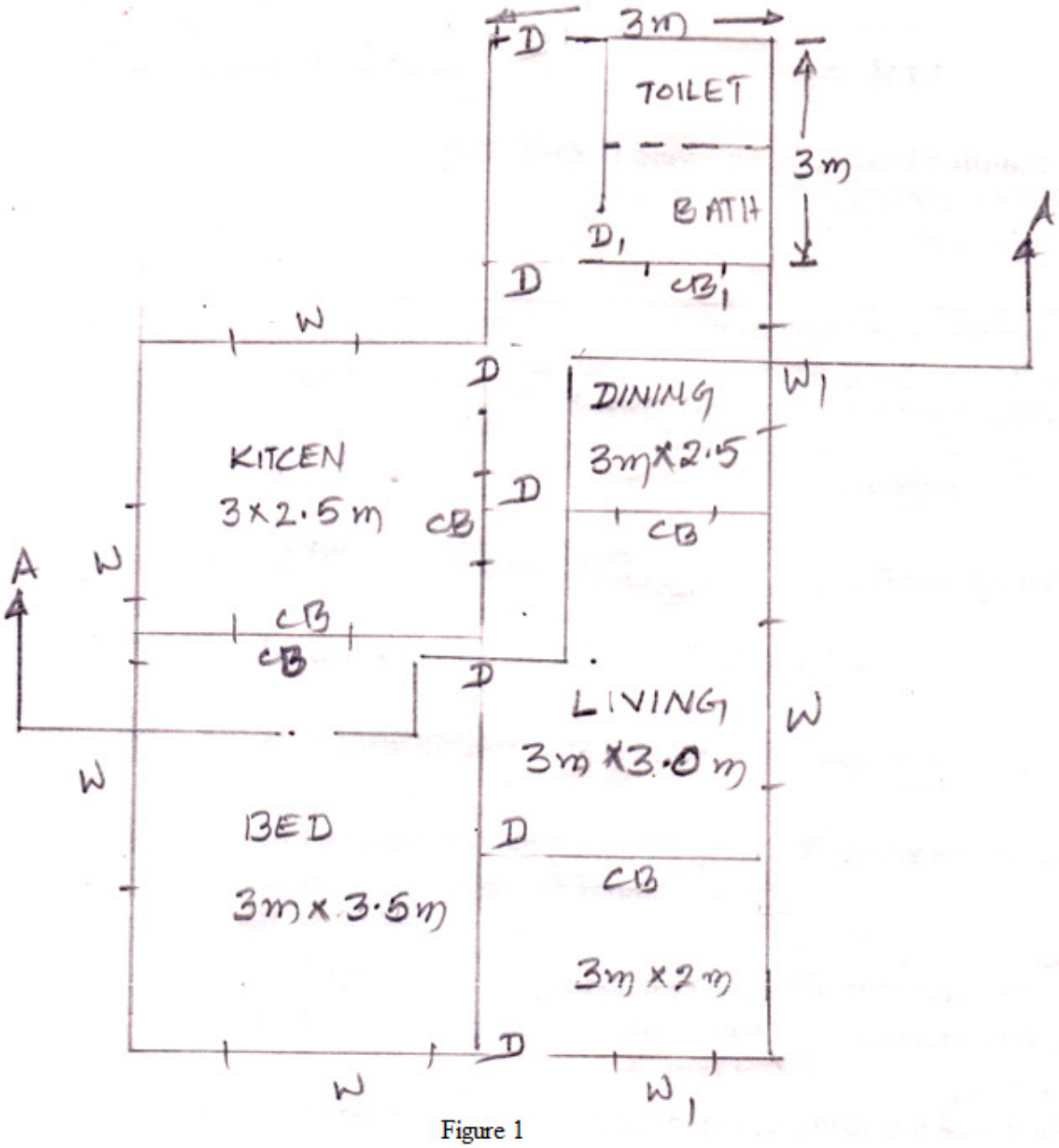
3m
D
TOILET
3m
BATH
D1
D
CB1
W
D
W1
DINING
3m X 2.5
KITCEN
3 X 2.5 m
CB
D
CB
A
W
CB
CB
D
LIVING
3m X 3.0 m
W
W
BED
3m x 3.5m
D
CB
3m X 2 m
D
W
W1

Figure 1

Code No: RT22015 **R13** SET - 1

II B. Tech II Semester Regular Examinations, May/June - 2015
CONCRETE TECHNNOLOGY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) What is meant by the water of hydration?
   b) Define workability of concrete?
   c) Define poisson's ratio?
   d) Define creep of concrete?
   e) Write short note on cellular concrete (4M+4M+4M+4M+6M)

PART-B

2. a) What are the reactions of hydration of the main compounds in portland cement?
   b) What is meant by surface texture of aggregate? (8M+8M)

3. a) How is the compacting factor measured?
   b) What are the factors affecting the workability of concrete? (8M+8M)

4. a) Explain in detail the factors influencing the strength results in case of hardened concrete.
   b) Write a brief note on Flexure strength of Concrete. (8M+8M)

5. a) Describe the role of aggregate in creep of concrete.
   b) Discuss the influence of mix proportions of concrete on shrinkage? (8M+8M)

6. Design a concrete mix of M20 grade for a roof slab. Take a Standard deviation of 4MPa. The specific gravities of Coarse Aggregate and Fine Aggregate are 2.73 and 2.60 respectively. The bulk density of coarse aggregate is 1615kg/m^3 and fineness modulus of fine aggregate is 2.74. A slump of 55mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using IS code method. Assume any missing data suitably. (16M)

7. What is the need to study fiber reinforced concrete and explain briefly the factors effecting properties of fiber reinforced concrete? (16M)
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Code No: RT22015 **R13** SET - 2

II B. Tech II Semester Regular Examinations, May/June - 2015
CONCRETE TECHNNOLOGY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) How is fineness of cement measured?
   b) What is meant by honeycombing?
   c) Define the gel/space ratio?
   d) What is a secant modulus of elasticity?
   e) Write short note on no fines concrete? (4M+4M+4M+5M+5M)

PART-B

2. a) What is the pozzolanic activity index?
   b) Why do we determine the elongation index?
   c) What is bulking of sand? (6M+6M+4M)

3. a) Explain what is meant by bleeding of concrete?
   b) What are the factors affecting the workability of concrete? (8M+8M)

4. a) What is the importance of Non-Destructive tests?
   b) Write a brief note on split tensile strength of Concrete. (8M+8M)

5. a) Discuss the main factors affecting the creep of concrete
   b) Describe the mechanism of drying shrinkage of concrete (8M+8M)

6. Design a concrete mix of M30 grade for a roof slab. Take a Standard deviation of 5MPa. The specific gravities of Coarse Aggregate and Fine Aggregate are 2.74 and 2.62 respectively. The bulk density of coarse aggregate is 1620kg/m^3 and fineness modulus of fine aggregate is 2.76. A slump of 65mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using IS code method. Assume any missing data suitably. (16M)

7. Explain the following,
   a) Cellular concrete
   b) Polymer concrete
   c) High performance concrete (5M+5M+6M)
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Code No: RT22015 **R13** SET - 3

II B. Tech II Semester Regular Examinations, May/June - 2015
CONCRETE TECHNNOLOGY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) What are the major compounds in Portland cement?
   b) What is meant by segregation of a concrete mix?
   c) What is the effective water/cement ratio?
   d) What is a tangent modulus of elasticity?
   e) Write short note on self compacting concrete
   (4M+4M+4M+5M+5M)

PART-B

2. a) How are the strength tests of cement performed?
   b) Why do we determine the flakiness index?
   c) What are the advantages of a gap-graded mix? (6M+5M+5M)

3. a) Discuss the factors affecting bleeding of concrete.
   b) What is relation between cohesiveness and segregation? (8M+8M)

4. a) Discuss the relation between modulus of elasticity and strength
   b) Write a brief note on rebound hammer test. (8M+8M)

5. a) Write a brief note on factors affecting modulus of elasticity.
   b) Define Creep and explain how creep is measured.
   c) Explain in detail the classification of Shrinkage. (6M+5M+5M)

6. Design a concrete mix of M25 grade for a roof slab. Take a Standard deviation of 4MPa. The specific gravities of Coarse Aggregate and Fine Aggregate are 2.75 and 2.58 respectively. The bulk density of coarse aggregate is 1630kg/m^3 and fineness modulus of fine aggregate is 2.78. A slump of 60mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using IS code method. Assume any missing data suitably. (16M)

7. Explain the following,
   i) Light weight aggregate concrete
   ii) SIFCON
   iii) Types of polymer concrete (5M+5M+6M)
~~~~~~

Code No: RT22015 **R13** SET - 4

II B. Tech II Semester Regular Examinations, May/June - 2015
CONCRETE TECHNNOLOGY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) What is meant by the total heat of hydration of cement?
   b) What is meant by bleeding of concrete?
   c) What is Abram's law?
   d) Explain what is meant by differential shrinkage?
   e) Write short note on self healing concrete
   (4M+4M+4M+5M+5M)

PART-B

2. a) What is meant by soundness of aggregate
   b) What is a gap-graded mix?
   c) Define toughness of aggregate? (6M+5M+5M)

3. a) Discuss the factors affecting cohesion of concrete?
   b) What is Workability and explain various factors influencing the Workability? (7M+9M)

4. a) What are the advantages of NDT over destructive tests?
   b) Write a brief note on compressive strength of Concrete. (8M+8M)

5. a) Explain the term efflorescence.
   b) Define Creep and explain how creep is measured.
   c) Write about the thermal properties of concrete. (5M+6M+5M)

6. Design a concrete mix of M35 grade for a roof slab. Take a Standard deviation of 5MPa. The specific gravities of Coarse Aggregate and Fine Aggregate are 2.76 and 2.59 respectively. The bulk density of coarse aggregate is 1625kg/m^3 and fineness modulus of fine aggregate is 2.82. A slump of 70mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using IS code method. Assume any missing data suitably. (16M)

7. a) What are the factors affecting properties of fiber reinforced concrete?
   b) Difference between High performance concrete and high density concrete. (8M+8M)
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Code No: RT22012 **R13** SET - 1

II B. Tech II Semester Regular Examinations, May/June – 2015
HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Differentiate between uniform and non uniform flow
   b) What are the methods of dimensional analysis?
   c) Differentiate between inward and outward radial flow turbine
   d) How cavitations be avoided in reaction turbine
   e) Define slip, percentage slip and negative slip of a reciprocating pump.
   f) Define the term utilization factor

(3M+4M+4M+4M+4M+3M)

PART-B

2. a)Obtain an expression for the depth after the hydraulic jump and the loss of head Due to the jump. Write the assumptions made.
   b) Determine the economical cross-section for an open channel of trapezoidal section with side slopes of 1 vertical to 2 horizontal, to carry 10 m^3/s, the bed slope being 1/2000. Assume Manning coefficient as 0.022. (8M+8M)

3. a) What do you mean by dimensional numbers? Name any four dimensional numbers. Define and explain Reynolds's number, Froude's number and Mach number. Derive expressions for any above two numbers.
   b) What is meant by geometric, kinematic and dynamic similarities? (10M+6M)
~~~~~~

4. a) A water jet 20 mm in diameter and having a velocity of 90 m/s strikes series of moving blades in a wheel. The direction of the jet makes 20° with the direction of movement of the blade. The blade angle at inlet is 35°. If the jet should enter the blade without striking, what should be the blade velocity? If the outlet angle of the blade is 30°, determine the force on the blade. Assume that there is no friction involved in the flow over the blade.
   b) Differentiate between the force exerted by a jet on a single curved moving plate and a series of curved moving plate (10M+6M)

5. a) A Francis turbine working under a head of 5 m at a speed of 210 rpm develops 75 KW when the rate of flow of water is 1.8 m3/ sec. If the head is increased to 16 m, determine the speed, discharge and power.
   b) Explain briefly the principles on which a Kaplan turbine works. (9M+7M)

6. a) A centrifugal pump works against a head of 30 m and discharges 0.25 m3/s while running at 1000 rpm. The velocity of flow at the outlet is 3 m/s and the vane angle at outlet is 300. Determine the diameter and width of impeller at outlet if the hydraulic efficiency is 80 per cent.
   b) Draw and discuss the operating characteristics of a centrifugal pump (9M+7M)

7. Write short notes on the following:
   i) Firm Power ii) Secondary power iii) Utilization factor iv) Load duration curve.
   (4M+4M+4M+4M)

Code No: RT22012 **R13** SET - 2

II B. Tech II Semester Regular Examinations, May/June – 2015
HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Differentiate between Steady and unsteady flow
   b) What do you mean by repeating variable?
   c) Differentiate between the radial and axial flow turbines
   d) Define and explain hydraulic efficiency and mechanical efficiency
   e) What is an air vessel?
   f) What do you mean by mass curve?

(3M+4M+4M+3M+4M+4M)

PART-B

2. a) Derive the condition for depth of flow of a most economical circular channel Section subject to the condition for maximum velocity.
   b) A Wide channel of uniform rectangular section with a slope of 1/95 has a flow rate of 3.75 $m^3/s/m$. The Manning constant is 0.013. Suddenly the slope changes to 1/1420. Determine the normal depths for each case. Show that a hydraulic jump has to occur and calculate the downstream flow height. (8M+8M)

3. a) What are the methods of dimensional analysis? Describe the Rayleigh's method for Dimensional analysis.
   b) Explain the terms: distorted models and undistorted models. What the use is of distorted Models? (8M+8M)
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4. a) Prove that the force exerted by a jet of water on a fixed semi-circular plate in the direction of the jet when the jet strikes at the center of the semi-circular plate is two times the force exerted by the jet on an fixed vertical plate.
   b) Find the force exerted by a jet of water of diameter 100 mm on a stationary flat plate, when the jet strikes the plate normally with a velocity of 30 m/s. (8M+8M)

5. a) Define the specific speed of the turbine? Derive an expression for the specific speed. What is the significance of specific speed of the turbine.
   b) Two jets strike at bucket of a Pelton wheel, which is having shaft power as 14,715 kW. The diameter of each jet is given as 150 mm. If the net head on the turbine is 500 m, find the overall efficiency of the turbine. Take $C_v = 1.0$

   (8M+8M)

6. a) The diameter and width of a centrifugal pump impeller are 50 cm and 2.5 cm. The pump runs at 1200 rpm. The suction head is 6 m and the delivery head is 40m. The frictional drop in suction is 2 m and in the delivery 8 m. The blade angle at out let is 30°. The manometric efficiency is 80% and the overall efficiency is 75%. Determine the power required to drive the pump. Also calculate the pressures at the suction and delivery side of the pump
   b) Define a centrifugal pump. Explain the working of a single stage centrifugal pump with neat sketches.

   (9M+7M)

7. a) How do you estimate hydropower potential
   b) Discuss various classifications of different types of hydropower plants

   (9M+7M)

Code No: RT22012 **R13** SET - 3

II B. Tech II Semester Regular Examinations, May/June – 2015
HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a)What is specific energy curve
   b) State Buckingham's π- theorem
   c) Differentiate between the impulse and reaction turbine
   d) Define the terms 'unit power', 'unit speed' and 'unit discharge'
   e) Differentiate between a single acting and double acting reciprocating pump
   f) What is a draft tube? What are its functions? (3M+4M+3M+4M+4M+4M)

PART-B

2. a)Explain the terms specific energy of a flowing liquid, minimum specific energy, critical depth, critical velocity and alternate depths as applied to non-uniform flow.
   b) A rectangular channel of 5 m width discharges water at the rate of 1.5 m^3/s into a 5 m wide apron with 1/3000 slope at a velocity of 5 m/s. Determine the height of the hydraulic jump and energy loss. (8M+8M)

3. a) Explain different types of hydraulic similarities that must exist between a prototype and its model.
   b) Define the term dimensional analysis and model analysis (10M+6M)

4. a) A jet of water of diameter 50 mm moving with a velocity of 20 m/s strikes a fixed plate in such a way that the angle between the jet and the plate is 60°. Find the force exerted by the jet on the plate (i) in the direction normal to the plate, and (ii) in the direction of the jet.
   b) Differentiate between the force exerted by a jet of water on a fixed vertical plate and moving vertical plate. (10M+6M)

5. a) A Kaplan turbine is to develop 2400 KW when running at 240 rpm under a net head of 49m. In order to predict its performance a model of scale 1:5 istested under a net head of 25m. At what speed should the model run and what power would it develop. Determine the discharge in the model and in full scale turbine if the overall efficiency of the model is 85%
   b) Explain the different types of the efficiency of a turbine (9M+7M)

6. a)What do you mean by manometric efficiency, mechanical efficiency and overall efficiency of centrifugal pump.
   b) What is negative slip in a reciprocating pump? Explain with neat sketches the functions of air vessels in a reciprocating pump (8M+8M)

7. a) What are the main components of hydropower plants and explain each in detail
   b) Define the terms: (i) load factor, (ii) utilization factor and (iii) capacity factor (9M+7M)

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Code No: RT22012 **R13** SET - 4

II B. Tech II Semester Regular Examinations, May/June – 2015
HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Differentiate between Critical, sub-critical and super –critical flow in a open channel
b) What do you mean by fundamental units and derived units? Give examples
c) Differentiate between the turbines and pumps
d) What is specific speed
e) Differentiate between a single cylinder and double cylinder reciprocating pump
f) Define the term load factor

(4M+4M+4M+3M+4M+3M)

PART-B

2. a) Derive the condition for the best side slope of the most economical trapezoidalchannel.
b)Water is discharged at a velocity of 8 m/s with a depth of 0.7 m in a horizontal rectangular open channel of constant width when the sluice gate is opened upwards. Determine the height of the hydraulic jump and the loss of energy (8M+8M)

3. a) State Buckingham's Π-theorem. Why this theorem is considered superior over the Rayleigh's method for dimensional analysis.
b) What is meant by geometric, kinematic and dynamic similarities? (10M+6M)

4. a) Derive the expression for the force exerted by a water jet on a plate moving in the same direction of the jet with a velocity less than that of the jet.
b) A blade turns the jet of diameter 3 cm at a velocity of 20 m/s by 60°. Determine the force exerted by the blade on the fluid. (8M+8M)

5. a) A Pelton wheel is having a mean bucket diameter of 0.8 m and is running at 1000 r.p.m. The net head on the Pelton wheel is 400 m. If the side clearance angle is 15° and discharge through nozzle is 150 liters/s, find (i) Power available at the nozzle, and (ii) Hydraulic efficiency of the turbine
b)What do you understand by the characteristics curves of turbine? Name the important characteristics of a turbine.

(9M+7M)

6. a) What is meant by priming of a centrifugal pump? What are the different priming arrangements employed for small and big pumping units?
b) Find an expression for the head lost due to friction in suction and delivery pipe (8M+8M)

7. a) Compare and contrast between hydropower station and thermal power station.
b) List out twelve important hydropower plants in India. (9M+7M)
~~~~~~

Code No: RT22014 **R13** SET - 1

II B. Tech II Semester Regular Examinations, May/June - 2015
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Com. to CE, EIE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Define Managerial Economics
   b) Define Isoquants
   c) What are the Pricing Objectives?
   d) Write a short note on Trade cycle
   e) Write a short note on Accounting cycle
   f) What do you mean by Payback period (3M+3M+4M+4M+4M+4M)

PART-B

2. a) Define the law of demand. What are its exceptions? Explain
   b) Explain different methods of demand forecasting (8M+8M)

3. a) Explain the laws of returns with appropriate examples
   b) Discuss the different cost concepts used in the process of cost analysis (8M+8M)

4. a) Differentiate between perfect and imperfect markets
   b) Explain the Marris Managerial theory of Firm Growth Maximization Model (7M+9M)

5. a) Enumerate the merits and demerits of partnership firm
   b) Describe the different phases of a business cycle (8M+8M)

6. a) Define accounting and discuss its functions
   b) Calculate the earnings per share from the following data:
   Net profit before tax Rs.1,00,000
   Taxation at 50% of net profit
   10% Preference share capital (Rs.10 each) Rs.1,00,000
   Equity share capital (Rs.10 share) Rs.1,00,000 (9M+7M)

7. a) Explain the nature of capital budgeting proposals
   b) Discuss the phases of capital expenditure decisions (9M+7M)
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Code No: RT22014 **R13** SET - 2

II B. Tech II Semester Regular Examinations, May/June - 2015
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Com. to CE, EIE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) What do you mean by Consumer equilibrium
b) Write a note on Law of increasing returns
c) Define Monopoly
d) What are the types of companies?
e) Write a note on Double-entry book keeping
f) What do you mean by Profitability index (3M+4M+3M+4M+4M+4M)

PART-B

2. a) What do you understand by elasticity of demand? Explain the factors governing it
b) Explain Demand forecasting in case of new products (8M+8M)

3. a) Discuss the economies of scale that accrue to a firm
b) Kamal enterprises deals in the supply of hardware parts of computer. The following cost data is available for two successive periods:

	Year I (Rs.)	Year II (Rs.)
Sales	50,000	1,20,000
Fixed costs	10,000	20,000
Variable cost	30,000	60,000

Determine a) Break-even point b) Margin of safety (7M+9M)

4. a) Illustrate the price determination in case of monopoly
b) Discuss the factors those influence price decisions (8M+8M)

5. a) Define partnership. What are its essential features
b) Discuss the various measures that may be taken by a firm to counteract the evil effects of a trade cycle (8M+8M)

6. a) Explain different accounting concepts and accounting conventions
b) Calculate the net profit ratio from the following data:

Sales less returns	1,00,000	Selling expenses	10,000
Gross profit	40,000	Income from investment	5,000
Administration	10,000	Loss on account of fire	3,000

(8M+8M)

7. a) Explain the significance of capital budgeting
b) Discuss the merits and demerits of accounting rate of return (8M+8M)

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Code No: RT22014 **R13** SET - 3

II B. Tech II Semester Regular Examinations, May/June - 2015
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Com. to CE, EIE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Define Economics, as a science of wealth
   b) Compare accounting costs and economic costs
   c) Write a note on monopolistic competition
   d) What are the privileges of a private company?
   e) What are the rules for Debit and Credit?
   f) Define Capital rationing (3M+4M+3M+4M+4M+4M)

PART-B

2. a) Explain how do you measure elasticity of demand
   b) What is demand function? How do you determine it (8M+8M)

3. a) Explain how cost-output relationship helps the entrepreneurs in expansion decisions
   b) Discuss the significance of Break-even analysis (8M+8M)

4. a) What is Oligopoly? Explain the features of oligopoly market
   b) Explain Price discrimination and how it happens (8M+8M)

5. a) Explain the main characteristics of business in the modern world
   b) What are the problems faced by the public enterprises in India (8M+8M)

6. a) Explain the sources and applications of funds flow and cash flow statements
   b) Journalise the following transactions as on March 31,2010 and post it in ledger.
   March 1,Vamsi started business with Rs.20,000
   Purchased goods from Madan Rs.4,000
   Sold goods to Samuel Rs.4,000
   Rent paid Rs.500 (7M+9M)

7. a) Explain the traditional methods of Capital budgeting
   b) A project costs Rs.25,000 and is expected to generate cash inflows as

Year	Cash inflows
	10,000
	8,000
	9,000
	6,000
	7,000

Compute the NPV of the project and the cost of the capital is 12%. (Data book is required) (7M+9M)
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Code No: RT22014 **R13** SET - 4

II B. Tech II Semester Regular Examinations, May/June - 2015
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Com. to CE, EIE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Write the significance of the advertising elasticity of demand
   b) Write a note on Cobb-Douglas Production function
   c) Write a note on Market Skimming Pricing
   d) What do you mean by Memorandum of Association
   e) Write a note on Trading and Profit and loss account
   f) Define Internal rate of return (4M+4M+3M+3M+4M+4M)

PART-B

2. a) Illustrate. How do you interpret the different types of elasticity
   b) Differentiate extension in demand and increase in demand. Illustrate (8M+8M)

3. a) Explain the features of short-run average cost and long-run average cost curve
   b) How do you determine BEP. Show graphical presentation of BEA (8M+8M)

4. a) Explain the structure of markets
   b) Discuss Williamson's Managerial Discretionary theory (7M+9M)

5. a) In what circumstances, sole proprietorship is considered and why
   b) Explain the characteristics of Business cycle (8M+8M)

6. a) Stock turnover ratio is 2.5 times. Average stock is Rs.20,000. Calculate cost of goods sold and also sales if profit earned is 25% of cost.
   b) What is a trial balance? Explain the method of its preparation (8M+8M)

7. a) What are the merits and limitations of payback period
   b) Explain the significance of identification f investment opportunities in capital budgeting process (8M+8M)
~~~~~~

Code No: RT22013 **R13** SET - 1

II B. Tech II Semester Regular Examinations, May/June - 2015
STRENGTH OF MATERIALS - II
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) If the principal stresses at a point in an elastic material are 2f tensile, 1.5f tensile and f compressive, calculate the value of 'f' at failure according to the maximum principal strain theory. The elastic limit in simple tension is 210 N/mm^2 and Poisson's ratio is 0.30.
   b) A 450 kW of power has to transmit at 100 r.p.m. Find the suitable diameter of hollow circular section, the inside diameter being 3/4 of the external diameter. Take allowable shear stress as 70 N/mm^2.
   c) Write and explain about the limitations of Euler's Formula.
   d) Find core diameter of a solid section, if diameter is 'd'.
   e) Explain the concept of unsymmetrical bending. What are the conditions that should be satisfied for a beam to bend without twisting?
   f) Explain the procedure for tension coefficient method in statically determinate frame.

(4M+4M+3M+4M+4M+3M)

PART-B

2. Direct stresses of 120 N/mm^2 (tensile) and 90 N/mm^2 (compressive) exist on two perpendicular planes at a certain point in a body. They are also accompanied by shear stress on the planes. The greatest principal stress at the point due to these is 150 N/mm^2.
   i) What must be the magnitude of the shearing stresses on the two planes?
   ii) What will be the maximum shearing stress at the point?

3. a) Derive the torsion equation from fundamentals $T/J = q/r = N\theta/L$ with usual notation.
   b) A solid steel shaft has to transmit 75 kW at 200 r.p.m., taking allowable shear stress as 70 N/mm^2. Find the diameter for the shaft, if maximum torque transmitted at each revolution exceeds the mean by 30%.
~~~~~~

4. A hollow rectangular column of external depth 1 m and external width 1 m is 10 cm thick. Calculate the maximum and minimum stress in the section of the column, if vertical load of 200 kN is acting with an eccentricity of 20 cm.

5. A beam carries a UDL of 50 kN/m over a span of 2 m long, with an axial compressive load of 50 kN. The beam section is rectangular, having depth equal to 240 mm and width equal to 120 mm. Compute (i) maximum fibre stress, (ii) fibre stress at a point 0.5 m from the left end of the beam and 80 mm below the N.A.

6. A beam of rectangular section, 80 mm wide and 10 mm deep is subjected a bending moment of 12 kN-m. The trace of the plane of loading is included at 45^{o} to the Y-Y axis of the section. Locate the neutral axis of the section and calculate the maximum bending stress induced in the section.

7. A cantilever truss is loaded as shown in Figure 1. Analyze the truss by method of sections.

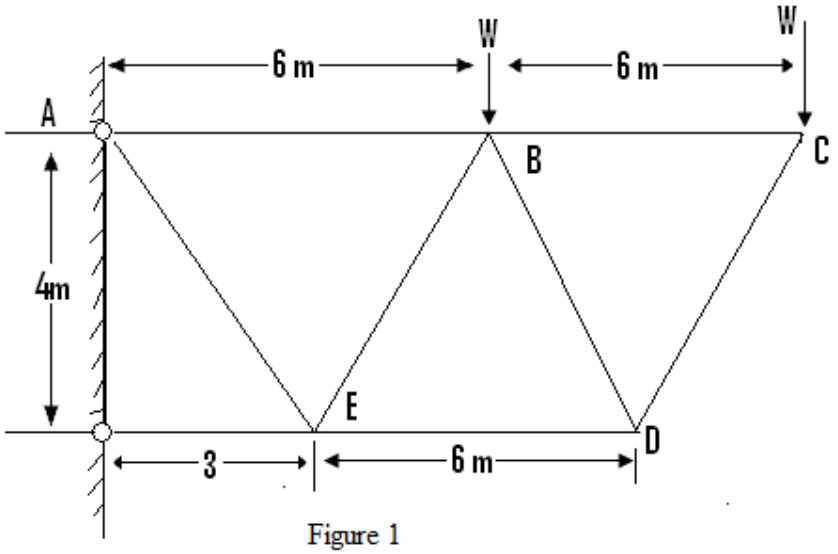

Figure 1

Code No: RT22013 **R13** SET - 2

II B. Tech II Semester Regular Examinations, May/June - 2015
STRENGTH OF MATERIALS - II
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) In a piece of material, a tensile stresses p1 and a shearing q act on a given plane. Show that principal stresses are always of opposite sign.
   b) Write the assumptions made in the theory of torsion.
   c) Calculate Euler's critical stress for the column having slenderness ratio 100,150 with both ends hinged. Take E = $2x10^5$ N/mm^2.
   d) Find core diameter of a hollow section, if external and internal diameter are 'D' and 'd'.
   f) State the assumptions made in analyzing a beam for unsymmetrical bending.
   g) Explain the procedure for method of sections in statically determinate frame.

(4M+3M+4M+4M+3M+4M)

PART-B

2. A circular shaft 100 mm diameter is subjected to combined bending and twisting of moments the B.M being 3 times the twisting moment. If the direct tensile yield point of the material is 350 N/mm^2, and the factor of safety is 4, calculate the allowable twisting moment according to the following theories of failures. (i). maximum principle stress theory, (ii) shear strain energy theory, if the simple shear is not to exceed 60 N/mm^2.

3. Derive the maximum shear stress induced, in the wire of a closed-coiled helical spring which carries an axial load W. Assume mean radius of spring coil is R and diameter of spring wire is d.

4. In an experimental determination of the buckling load for a rod 12 mm mild steel pin ended struts of various lengths, two of the values obtained were: (a) When the length is 50 cm load is 10 kN and (b) When the length is 20 cm load is 30 kN.
   Make necessary calculations and state whether either of the values of the loads, confirm with Euler's formula for the critical load. Take E= $2x10^5$ N/mm^2.
~~~~~~

5. A hollow rectangular column of external depth 1 m and external width 1 m is 10 cm thick. Calculate the maximum and minimum stress in the section of the column if vertical load of 200 kN is acting with an eccentricity of 20 cm.

6. Determine the principal moments of Inertia for an angle section 225x175x15 mm.

7. A cantilever truss is loaded as shown in Figure 1. Analyze the truss by method of joints.

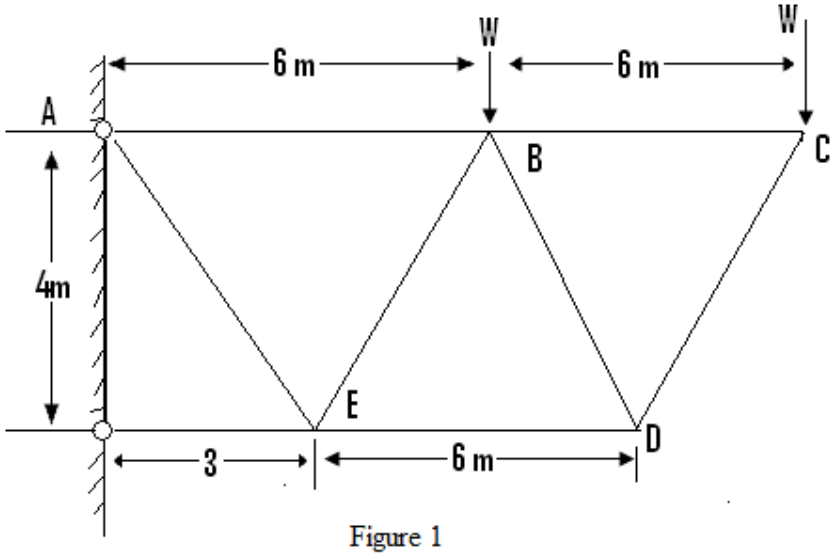

Figure 1

Code No: RT22013 **R13** SET - 3

II B. Tech II Semester Regular Examinations, May/June - 2015
STRENGTH OF MATERIALS - II
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Show that the greatest shear strain is equal to greatest difference of principal strains.
   b) Find the maximum torque that can be safely applied to a shaft of 200 mm diameter, if the permissible shear stress is 45 N/mm^2.
   c) An I-section joist ISWB400 and 8 m long is used as a strut with both ends fixed, determine Euler's crippling load. Give for the section Ixx = 23426.7 cm^4, Iyy= 1388.0 cm^4 and E = 2x10^5 N/mm^2.
   d) Find maximum eccentricity of the rectangular section (width b and depth d) for no tension in the section.
   f) Explain the concept of unsymmetrical bending. What are the conditions that should be satisfied for a beam to bend without twisting?
   g) Determine the forces in the members of equilateral triangle truss of span 'L' loaded with a point load 'W'. (4M+3M+4M+4M+4M+3M)

PART-B

2. An element is subjected to tensile stresses of 60 N/mm^2 and 20 N/mm^2 acting on two perpendicular planes and is also accompanied by shear stress of 20 N/mm^2 on these planes. Draw the Mohr's circle of stresses and determine the magnitudes and directions of principal stresses and also the greatest shear stress.

3. A leaf spring carries a central load of 3000 N. The leaf spring has to be made of 10 steel plates 5 cm wide and 6 mm thick. If the bending stress is limited to 150 N/mm^2 determine: (i) length of the spring and (ii) deflection at the centre of the spring. Take E = 2x10^5 N/mm^2.
~~~~~~

4. a) Derive Euler's buckling load formula of a long column pinned at both ends.
   b) A solid round bar 3 m long and 5 cm in diameter is used as a strut with one end is fixed and other is hinged. Determine the crippling load. Take E = $2x10^5$ N/mm^2.

5. A short column of external diameter 40 cm and internal diameter 20 cm carries an eccentric load of 80 kN. Find the greatest eccentricity which the load can have without producing tension on the cross –section.

6. A rectangular section of dimensions 120 x 200 mm is used as a beam on a 3 m span, If the beam is loaded by a concentrated load (P) at the centre at 30^o to the vertical (Y-Y axis). Find the maximum value of the load 'P' in kN, if the maximum bending stress is not to exceed 12 MPa.

7. Determine the member forces of the truss shown in Figure 1, using method of joints.

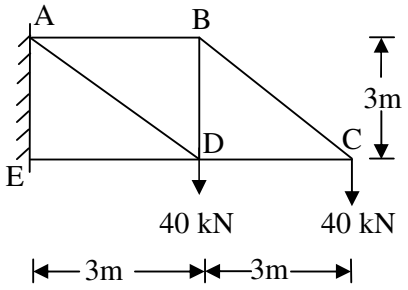

Figure 1

Code No: RT22013 **R13** SET - 4

II B. Tech II Semester Regular Examinations, May/June - 2015
STRENGTH OF MATERIALS - II
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Discuss briefly the maximum principal stress theory.
   b) A solid shaft is required to transmit 120 kW power at 200 r.p.m. Find the suitable diameter of the shaft if maximum torque transmitted in each revelation exceeds the mean by 20%. Take allowable shear stress as 70 N/mm^2.
   c) Calculate Euler's critical stress for the column having slenderness ratio 150, 200 with both ends fixed. Take $E = 2x10^5$ N/mm^2.
   d) Explain about the term kernel and determine the size of kernel for a rectangular 200 mm x 300 mm.
   f) State the assumptions made in analyzing a beam for unsymmetrical bending.
   g) Explain the procedure for tension coefficient method in statically determinate frame.

(4M+4M+3M+4M+3M+4M)

PART-B

2. Derive an expression for the major and minor principal stresses on an oblique plane, when the body is subjected to direct stresses in two mutually perpendicular directions accompanied by a shear stress

3. a) Derive the maximum shear stress induced, in the wire of a closed-coiled helical spring which carries an axial load W. Assume mean radius of spring coil is R and diameter of spring wire is d.
   b) A leaf spring carries a central load of 3000 N. The leaf spring has to be made of 10 steel plates 5 cm wide and 6 mm thick, if the bending stress is limited to 150 N/mm^2. Determine: (i) length of the spring and (ii) deflection at the centre of the spring. Take $E = 2x10^5$ N/mm^2.
~~~~~~

4. A 1.5 m long column has a circular cross section of 5 cm diameter, one of the ends of the column is fixed in direction and position, and the other end is free. Taking factory of safety as 3, calculate the safe load using: (i) Rankin's formula, take yield stress is 560 N/mm^2 and a= 1/1600 for pinned ends, (ii) Euler's formula, Young's Modulus for the material is $1.2x10^5$ N/mm^2.

5. A square chimney, 30 m high, has a flue opening of size 1.5 m x 1.5 m. Find the minimum width required at the base for no tension if the masonry weights 20 kN/m^3 and the wind pressure is 1.5 kN/m^2. The permissible stress in the masonry is $1kN/m^2$.

6. A T-Section of dimensions 150 wide x 200 mm deep, with 10 mm thickness of flange and web, is used as simply supported a beam on a span of 6 m. Find the maximum value of 'w' in kN/m, the permissible stress in the material is 120 MPa. The plane of loading is inclined at an angle of 40^o to the vertical plane.

7. Determine the member forces of the truss shown in Figure 1, using method of sections.

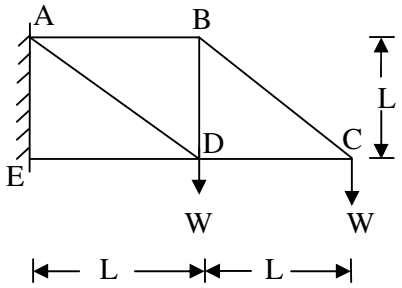

Figure 1

Code No: RT22016 **R13** SET - 1

II B. Tech II Semester Regular Examinations, May/June - 2015
STRUCTURAL ANALYSIS-I
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) What is the degree of indeterminacy of a propped cantilever?
   b) What are the support moments when there is relative displacement at the supports?
   c) How Clapeyron's theorem of three moments can be applied to a overhanging beams?
   d) What are the sign conventions used in slope deflection equations and write the equations.
   e) State the Castigliano's first theorem.
   f) Define the influence line. Draw a I.L.D.
   g) Differentiate between determinate and indeterminate structures.

(2M+2M+3M+4M+3M+4M+4M)

PART-B

2. a) Analyse the propped cantilever beam loaded as shown in the Figure 1.Draw the S.F.D and B.M.D. Assume EI constant throughout.

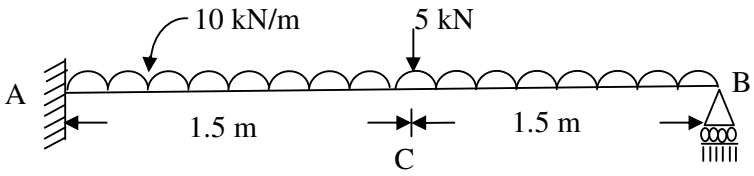

Figure 1

   b) A cantilever of length4m carries a uniformly distributed load of 1kN/m length over the whole length .The free end of the cantilever is supported on a prop. If E = 2 x 10^5 N/ mm^2 and I = 10^8 mm^4, then (i) find the prop reaction (ii) deflection at the centre of cantilever

(8M+8M)
~~~~~~

3. A continuous beam ABC is simply supported at A and C and continuous over support B with AB = 5m and BC = 6m.Auniformly distributed load of 12kN/m is acting over the beam. The moment of inertia is I throughout the span. Analyse the continuous beam and draw S.F.D and B.M.D. (16M)

4. Abeam ABCD 9.2m long is fixed at A and is supported at B and C at distances 4m and 7m from A with an overhang CD 2.2m long. The span AB carries a point load of 32kN at the mid span. A point load of 16kN acts at the end D. Find the moments and reactions at the supports. (16M)

5. ABC is a continuous beam with constant EI throughout its length. The end supports A and C are fixed and beam is continuous over middle support B. Span BC is uniformly loaded with 10kN per metre length ,while a concentrated vertical load of 100kN acts at the mid span AB. Calculate the moments by slope deflection method. (16M)

6. a) State and prove Castigliano's first theorem.
   b) Derive the energy stored due to axial loading. (8M+8M)

7. a) Draw the influence line diagram for a shear force at any section of a simply supported beam.
   b) Find the maximum force in the member shown in the Figure 2, when a uniformly distributed load of 10kN/m longer than the span crosses the bridge. (6M+10M)

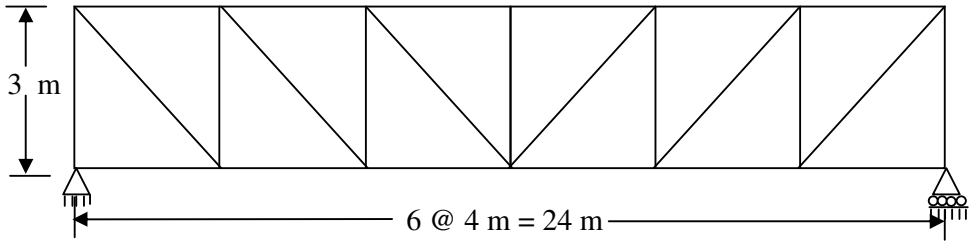

Figure 2

Code No: RT22016 **R13** SET - 2

II B. Tech II Semester Regular Examinations, May/June - 2015
STRUCTURAL ANALYSIS-I
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Draw the bending moment diagram for a propped cantilever of length *l* with u.d.l. over the whole span.
   b) What is the equation for a fixed beam with ends at different levels?
   c) What is the procedure for analysing the continuous beams using theorem of three moments?
   d) What are the sign conventions used in slope deflection equations and write the equations.
   e) State the Castigliano's first theorem.
   f) Define the influence line. Draw I.L.D for a simply supported beam for finding the reactions at the supports. (3M+3M+4M+4M+3M+5M)

PART-B

2. a) Determine the reactions of the propped cantilever beam and draw SFD and BMD.

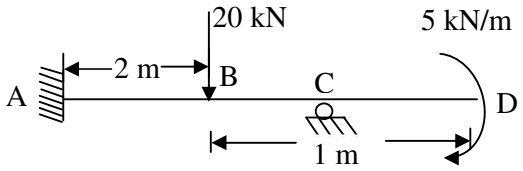

Figure 1

   b) A cantilever of length 6m carries a uniformly distributed load of 2kN/m length over the whole length. The free end of the cantilever is supported on a prop. If E = 2 x 10^5 N/ mm^2 and I = 10^8 mm^4, then (i) find the prop reaction (ii) deflection at the centre of cantilever (8M+8M)

3. A continuous beam ABC is simply supported at A and C and continuous over support B with AB = 4m and BC = 6m. A uniformly distributed load of 10kN/m is acting over the beam. The moment of inertia is I throughout the span. Analyse the continuous beam and draw S.F.D and B.M.D. (16M)
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4. Analyse the fixed beam shown in the Figure 2. (16M)

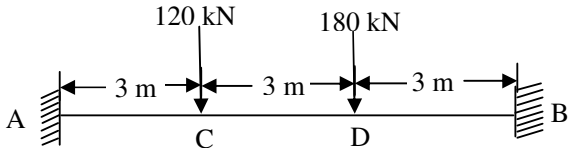

Figure 2

5. ABC is a continuous beam with constant EI throughout its length. The end supports A and C are fixed and beam is continuous over middle support B. Span BC is uniformly loaded with 12kN per metre length ,while a concentrated vertical load of 120kN acts at the mid span AB. Calculate the moments by slope deflection method. (16M)

6. a) State Castigliano's first theorem.

   b) Compute the vertical deflection of joint E by unit load method Figure 3. (4M+12M)

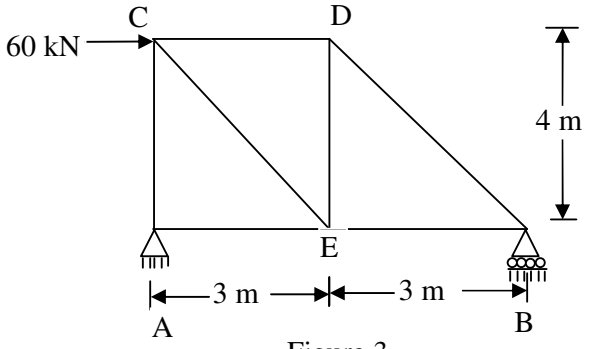

Figure 3

7. a) Draw the influence line diagram for a shear force at any section of a simply supported beam.

   b) A uniformly distributed load of 40kN/m and of length 3m transverse across the span of simply supported length of 18m.Compute the maximum bending moment at 4m from left support and absolute bending moment. (6M+10M)

Code No: RT22016 **R13** SET - 3

II B. Tech II Semester Regular Examinations, May/June - 2015
STRUCTURAL ANALYSIS-I
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Name a method for deriving the compatibility equation for the propped cantilever.
   b) Draw the shear force and bending moment diagrams for a fixed beam when one of its supports sinks.
   c) What are the merits and limitations of the theorem of three moments?
   d) What are the sign conventions used in slope deflection equations and write the equations.
   e) State and prove Castigliano's first theorem.
   f) Draw a I.L.D for a simply supported beam for finding the reactions at the supports.

(3M+4M+3M+3M+6M+3M)

PART-B

2. a) A propped cantilever beam of length *l* is subjected to uniformly distributed load of ω/m length over three fourth of its span from the fixed support.Determine the prop reaction and sketch the BMD.
   b) A cantilever of length 5m carries a uniformly distributed load of 1kN/m length over the whole length. The free end of the cantilever is supported on a prop. If E = 2 x 10^5 N/ mm^2 and I = 10^8 mm^4, then (i) find the prop reaction (ii) deflection at the centre of cantilever (iii) Magnitude and position of maximum deflection. (6M+10M)

3. A continuous beam ABC is simply supported at A and C and continuous over support B with AB = 7m and BC = 6m. A uniformly distributed load of 14kN/m is acting over the beam. The moment of inertia is I throughout the span. Analyse the continuous beam and draw S.F.D and B.M.D. (16M)
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4. Analyse the fixed beam shown in the Figure 1. (16M)

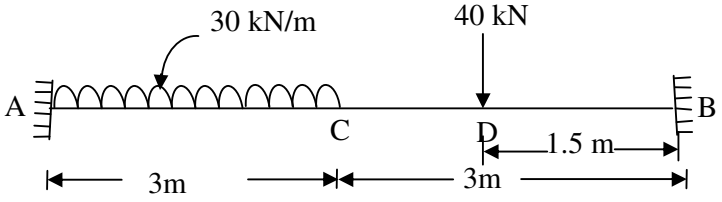

Figure 1

5. ABC is a continuous beam with constant EI throughout its length. The end supports A and C are fixed and beam is continuous over middle support B. Span BC is uniformly loaded with 14kN per metre length ,while a concentrated vertical load of 140kN acts at the mid span AB. Calculate the moments by slope deflection method. (16M)

6. a) State and prove Castigliano's first theorem.

   b) Compute the vertical deflection of joint E by unit load method Figure 2. (8M+8M)

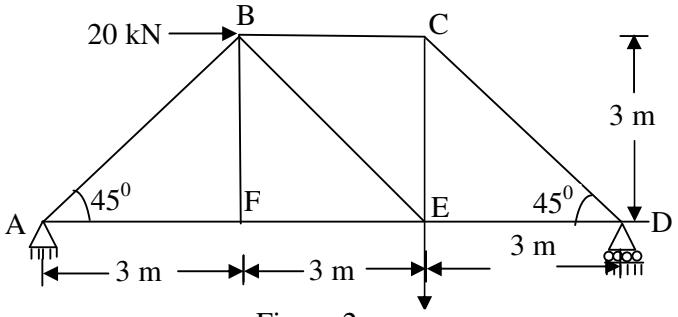

Figure 2

7. a) Draw the influence line diagram for a bending moment at any section of a simply supported beam.

   b) A uniformly distributed load of 50kN/m and of length 4m transverse across the span of simply supported length of 18m.Compute the maximum bending moment at 5m from left support and absolute bending moment. (6M+10M)

Code No: RT22016 **R13** SET - 4

II B. Tech II Semester Regular Examinations, May/June - 2015
STRUCTURAL ANALYSIS-I
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) What is a propped cantilever? What is the degree of indeterminacy?
   b) Draw the shear force and bending moment diagrams for a propped cantilever when the prop sinks.
   c) State and deduce the Clapreyon's three-moment equation.
   d) What are the sign conventions used in slope deflection equations and write the equations.
   e) State and prove Castigliano's first theorem.
   f) Draw Influence line diagrams for a Pratt truss (4M+4M+3M+3M+3M+5M)

PART-B

2. a) A propped cantilever beam of length *l* is subjected to uniformly distributed load of ω/m length over three fourth of its span from the fixed support.Determine the prop reaction and sketch the BMD.
   b) A cantilever of length 7m carries a uniformly distributed load of 3kN/m length over the whole length. The free end of the cantilever is supported on a prop. If $E = 2 \times 10^5$ N/ mm^2 and $I = 10^8$ mm^4, then (i) find the prop reaction (ii) Magnitude and position of maximum deflection. (8M+8M)

3. A continuous beam ABC is simply supported at A and C and continuous over support B with AB = 7m and BC = 6m. A uniformly distributed load of 14kN/m is acting over the beam. The moment of inertia is I throughout the span. Analyse the continuous beam and draw S.F.D and B.M.D. (16M)
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4. A fixed beam AB of length 3m carries a point load of 45kN at a distance of 2m from A. If the flexural rigidity is of the beam is 1 x 10^4 kNm^2, determine (i) the fixed end moments at A and B. (ii) Deflection under the load and (iii) maximum deflection. (16M)

5. ABC is a continuous beam with constant EI throughout its length. The end supports A and C are fixed and beam is continuous over middle support B. Span BC is uniformly loaded with 8kN per metre length ,while a concentrated vertical load of 80kN acts at the mid span AB. Calculate the moments by slope deflection method. (16M)

6. a) State and prove Castigliano's first theorem.
   b) Compute the vertical deflection of joint E by unit load method Figure 1. (4M+12M)

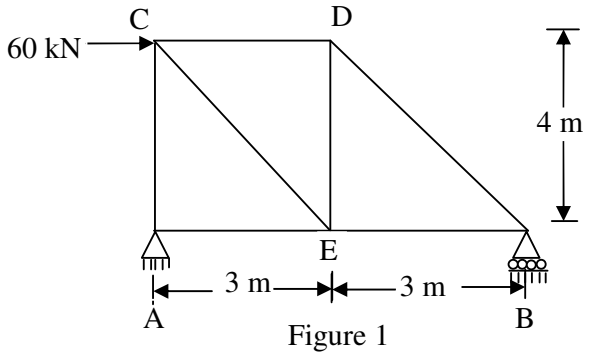

Figure 1

7. a) Draw the influence line diagram for a shearforce at any section of a simply supported beam.
   b) A uniformly distributed load of 60kN/m and of length 4m transverse across the span of simply supported length of 20m.Compute the maximum bending moment at 5m from left support and absolute bending moment. (6M+10M)