

Seat No.	
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S.E. (Civil) (Part - II) (Semester - IV) (Revised)
Examination, November - 2017
BUILDING DESIGN AND DRAWING
Sub. Code: 63348

Day and Date : Tuesday, 07 - 11 - 2017
 Time : 9.30 a.m. to 1.30 p.m.

Total Marks : 100

- Instructions :
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if required and clearly mention it.

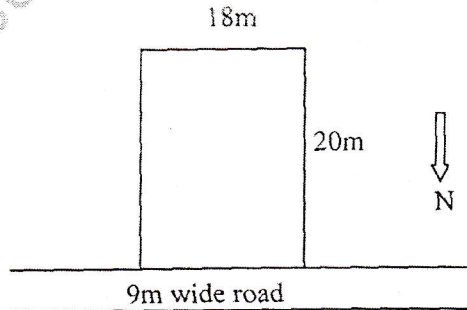
SECTION - I

- Q1) a) Explain the concept of F.S.I. [5]
 b) Explain : Site Plan. [5]

OR

- b) Write short note on 'Circulation' principle of a building planning. [5]

- Q2) Plan a bungalow (G+1) on the given plot. The requirements are as below,



Name of Room	Tentative Size
Living Room	4 m X 5 m
Children Bed Room	5 m X 3.5 m
Master Bed Room	3.5 m X 4.5 m
Guest Bed Room	3 m X 4 m
Verandah	2.5 X 3 m
Store	1.3 X 2.5 m
Staircase	Suitable Size

Assume any other suitable data.

External walls – 230 mm thick. Internal walls – 150 mm thick.

Draw to a suitable scale the following:

- i) Building Plans (Ground and First Floor) [25]
- ii) Furniture layout of Living Room [5]

Q3) Write short notes on any *two*: [10]

- a) Aspect
- b) Building Permission
- c) Maintenance of building
- d) Green building

SECTION - II

Q4) a) Explain the systems of plumbing with sketches. [10]

b) Explain : Intercepting Trap [6]

OR

b) Explain the types of wiring system. [6]

Q5) a) Explain the systems of ventilation with help of sketches. [10]

b) Explain the concept of thermal insulation. [6]

OR

b) Explain : Acoustics [6]

Q6) Write short notes on any *three*: [18]

- a) Types of Pointing.
- b) Characteristics of good paint.
- c) Summer air conditioning.
- d) Rain water harvesting.
- e) Fire resisting building materials.



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S.E. (Civil Engineering) (Semester-IV) (New)

Examination, November - 2017

CONCRETE TECHNOLOGY

Sub. Code :63346

Day and Date : Friday, 03- 11 - 2017

Total Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to right indicate full marks.
 - 3) Assume suitable data if necessary.

SECTION - I

- Q1) a) Describe effect of impurities in water on properties of concrete. [8]**
b) Describe the procedure for determining standard consistency of cement. [8]

- Q2) a) Define placing of concrete and describe the different method of placing of concrete. [8]**
b) Compare slump test and compacting factor test for determining the workability of concrete. [8]

OR

- b) What do you mean by mineral admixture? Explain in detail silica fume and GGBS? [8]
- Q3) a) Enlist different tests for hardened concrete. Explain Split cylinder test. [9]**
b) What is creep and shrinkage of concrete? List the factors affecting creep and shrinkage of concrete. [9]

P.T.O.

SECTION - II

Q4) Write short notes (any three) [18]

- a) Ferrocement
- b) No-fines concrete
- c) Vacuum Dewatered Concrete
- d) Roller Compacted Concrete

Q5) a) What is durability of concrete? Enlist factors affecting durability of concrete. Explain any one in detail. [8]

b) What is permeability of concrete? Enlist factors affecting permeability of concrete. Explain any one in detail. [8]

OR

b) List various Non-Destructive tests for assessment of strength of concrete. Explain Rebound Hammer test. [8]

Q6) Define the "Mix design" and design concrete mix M20 using following data and IS: 10262 procedures. [16]

- a) Max. size of aggregate - 20 mm
- b) Degree of workability = 0.80 CF
- c) Degree of quality control = good
- d) Type of exposure = mild
- e) $w/c = 0.47$
- f) Cement used = OPC 53 grade
- g) Sp. Gravity of cement = 3.15, Coarse aggregate = 2.85, Fine aggregate = 2.65
- h) Water absorption of Coarse aggregate = 0.5%, Fine aggregate = 1.0%
- i) Free moisture in C.A. = 0.0%, F.A. = 0.0%
- j) Bulk density of Cement = 1440, C.A. = 1650, F.A. = 1800 kg/m³

Take standard deviation: 5 and Tolerance factor: 1.65

Sr.No.	Nominal Maximum Size of Aggregate	Maximum Water Content kg/m^3
1	10	208
2	20	189
3	40	165

Sr.No.	Nominal Size of Aggregate	Zone IV	Zone III	Zone II	Zone I
1	10	0.50	0.48	0.46	0.44
2	20	0.66	0.64	0.62	0.60
3	40	0.75	0.73	0.71	0.69

Sl. No.	Exposure	Plain Concrete		Reinforced Concrete			
		Minimum Cement Contents kg/m^3	Maximum Free W/C ratio	Minimum Grade of concrete	Minimum Cement Content kg/m^3	Maximum Free W/C ratio	Minimum Grade of Concrete
1.	Mild	220	0.60	-	300	0.55	M 20
2.	Moderate	240	0.60	M 15	300	0.50	M 25
3.	Severe	250	0.50	M 20	320	0.45	M 30
4.	Very Severe	260	0.45	M 20	340	0.45	M 35
5.	Extreme	280	0.40	M 25	360	0.40	M 40



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T.E. (Civil) (Semester - VI) (New) Examination, November - 2017

ENGINEERING GEOLOGY

Sub. Code: 66876

Day and Date :Monday, 06 - 11- 2017

Total Marks : 100

Time :2.30 p.m. to 5.30 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Answer to the two sections must be written in one and same answer book.
 - 3) Figures to the right indicate full marks.

SECTION-I

Q1) Attempt any two of the following:

- a) Describe with neat sketches depositional features formed by river. [9]
- b) What is meant by Igneous Rock? Give the classification of Igneous Rocks on the basis of mode of occurrence. Mention one rock from each group. [9]
- c) What are the parameters of fault? Explain the causes of faulting. [9]

Q2) Attempt any two of the following:

- a) Explain in brief various process of weathering. [8]
- b) What is metamorphism? Describe in detail the agents of metamorphism. [8]
- c) Describe with the help of neat sketches the part of folds. Give in brief the Civil Engineering significance of fold. [8]

P.T.O.

Q3) Write short notes on:

- a) Interior of the Earth.
- b) Grain size classification of Sedimentary Rocks.
- c) Types of unconformity.
- d) Scope of Engineering Geology.

SECTION-II

Q4) Attempt any two of the following:

- a) Explain the various causes of earthquake. Write a brief note on RIS. [9]
- b) Describe the internal causes of landslides. [9]
- c) With a suitable sketch explain the zones of groundwater. [9]

Q5) Attempt any two of the following:

- a) Explain the various steps in the preliminary geological investigation at a civil engineering site. [8]
- b) Data obtained from a drill hole at foundation site is as follows. [8]
 - i) Top of borehole- R.L.410 m.
 - ii) Bottom of borehole- R.L. 380 m.
 - iii) Length of each piece of core obtained between 400m and 397m is, 16, 11, 13, 09, 08, 21, 23, 06, 05, 09, 08, 14, 19, 23, 21, 16, 18, 07, 06, 07, 10

Find,

- 1) Total length of core recovered
 - 2) Core Recovery
 - 3) Core loss
 - 4) RQD
- c) Explain the suitable and unsuitable conditions for excavating a tunnel. [8]

Q6) Write short notes on the following:

- a) Dams on Deccan Trap.
- b) Overbreak.
- c) Observations during drilling.
- d) Confined aquifer.

[16]

EEE

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S.E. (Civil) (Part - II) (Semester-IV)
Examination, November - 2017
FLUID MECHANICS - II
Sub. Code : 63347

Day and Date : Monday, 06-11-2017

Total Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :
- 1) Question no. 1 and 5 are compulsory.
 - 2) Attempt any other two questions from each section.
 - 3) Assume any suitable data if necessary.
 - 4) Figures to the right indicate full marks.

SECTION-I

- Q1) a) Design an efficient trapezoidal channel of side slope 2H:1V bed slope 1 in 4900 to carry a discharge of 8m³/sec. Take Manning's n=0.025. [5]
- b) Define - Most economical channel section. Derive the formula for most efficient triangular section. [5]
- c) Derive an expression for the loss of energy due to hydraulic jump in a rectangular channel is in the form of [5]
- $$\Delta E = \frac{(Y_2 - Y_1)^3}{4Y_1 Y_2}$$
- d) Compare Gradually Varied flow and Rapidly Varied Flow? [5]

- Q2) a) Draw the following [5]
- i) Specific energy curve.
 - ii) Specific force curve.
 - iii) Discharge diagram.
- b) A 3m wide rectangular channel carries a discharge of 1.85m³/sec at a depth of 0.5m. Find the greatest allowable contraction in the width to get critical flow at the contracted section. [5]
- c) Derive Chezy's formula for uniform flow in an open channel. [5]

P.T.O.

Q3) a) Derive the expression

$$\left(\frac{dy}{dx}\right) = \frac{S_0 - S_f}{1 - Fr^2}$$

Where (dy/dx) = Water surface slope

S_0 = channel bottom slope

S_f = Energy line

Fr = Froude Number

[5]

b) Discuss the relation between water surface slope and channel bottom slope. [5]

c) Write a note on M_1 and M_3 curve. [5]

Q4) a) Derive the expression for hydraulic jump

$$\frac{Y_2}{Y_1} = \frac{1}{2} \left\{ -1 + \left(1 + 8(Y_c / Y_1)^3 \right)^{1/2} \right\}$$

Where Y_1 = depth of water before jump

Y_2 = depth of water after jump

Y_c = critical depth.

[5]

b) A rectangular channel 7.5m wide has a uniform depth of flow of 2.0m and has a bed slope of 1 in 3000. If due to weir constructed at the down stream end of the channel, water surface at a section is raised by 0.75m. Determine the water surface slope with respect to horizontal at this section. Assume Manning's $n = 0.02$. [5]

c) A rectangular channel carries a discharge of $2\text{m}^3/\text{sec}$ per meter width. If the loss of energy in the hydraulic jump is found to be 2.75m, determine the conjugate depths before and after the jump. [5]

SECTION-II

Q5) a) Discuss the advantages of Triangular weir over Rectangular weir. [5]

b) Write a note on ventilation of weir. [5]

c) What are advantages of hydro-electric power plant. [5]

d) What are the different efficiencies of a centrifugal pump. [5]

- Q6) a) Derive an expression for the force exerted by the jet at centre on a stationary curved plate. [5]
- b) A 50mm diameter jet having a velocity of 25m/sec strikes a flat plate the normal of which is inclined at 30° to the axis of the jet. Calculate the normal force exerted on the plate. [5]
- i) When the plate is stationary.
- ii) When the plate is moving with a velocity of 10m/sec in the direction of the jet.
- c) In an experiment on a 90° V notch, the flow is collected in a rectangular tank having the cross section 0.8×0.8 m. If the water level in the collecting tank changed from 0.7m to 1.4m in 17.2 seconds when the head over the notch was 0.2m, estimate the coefficient of discharge for the notch. [5]
- Q7) a) Write short note on NPSH- centrifugal pump. [5]
- b) Define Static head, Manometric head, Delivery head, Gross head and suction head. [5]
- c) Write short note on common pump troubles. [5]
- Q8) a) What is hydraulic turbine? How are they classified? [5]
- b) What are disadvantages of hydroelectric power generation? [5]
- c) Draw the figure of Francis turbine. [5]



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S.E. (Civil) (Semester - IV) (Revised) Examination, November - 2017
STRUCTURAL MECHANICS

Sub. Code : 63344

Day and Date : Wednesday, 01 - 11 - 2017

Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

- Instructions :
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Use of electronic calculator is permitted.
 - 4) Assume suitable data if necessary and mention it clearly.

SECTION - I

- Q1) a) Derive the for normal and tangential stresses on a plane making angle θ with σ_x direction. [6]
- b) A thin cylinder with 1000 mm dia. and 20 mm wall thickness is subjected to internal pressure of 2 MPa. In addition the cylinder is subjected to shear stress of 30 MPa. Calculate the principal stresses and their orientation. [10]

- Q2) a) Derive the limiting value of eccentricity on rectangular section for no tension condition and show the kern of the section. [6]

OR

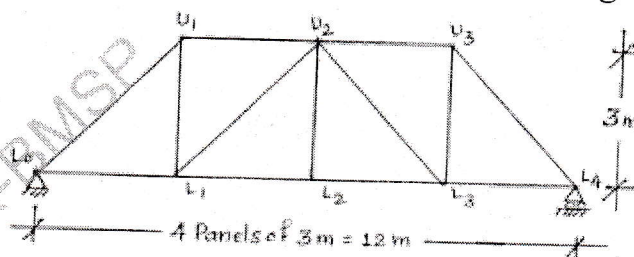
Discuss different modes of failure of gravity dam and their significance in analysis of dam.

- b) A trapezoidal masonry dam 4 m high is 1 m wide at top and 3 m wide at base retains water against vertical face. Determine max. and min. intensities of pressure. Unit weight of masonry = 20 kN/cum. [10]

- Q3) Attempt any two :

[2 × 9 = 18]

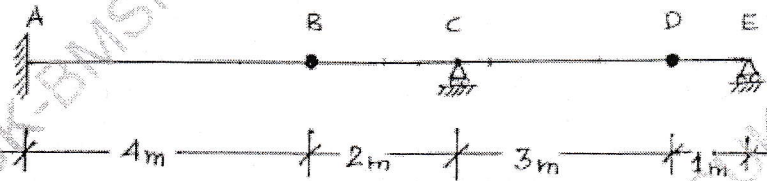
- a) Construct the influence line diagrams for force in members U_1U_2 , L_1L_2 , L_2U_3 and U_1L_1 of the through truss shown in fig. 1



P.T.O.

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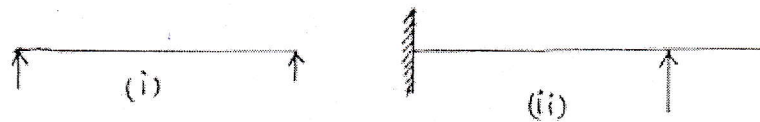
- b) Construct the influence line diagrams for reaction at A and moment at A of the compound beam shown in fig. 2.



- c) Using the I.L.D.s of Q.3 (b) find the values R_A and M_A when load of 100 kN acts at D.

SECTION - II

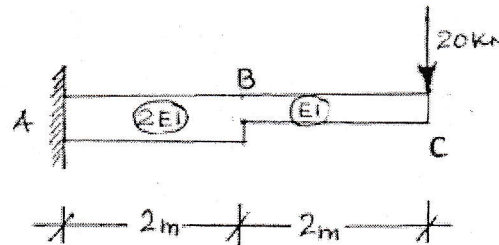
- Q4) a) State the conjugate beam theorems with neat diagrams and draw the conjugate beams for the beams shown in the fig.3. [6]



OR

Using double integration method find the central deflection of the simply supported beam subjected to u.d.l. on entire span.

- b) Find the slope and deflection at end C of the beam shown in fig. 4. [10]

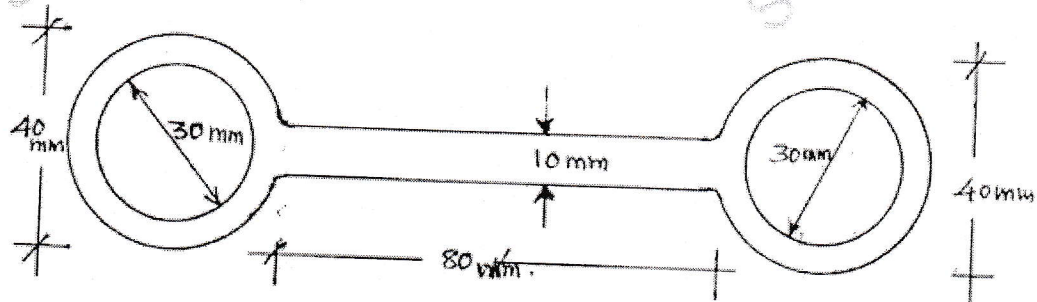


- Q5) Attempt any two : [2 × 9 = 18]

- The maximum allowable shear stress in a hollow shaft whose outer dia. is twice the inner dia. is 80 MPa. Determine the diameter of the shaft if it is subjected to torque of 4 kN.m. and bending moment of 3kN.m.
- Derive the expressions for equivalent moment and equivalent torque and give its significance.
- A solid circular shaft 100 mm dia. is subjected to axial compressive force of 240 kN and torque of 5.4 kN.m. Determine the principal stresses and max. shear stress developed at a point on the surface of the shaft.

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- Q6) a) State the assumptions and limitations of the Euler's formula. [5]
- b) The member of a frame of machine acts as strut with both ends fixed. The cross section of the member is formed of two tubes and a plate welded as shown in fig.5. The length of the member is 1.5 m. Taking factor of safety = 6 find the maximum load the member can resist. Take $f_y = 320 \text{ N/mm}^2$, $\alpha = 1/7500$. [11]



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S.E. (Civil) (Semester - III)
Examination, November - 2017
SURVEYING - I
Sub. Code : 63339

Day and Date : Monday, 13-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

- Instructions :**
- 1) Answer any **THREE** questions from **EACH** section.
 - 2) Figures to the **RIGHT** indicate **FULL** marks.
 - 3) Assume suitable data if **NECESSARY** and state them clearly.
 - 4) Answers shall be supported by adequate sketches.

SECTION - I

Q1) Solve (6 marks each) [18]

- a) Explain test and adjustment for setting the bubble axis parallel to line of collimation for dumpy level.
- b) Explain auto level with diagram of tilt compensator.
- c) Derive expression for correction for curvature and refraction.

Q2) a) State and explain significance of temporary and permanent adjustments for a Level. [8]

b) While carrying out two peg test following data are collected for a level [8]

Distance AB= 100 m

Instrument at C, 50 m i.e. midway between A&B

Reading at A = 2.5 m reading at B = 3.5 m

Instrument at D in line AB 25 m from B such that AD= 125 m

Reading at A= 2.0 m reading at B = 3.25 m

If the instrument is to be adjusted what procedure will you follow?

P.T.O.

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- Q3) a)** The perpendicular offsets taken at 10m interval from a survey line to an irregular boundary are 2.25, 3.85, 4.5, 6.8, 5.2, 7.35, 8.9, 8.3, & 5.45 m. determine the enclosed area by [8]
- i) Average ordinate rule
 - ii) Trapezoidal rule
 - iii) Simpson's rule.
- b) Define area of zero circle and methods for calculating area of zero circle. Explain any one method in detail. [8]
- Q4) Writes short notes on [16]**
- a) Resectioning in plane table survey.
 - b) Plane table and its accessories.
 - c) Block contouring.
 - d) Factors affecting sensitivity of level tube.

SECTION - II

- Q5) a) What is the purpose of [16]**
- i) Making face left and face right observations.
 - ii) Observing the readings on both the verniers.
 - iii) Repetition method of horizontal angle measurement.
- b) Explain stepwise procedure of measuring horizontal angle by reiteration method. Also indicate under what circumstances it is preferred. [6]
- c) Name the fundamental lines of a transit theodolite and also indicate their inter-relationships. [5]

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- Q6) a) From the following observations on the traverse ABCD, calculate the length and bearing of the line AB. [9]

Line	CA	CD	DB
Length in m.	66.25	330.20	150.00
Bearing	250°45'	15° 20'	270° 15'

- b) Explain stepwise procedure for carrying out theodolite traversing. Also, explain the sequential procedure of obtaining total co-ordinates from Gale's traverse table. [8]

- Q7) a) What are Ranges? Name different types of Ranges and their significance. [5]

- b) Explain how leveling work is carried out in tunnel surveying. [5]

- c) Explain the construction and use of Nautical sextant. [7]

- Q8) a) Explain by deriving necessary expressions the Double plane method to determine the reduced level of tip of an elevated tower. [8]

- b) Calculate the length of CD and bearing of the line AB from the following traverse observations. [8]

Line	AB	BC	CD	DA
Bearings	Roughly East	178°0'	270° 0'	1° 0'
Length in m.	150.00	75.50	Not obtained	63.00

