Code : 1G652

R-11

III B.Tech. I Semester Regular Examinations Nov/Dec 2014

Engineering Geology

(Civil Engineering)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1.	a)	Justify the importance of geology for civil engineering applications.	8M
	b)	Brief any two case histories of failures due to geological draw backs.	6M
2.		Write a detailed note on identification of minerals by their physical properties with suitable examples.	14M
3.		Describe the megascopic description, engineering properties and uses of the following rocks i) Granite ii) Basalt iii) Sand stone iv) Marble	14M
4.		What are the different types of soils in India? Explain the origin of them?	14M
5.		Explain the following: i) Types of ground water ii) Cone of depression iii) Springs iv) Specific yield	14M
6.		Write a detailed note on seismic refraction method of geophysical exploration.	14M
7.		Explain the geological considerations in the selection of a dam site.	14M
8		Explain i) Over break ii) Lining of tunnels iii) Purpose of tunneling	14M

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Code : 1G655

R-11

III B.Tech. I Semester Regular Examinations Nov/Dec 2014

Design & Drawing of Reinforced Concrete Structures

(Civil Engineering)

Max. Marks: 70 **Time: 03 Hours**

Use of IS 456:2000, SP16 Design aided charts only and IS: 875 (Part 1 &2) books are permitted in the examination hall

PART-A

(Answer any one question) ***1x28 marks***

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1. Design a simply supported rectangular beam to carry 38KN/m superimposed load over a span of 5.5 m on 300mm wide supports. Use M20 grade concrete and Fe 415 grade steel. Check the design for all necessary conditions. Draw to a suitable scale
   (a) Longitudinal section showing the reinforcement details.
   (b) The cross section of the beam at salient points, showing reinforcement details.

2. Design a continuous R.C. Slab for a class room 8m wide and 15m long. The roof is to be supported on R.C.C Beams spaced at 3.5 m intervals. The width of beam should be kept 230 mm. The superimposed load is 3.2 kN/m^2 and finishing load expected is 1.8 kN/m^2. Use M_{20} concrete and Fe $_{415}$ steel.
   (a) Draw the reinforcement of the slab in plan view.
   (b) Draw cross section of the slab including beams with reinforcement details.

PART – B

(Answer any three questions) ***3x14 marks***

3. A rectangular beam 300mm wide and 400 mm deep upto the centre of reinforcement, has to resist a factored moment of 45KN-m. Design the section. Use M_{20} grade concrete and Fe $_{415}$ steel.

4. Design the torsional reinforcement in a rectangular beam section, 350mm wide and 650mm deep and it is subject to an ultimate twisting moment of 170KNm, combined with an ultimate (hogging) bending moment of 260KNm and an ultimate shear force of 180KN. Assume M20 grade concrete and Fe $_{415}$ steel and mild exposure conditions.

5. An R.C. Column 500mmx 400mm is subjected to an axial ultimate load of 2450KN and bent in single curvature about the minor axis M_y (top)= 90KNm and M_y(bottom)=120KNm as ultimate moments. If L_o=7.5m and L_e=5.50m on both axes, calculate the design moments for the column.

6. A circular column of 420mm diameter transfers an axial dead load of 510KN and an axial live load of 430KN. The column is having 8-20mm diameter bars. The safe bearing capacity of the soil is 230 KN/m^2, Use M_{20} grade of concrete and HYSD steel bars of Fe_{415} grade. Design a circular footing to support the circular column.

7. A rectangular simply supported beam of clear span 4.2m is 340mmx540mm in cross section. It is reinforced with 4 bars of 20mm diameter. Use M_{20} grade concrete and Fe_{415} steel. The effective cover is 40mm. Taking super imposed live load as 26 KN/m and dead load as 18KN/m, calculate the short term and long term deflections of the beam.

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Code : 1G653

R-11

III B.Tech. I Semester Regular Examinations Nov/Dec 2014

Engineering Hydrology-I

(Civil Engineering)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1.	a)	Describe the hydrological cycle establishing the interaction among its different components and processes	6M
	b)	There are ten rain gauge stations in an area. In order to find the average rainfall over the area Theissen polygons were constructed and their weights are 0.10, 0.16, 0.12, 0.11, 0.09, 0.08, 0.07, 0.11, 0.06 and 0.10. If the rainfalls recorded at the ten rain gauge stations are 132, 114,162,138,207,156,135,158,168 and 150 mm respectively, determine average rainfall by Theissen and arithmetic mean methods.	8M
2.	a)	What are the abstractions from a rainfall? Explain the abstraction of infiltration in detail	6M
	b)	A rainfall has occurred for 6 hours at an intensity of 1.5 cm/hour over a basin. The observed run off from this rainfall is 21.6×10^6 m^3. The area of the basin is 300 Km^2. Find the average infiltration rate for the basin.	8M
3.	a)	Explain how runoff concentrates in a stream? What are the factors affecting the runoff?	6M
	b)	Explain the procedures to separate base flow from a total runoff hydrograph	8M
4.	a)	Define a hydrograph and explain how it is different from unit hydrograph.	6M
	b)	The observed flows at every 6 hour interval in a river are given in cumecs. The flows are consequent to a storm of 4 hour duration over a basin of area 425 Sq Km. Assuming a constant base flow of 15 cumec, derive 4 hour unit hydrograph. 15, 117.8, 260.7, 195.3, 152, 115.7, 90.3, 70.5, 52.3, 40.4, 30.3, 22.7, 19.2, 18.6, 15	8M
5.	a)	List out different aquifer parameters and explain them.	6M
	b)	Determine the yield from a 30 cm diameter well made in an unconfined aquifer of thickness 60m. The drawdown in the well is 10m. The radius of influence and hydraulic conductivity are 150m and 5m/day respectively	8M
6.	a)	What are different types of irrigation? Explain in detail	8M
	b)	What is soil fertility? How can the same be improved by different methods?	6M
7.	a)	Define duty and delta and derive the relation between them	6M
	b)	What is frequency of irrigation? Explain the procedure to find the same	8M
8.	a)	Describe the classification of canals in detail	8M
	b)	Enumerate the procedure of canal design by Kennedy's theory	6M

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Code : 1G654

R-11

III B.Tech. I Semester Regular Examinations Nov/Dec 2014

Environmental Engineering I

(Civil Engineering)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1. a) Draw the flow diagram of a typical water supply scheme. Explain the function of each component.

   b) What is meant by Environmental Engineering? Why is it necessary to create healthy environment?

2. a) What are the pipe appurtenances in water supply scheme? Mention their functions and location.

   b) What is intake? Explain the river intake with neat sketch

3. a) What are the factor affecting design period? Explain in brief.

   b) What is meant by the per capital demand? How is it estimated for Indian conditions?

4. a) List the water borne diseases. Explain the various engineering measures to control water borne diseases.

   b) Explain the water quality standards for

   (i) Irrigation water

   (ii) Cooling water

5. a) What is difference between coagulation and flocculation? Explain the design criteria of sedimentation tank.

   b) What are objectives of aeration? Explain the different types of aeration systems with neat sketch.

6. a) Explain the disinfection mechanism of chlorine.

   b) Design a rapid sand filter unit for treatment of 2 million liters per day of water. The filter is rated to work 5 m/h. The period required for back washing and maintenance is 1 hour.

7. Explain the environmental impacts and treatment methods for removal of

   (a) Fluorides (b) Hardness (c) Salinity

8. a) Explain with a neat sketch, how municipal water main is connected to houses.

   b) Explain briefly principles involved in the design of water supply network to be laid in a multistoried building.

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Code : 1GA51

R-11

III B.Tech. I Semester Regular Examinations Nov/Dec 2014

Managerial Economics and Financial Analysis

(Common to CE,ME and ECE)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1. Discuss the salient and significance of managerial economics.
2. Explain the concept of cross elasticity of demand. How would you measure such elasticity?
3. You are given the following information

	Rs
Selling price per unit	20
Variable cost	12
Total fixed cost	96,000

Calculate:

(i) Break-even units and value.

(ii) Profit and margin of safety when sales would be Rs.4,00,000.

4. Explain the effect of government intervention in market price behavior.
5. a) What is technical imperative? What is its implication for organization design?

   b) Explain the importance and role of forms of business organization?
6. a) State the features of capital budgeting decisions.

   b) Define accounting rate of return (ARR).How is it calculated?
7. Prepare the Trial Balance from the following

	Rs		**Rs**
Outstanding expenses	1,500	Machinery	3,000
Purchase return	3,000	Capital	30,000
Purchases	42,000	Sales	16,000
Office expenses	9,000	Reserve fund	2,000
Creditors	3,000	Cash in hand	6,000
Loan	4,500		

8. Define ratio analysis. State its limitations.

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Code : 1G651

R-11

III B.Tech. I Semester Regular Examinations Nov/Dec 2014

Structural Analysis II

(Civil Engineering)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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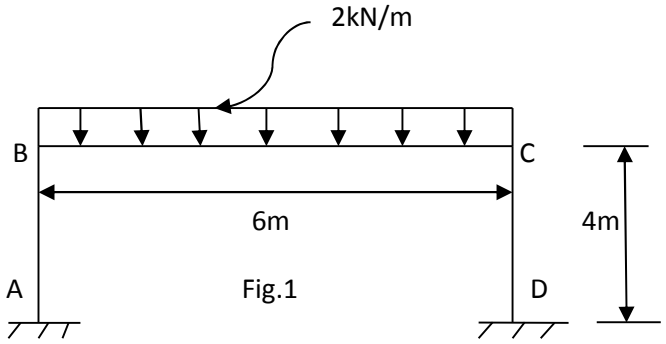
1. A three-hinged circular arch hinged at the crown and springing has a span of 40m and a central rise of 8m. It carries a uniformly distributed load of 20kN/m over the left half of the span and a concentrated load of 100kN at the right quarter span point. Find (i) reactions at the supports (ii) normal thrust and (iii) radial shear at a section 10m from the left support. 14M

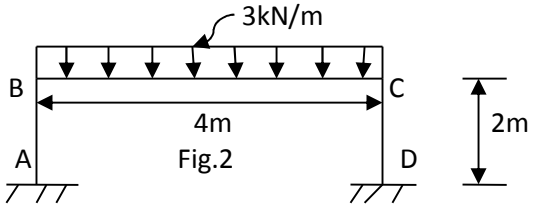
2. Find the horizontal thrust for the two-hinged parabolic arch of 24m span that carries 15kN load at 6m from left hand support. The moment of inertia at any section is $I = I_c \sec\theta$, where 'θ' is the slope at section and I_c is the moment of inertia at the crown. Neglect the effect of rib shortening. 14M

3. Analyse the portal frame shown in fig.1 below using slope deflection method. EI=Constant



14M

4. Analyse the portal frame shown in fig.2 below using moment distribution method. EI=Constant



14M

5. Analyse the beam shown in fig.3 below using Kani's method. EI=Constant

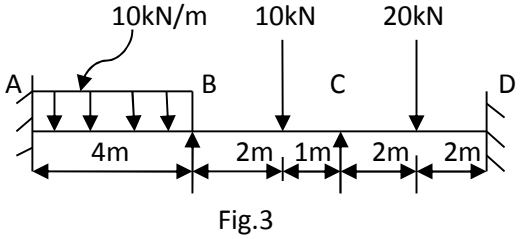


Fig.3

14M

6. Analyse the beam shown in fig.4 below using flexibility method. E=Constant

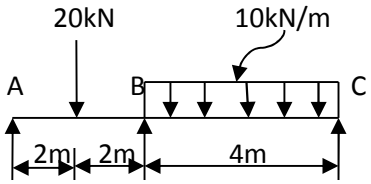


Fig.4

14M

7. Analyse the beam shown in fig.5 below using stiffness method. EI=Constant

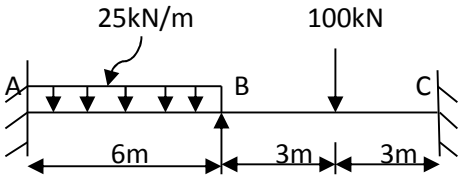


Fig.5

14M

8. a) Define 'shape factor' and find the shape factor for a circular section of diameter 'd'. 7M

   b) Find the collapse load factor for a fixed beam with uniformly distributed load of w/m length. Fully plastic moment of the section is Mp. 7M

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