

Code: 1G673

IV B.Tech. I Semester Supplementary Examinations May 2017

Bridge Engineering

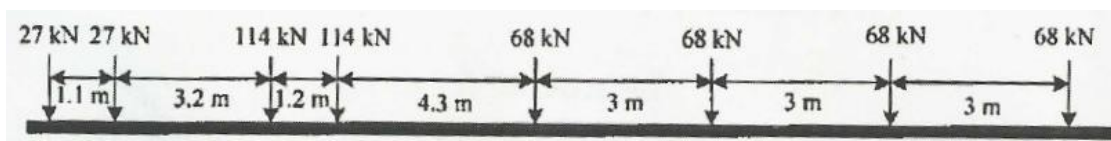
(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **Five** questionsAll Questions carry equal marks (**14 Marks** each)

1. a) Explain how Impact factor is calculated for Highway bridges 7M
 b) Classify the bridges on the basis of materials of construction and forms of Superstructure. 7M
2. a) Explain the IRC class AA loading with the help of sketch 5M
 b) Design a box culvert having inside dimensions 4m × 4m for the following data.
 Dead load = 12 kN/m²
 Live load = 46 kN/m²
 Density of soil = 18 kN/m³
 Use M20 concrete and Fe 415 steel. 9M
3. a) Briefly discuss the economic span for bridges. 7M
 b) Explain in detail the Effective width method of Analysis Design of deck Slab Bridge. 7M
4. a) Explain briefly different types of T-beam bridges with sketches 4M
 b) Design the longitudinal girder of a T-beam and slab bridge for the following data.
 Effective span 18m, Carriage way width 7.5m, Kerb 600 mm on either side.
 Provide three longitudinal beams and five cross beams. Loading IRC class AA tracked vehicle. Adopt M25 Fe415 bars. Also provide the reinforcement details.
 Use Courbon's method for the calculation of reaction coefficients. 10M
5. Design a deck type plate girder highway bridge for a span of 30 m. The bridge consists of two lanes with a reinforced concrete slab of 200 mm thick inclusive of the wearing coat. Two foot paths of 1.5 m are to be provided on either side of the carriage way. Design the plate girder for IRC class A loading shown in fig.1 and also sketch the details.

**Fig.1**

6. a) Explain in detail the functionality of Shear connectors in Composite bridges. 7M
 b) Explain in detail the technical parameters to be considered especially in case of Composite bridge design over conventional bridge design. 7M
7. a) The effective span of truss girder through Type Bridge for a single board gauge track is 38 m. The reaction due to dead load, live load and impact load is 1850 kN. The vertical reaction due to wind is 270 kN. The tractive force is 1030.05 kN and the breaking force is 735.75 kN. Design a suitable bearing and sketch the details. 10M
 b) Explain with neat sketches various types of Bridges bearings 4M
8. a) What are the main features which are taken up for the design of abutments including forces acting on the abutments? 7M
 b) Draw a typical section through a well foundation and indicate the different components. Describe briefly the design of each component. 7M

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R-11 / R-13

Code: 1G674

IV B.Tech. I Semester Supplementary Examinations May 2017

Concrete Technology

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **Five** questions

All Questions carry equal marks (**14 Marks** each)

1. Explain the procedure involved in the testing of the grade of cements in detail. 14M

2. a) Describe the importance of sieve analysis. 5M
b) Discuss the method of constructing a gradation curve for fine aggregates. 9M

3. a) Summarize the effect of Time and temperature on workability of concrete. 5M
b) Discuss the merits and demerits of Flow table test and Slump cone test for concrete. 9M

4. Compare the factors governing the Tensile strength and Compressive strength of hardened concrete. 14M

5. Explain the steps involved in any three of the Non-destructive testing methods for concrete. 14M

6. a) Explain the method of evaluating the poisons ratio of hardened concrete in the laboratory. 6M
b) Explain the following.
(i) Effects of creep. 8M
(ii) Types of shrinkage.

7. Discuss the factors governing choice of mix proportions. 14M

8. Explain the following.
(i) Cellular concrete.
(ii) No-fines concrete.
(iii) Polymer concrete. 14M

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IV B.Tech. I Semester Supplementary Examinations May 2017
Construction Technology and Project Management
 (Civil Engineering)

Max. Marks: 70

Time: 03 Hours

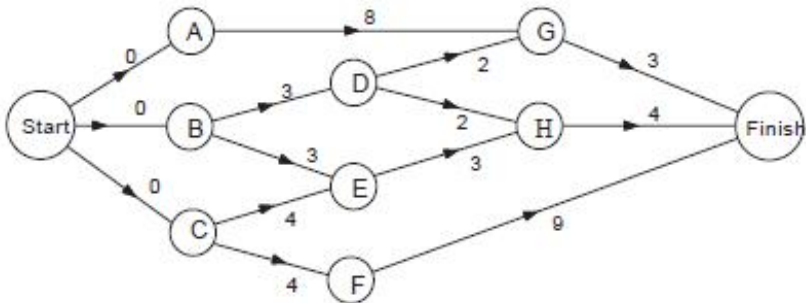
Answer any **five** questions
 All Questions carry equal marks (**14 Marks** each)

- 1. a) Explain various activities involved in construction projects. 7M
- b) How do you prepare construction schedules and records? 7M
- 2. a) Discuss in detail about various methods available in formwork. 7M
- b) What do you mean by false works and temporary works? 7M
- 3. a) What is the significance of mechanized excavation? 7M
- b) Discuss about the measures for ground water control. 7M
- 4. Write short notes on Rock excavation and Blasting patterns 14M
- 5. Explain the following:
 - i) Decision making in Project planning
 - ii) Importance of fund flow statement. 14M
- 6. a) If the expected time along the critical path of a project is 27 weeks and the standard deviation along it is 6 weeks, determine the probability of completing the project within i) 21 weeks ii) 24 weeks iii) 36 weeks 10M
- b) Define Critical path. What does a negative slack indicate? 4M
- 7. A project consists of seven activities and the time estimates of the activities are furnished as under:
 - i) Draw the network diagram.
 - ii) Identify the critical path and its duration.
 - iii) What is the probability that project will be completed in 5 days earlier than the critical path duration?

Activity	Optimistic days	Most likely days	Pessimistic days
1-2	4	10	16
1-3	3	6	9
1-4	4	7	16
2-5	5	5	5
3-5	8	11	32
4-6	4	10	16
5-6	2	5	8

14M

- 8. Consider the following activity network, in which the vertices represent the activities and the numbers next to the arcs represent time in days. Assuming that an unlimited number of workers is available, write down:
 - i) The minimum completion time of project
 - ii) The corresponding critical path
 - iii) Find the float time activity of B



14M

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R-11 / R-13

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IV B.Tech. I Semester Supplementary Examinations May 2017

Geotechnical Engineering II
(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

- 1. a) Describe various methods of drilling holes for subsurface investigation 7M
b) What are the different methods available for soil exploration? 7M

- 2. a) Explain Taylor's stability number 6M
b) Describe the common modes of failure of a finite slope with sketch 8M

- 3. a) State the assumptions of Columb's earth pressure theory 7M
b) What are the different types of earth pressure? 7M

- 4. a) Discuss the principles of the design of retaining wall 7M
b) Enumerate the different types of retaining wall that are commonly used with sketch 7M

- 5. a) Explain general bearing capacity equation 7M
b) Discuss one way eccentricity method of ultimate load for shallow foundation 7M

- 6. a) Explain gross allowable pressure & net allowable bearing pressure 6M
b) Discuss types of failures in soil 8M

- 7. a) Under what field conditions are the following piles used.
i) Uplift pile ii) Floating pile 6M
b) Distinguish between a piled foundation and a free standing pile group. Give one example 8M

- 8 a) Explain the forces acting on a well foundation 7M
b) What are caissons? Explain different types of caissons. 7M

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IV B.Tech. I Semester Supplementary Examinations May 2017

Railway Docks and Harbor Engineering

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (14 Marks each)

1. a) What are the functions of sleepers in a railway track? What are their requirements to satisfy these functions? 8M
b) Explaining the terms "Coning of wheels" and "Adzing of sleepers", discuss why they are needed. 6M
2. a) What is the permissible speed on a BG track with a 4° curve? If, due to some reasons, the speed is restricted to 70 kmph, what super elevation should be provided after allowing maximum permissible cant deficiency? 8M
b) Giving a neat diagram of a left hand turn out indicate various components. 6M
3. a) What is a Marshalling Yard? Give a typical layout of a Marshalling Yard. 6M
b) Differentiate between Passenger Platforms and Goods Platforms bringing out salient features of both. 8M
4. a) Write short notes on Underground Railways and Tube Railways. 8M
b) Explain with the help of a neat diagram how ventilation is to be provided in a tunnel. 6M
5. Describe the features of Eighteenth century harbours bringing out their historic prominence. 14M
6. a) Giving the classification of breakwaters, describe the features of Mound breakwaters. 8M
b) What are the salient features of a harbor? 6M
7. a) Why Jetties are needed in a Port? What are the different types of Jetties that are in use? 8M
b) Write a note on Landing stages and wharves. 6M
8. a) Describe the features of Mechanical dredgers and Hydraulic dredgers used in dredging operation. 8M
b) What are the different types of shore protection works? 6M
