

ME - Sem-II - Choice based - ACT
(CBCS)

Q.P. Code :13975

3 Hours

80 Marks

1. Solve **Any Four** questions.
2. Figures to the right indicate full marks.
3. Attempt sub questions in order

Q 1		20
a	Explain Cut holes, Rim holes, Reliever holes, Relief holes and various patterns of drilling holes for blasting in tunnel.	04
b	Explain : Secant pile construction.	04
c	Draw a neat sketch showing various components of a RMC plant. Approximately how much space and cost is required if you have to set up a RMC plant?	04
d	Explain stone column and sand drain construction along with their suitability.	04
e	Draw a neat sketch showing various components of an atomic power plant. List any 3 major atomic power plants in India with their generation capacities.	04
Q2		20
a	Draw a neat sketch showing various parts of a TBM. Explain its working. Comment about the typical dimensions, operation cost, Owning cost, Rate of working and past examples in India where TBM is being used.	10
b	Write a detailed note (with diagram) on New Austrian Tunneling Method covering the steps involved, Cost of working, Equipments required, Applications and practical examples where it is being used.	10
Q3		20
a	Explain Slip-form, jump-form and modular shuttering alongwith sketches, applications, practical examples and working process.	10
b	Write notes on 1) FRP Concrete. 2) High performance Concrete	10
Q4		20
a	Write a note on Construction Systems for high rise structures.	10
b	Write a note on Prefabricated construction techniques covering planning for precasting, fabrication, transport, site erection & safety measures during erection.	10
Q5		20
a	Explain Incremental launching method of Bridge construction.	07
b	Explain the different types of constructions to be done for underground railway.	06
c	Explain the working mechanism of Maglev trains.	07
Q6		20
a	With a neat sketch/flowchart, Explain the working of (Any One) Hydro power station. OR Thermal power Plant	07
b	What are the essential components of a port ?	07
c	Explain the procedure of erection of a solar power station	06

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ME-Civil - Cont Engg & Mgmt - Sem-II - ID
Choice-based

22/11/17

Q.P. Code :16390

(3 Hours)

Total Marks: 80

N.B 1) Answer any four out of six questions.

2) Each Main Question carries equal marks.

3) Assume suitable data, if reqd. 4) Draw sketches, wherever required.

- Q1.a) What is Public Private Partnership? Also explain the benefits of P.P.P. ----10M
- b) Explain main provisions of 12th five year plan for infrastructure development. ----10M
- Q2.a) Explain recent development of infrastructures in various sectors in India. --- 2M
- b) Explain: - i) B.O.T ii) Special Purpose vehicle. ----08M
- Q3.a) Explain P.P.P. models practised in construction Industry. ----10M
- b) Explain how infrastructure projects are funded & managed? ----10M
- Q.4a) Explain the characteristics of construction Industry? Also explain its role in generating the employment. ----10M
- b) What is G.D.P & G.N.P? Explain it clearly. Also explain its role associated with economy of nation. ----10M
- Q.5a) Explain the role of F.D.I.in construction industry. ----10M
- b) Explain the environmental clearances & approvals required for infrastructure project. ----10M
- Q.6) Write short notes on followings:- ----20M
- Government policies regarding infrastructure projects.
 - Infrastructure & the environment.
 - Classification of Infrastructure projects.
 - Hyderabad International Greenfield Airport.
 - Role of FICCI.

80 Marks

3 Hours

Note: 1. Attempt any 4 Questions

2. Assume suitable data, if required

3. Figures to the right indicate marks

4. Attempt sub questions in order

1. a) A contractor has to take a decision whether to bid for a construction project or not. The decision criteria is based on NPV. The project worth is ₹ 1600 crores to be completed in 5 years. Based on the tender conditions and the company policy, following information is generated: [14]

- Mobilization Advance: 15% of project worth. Mobilization Advance will be deducted in 3 equal instalments, starting from the first year
- C.E Advance: 10% of project worth. It will be deducted in 2 equal installments starting from the 2nd year
- Material cost component of the project is 40%. Secured advance against materials brought to site is 60% of the material cost. Secured Advance is accounted in proportion to the yearly bill payable to the contractor. Secured Advance will be deducted in 3 equal installments from the running bills starting from the 2nd year
- Contractor has to pay 3% as Performance Security in the beginning and 3% Retention amount, which are deductible from each running bill. Performance Security will be released after the end of the project during the 6th year and retention amount will be released in the 7th year at the end of defects liability period.
- the yearly bills payable to the contractor including the retention amount are as follows:

Year	Amount (in crore ₹)
1	300
2	400
3	500
4	280
5	120

- Net profit from the above project before deduction of taxes is 12%. Profit is accounted yearly in proportion to the bill amount
- Income tax is charged at 10%. Working capital required to be raised is estimated at 8%. Working capital may be divided in the proportion of yearly bill. Interest on the working capital is 12% (simple interest). Repayment of working capital is to be considered in the 6th and 7th year together with its simple interest
- Consider the cost of capital as 12%
- Estimated cost of the defects arising during d.l.p is 1.5% of the project worth

Prepare a cash flow statement for the contractor over the 7 year period. Represent the total yearly inflows and outflows w.r.t time graphically and identify whether additional funds may become necessary. Based on NPV, suggest whether the investment in the above project is feasible or not.

- b) Explain CIDC-ICRA grading system of construction entities [06]

2. Answer the following (any 4): [20]

- Escrow Account
- Role of lender's Engineer for execution of a major construction project
- Cash and Credit Management
- Mergers and acquisition with examples
- Profit and loss account statement

Q.P. Code: 25839

3. a) Summarized below are the income and expenditure forecast for the months of January to June 2018. [10]

Month (all credit)	Sales (all credit)	Purchase	Wages	Manufacturing expenses	Office expenses	Selling expenses
	₹	₹	₹	₹	₹	₹
Jan	6,00,000	4,90,000	95,000	40,000	20,000	40,000
Feb	6,20,000	3,70,000	95,000	40,000	25,000	45,000
Mar	6,40,000	3,60,000	45,000	45,000	25,000	50,000
Apr	5,90,000	3,60,000	85,000	45,000	20,000	45,000
May	5,70,000	3,80,000	95,000	50,000	25,000	40,000
Jun	6,00,000	3,50,000	85,000	40,000	20,000	55,000

You are given the following further information:

- Plant costing Rs. 2,60,000 is due for delivery, in May, payable at 10% on delivery and the balance after 3 months.
 - Advance tax of ₹ 65,000 is payable in July and October each.
 - Period of credit allowed by suppliers is 2 months and to customers is 1 month.
 - Lag in payment of manufacturing expenses is $\frac{1}{2}$ month.
 - Lag in payment of all other expenses is 1 month.
- You are required to prepare a cash budget for 3 months starting on 1st April 2018, when there was a cash balance of ₹ 2,00,000

- b) Explain with an example, the technicalities involved in dealing with foreign exchange on a project having stakeholders from different nationalities. [10]

4. a) A typical cost sheet of a manufacturing company provides following particulars: [10]

Sr. no.	Particulars	Amount per units(₹)
1	Element of costing:	
	a. Raw materials	75
	b. Direct labours	25
	c. Overheads	50
2	Profits:	30

The following additional details are available:

- Raw material in stock – on an average 1 month
 - Material in production – on an average $\frac{1}{2}$ month
 - Finished goods in stock – on an average 1 month
 - Credits allowed by suppliers – 3 months
 - Credits allowed to purchasers – 2 months
 - Lagged payment of wages – on an average $\frac{1}{2}$ month
 - Overhead expenses(Lagged payment) – 1 month
 - $\frac{1}{4}$ th of goods are sold against cash
 - Cash in hand and bank accounts is desired to be maintained at ₹ 3,50,000/-
- Estimate the working capital needed to be kept ready for production of 1 lakh units per annum (assuming production is carried out throughout the year)

- b) Innumerate the various ways in which the funds were raised from conception to completion of the Konkan Railway project. Discuss the hurdles faced and the solutions envisaged. Justify why the case study is an example of financial success.. [10]

Q.P. Code: 25839

5. Write Short notes on (any 4): [20]
- Equity and Debt
 - ARR with an example
 - Principles of accounting
 - Role of finance manager
 - Wealth maximization vs profit maximization

6. a) Explain How BOT is effective model for financing in bridge projects in India. [06]
- b) The estimated cost of an expressway to be constructed on BOT basis between 2 megacities is ₹ 1300 crores. The project is to be completed in 4 years and the expected life of the project after vehicles start plying on it is 25 years; after which it needs to be scrapped off and replaced. The commissioning period for the contractor is 10 years, after which the project becomes government property. The contractor had taken a bridging loan of ₹ 500 crores (on simple interest of 12%p.a) at the start of the project which is to be repayed back between the years 6-10 of the project life cycle in equal yearly instalments. The cashflows at the end of each years are estimated as follows: [14]

Year No.	Construction costs	Expected Toll to be collected	Expected Repairs and maintenance	Year No.	Expected Toll to be collected	Expected Repairs and maintenance
	In crore ₹	In crore ₹	In crore ₹		In crore ₹	In crore ₹
0				15	1050	300
1	300			16	960	330
2	350			17	970	360
3	390			18	980	390
4	260			19	990	420
5		800	115	20	1300	450
6		820	130	21	1015	490
7		840	145	22	1030	530
8		860	160	23	1045	570
9		880	175	24	1060	610
10		900	390	25	1375	650
11		910	210	26	1090	700
12		920	230	27	1000	750
13		930	250	28	900	800
14		940	270	29	750	700

Determine, based on NPV, whether the project is feasible for both the project parties. Also show the BEP of the project