BACHELOR OF CONSTRUCTION ENGINEERING EXAMINATION, 2017
4TH YEAR 2ND SEMESTER
QUALITY MANAGEMENT IN CONSTRUCTION

EX/CON/T/422/2017

PART I

Time: Three hours | Answer parts of any question ***SERIALLY*** | Full Marks: 100

Answer of a question No. 1 & any **TWO** of the rest. Please start answering a question or part there of from a **NEW** page.

1. (A) Annotate : (any four) 2.5 X 4 = 10
   (a) Inflation
   (b) Quality Assurance in the light of Industrial Fiscal Policies
   (c) Price Index
   (d) Devaluation of currency
   (e) Prime Lending Rate

   (B) *"Rate of Inflation in a probabilistic approach is the determining factor for Inflation Control in the World Economy"* Discuss in the light of the relation of Inflation with 'PLR'

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2. The table below gives the estimated monthly costs for a construction project : Profit margin is 5 % to be added to costs, with retention at 10 % repaid in two installments, half on practical completion & half nine months after practical completion. Normal terms of payment with a delay of one month is applicable in both cases on the contractor, while paying & receiving money. Based on experience the contractor assumes that the margin achieved will be reduced by increased costs. He assumes the costs to be 3% higher than estimated & expects to recover another 3% of the actual incurred total costs as claim to be recovered six months after practical completion.

   Prepare plots of cash in & cash out. Calculate the interest charges on lockup capital for an annual interest rate of 14 %.

   Monthly estimated costs for the contract

Month	1	2	3	4	5	6	7	8	9
Estimated Costs (*Rs. Crores*)	2	3	3	4	6	7	4	4	2

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3. From total quality management view there is restriction in storage space at a project. As such 100 containers PCE based Admixture are supplied per week. Price per container of the PCE based Admixture is Rs. 8,000/-. The cost of holding a container is 5% of cost price. The cost to the supplier each time a new order is processed is Rs. 500/-. Some times the delivery cannot be met & to make up the back log there are special deliveries to the customer as soon as the supplier is able to continue with the order. The extra cost incurred by the supplier in this situation is Rs.1,500/- per container.

   (a) Calculate the economic order quantity for the supplier as per total quality management principles.
   (b) Calculate the total cost per week to the supplier of stock holding & processing orders.
   (c) Calculate the level to which stock on site is topped up.

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4. From Quality Management principle the use of quality Panisagar Grade Coarse Aggregates are mandatory at a road construction project of NHAI in the Lungley - Tut Section of NH 56A in the State of Mizoram. The requirement is 20,000 tonnes per month. Cost of ordering is Rs. 1,500/- & cost of storing material is 15% of purchase cost. The cost per item depends on the total quality ordered as follows:
   (i) Less than 10,000 tonnes @ Rs. 15,500/- per tonne
   (ii) 10,000 – 19,999 tonnes @ Rs. 14,500/- per tonne
   (iii) 20,000 tonne or more @ Rs. 13,800/- per tonne
   Calculate the optimum order quantity & optimum total cost per month of purchasing, storing & ordering the material.

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Quality Management in Construction, 2nd Semester , 2017
Year-4th
PART - II

F.M 4x12=48

Answer **any 4 questions** Neatness=2

1. Expalin the requirement of quality management for any construction project? Mention the factors that are to be taken care of for good construction quality management .
2. What is good quality concrete? How will you cure a fresh concrete at site? Give a Flow chart on preparation of good concrete.
3. What do you mean by criticality of quality requirement? Mention the names of the types of quality management. Give flow sheets of Quality model & quality requirements.
4. Expalin the importance of storage and handling of TMT re-bars at site. How will you identify a sound TMT bar at site? Give a brief note on basic construction safety guidelines.
5. What do you mean by PDCA cycle? Explain each term briefly.