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Name of the Program: B. Sc. in Civil Engineering  
Semester: 8<sup>th</sup> Semester

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ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)  
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

Semester Final Examination  
Course Number: HUM 4851  
Course Title: Practice, Communication, and Professional Ethics

Summer Semester: 2021 - 2022  
Full Marks: 150  
Time: 3.0 Hours

There are 7 (Seven) questions. Answer any 6 (Six) questions. Do not write on this question paper. Marks of each question and corresponding CO and PO are written in the brackets.

1. (a) A real estate company has started construction of a 12 storied residential building one year ago. The foundation work is complete. Structure works of first 2 stories are completed too. Recently the Project Manager, while reviewing project monthly progress report, found that the progress rate of structure work got slower in the last three weeks. The Project Manager gets very much anxious. Upon scrutiny he found that a new highly advanced concrete batching plant was installed three weeks ago in the site and the delay in progress is due to the sudden slowing of the concrete production by the equipment which was happening sporadically. The Project Manager was determined to find the exact reason for this and to solve the issue in no time. (7.5)  
(CO1)  
(PO11)
- Discuss what kind of tool can the Project Manager use to find the root-cause that is causing delay for the project. Provide step by step procedure of your given solution.
  - Also inform how the project manager found out this delay issue- through project monitoring or through project evaluation.
- (b) "The road connecting between district A and district B was built on the embankment of a river. This year, due to heavy rainfall, some damages on the embankment was started to appear. The road is highly important as district B is a border district and cross-border trade of this region is dependent on this road. The relevant official of the area, Ms. Rishia became very anxious about the road condition. She was ordered by her superior to quickly take action to avoid any collapse of the communication. Rishia has approached one of the local experienced contractors to do the embankment and road repair work. She requested the Contractor to start the repair work as early as possible abiding relevant official procedures. The Contractor informed that the nature and breadth of repair work could not be estimated properly at this stage due to the uncertainty associated with this kind of repair work. Rishia instructed the Contractor to start the work and to keep all the records of materials, equipment and workforce used for this work. She told the Contractor that she would return all the actual costs that would be incurred by the Contractor. In addition, she would also provide 10% of the cost as additional fee to cover the profit and overhead of the Contractor." (10)  
(CO2)  
(PO06)

Please explain what kind of 'procurement method' and 'contract type' Rishia has considered for the repair work.

- (c) Explain the procedures for selecting 'Collective bargaining agent' for an establishment in context of Bangladesh Labor Law. (7.5)  
(CO3)  
(PO8)
2. (a) "A 11 Km long bridge construction project with a proposed duration of 5 years had started 2 years ago. As per the approved project proposal, around 38% physical works should have to be completed by the end of 2nd year. While checking the progress of the work, Ms. Riana, the Project Manager of the Project, finds that the physical progress is only 28%. She requested the Monitoring and Evaluation (M&E) officer of the project to evaluate the current project status along with the original project proposal and project design. She wants to use them as an immediate feedback for better implementation of the current project." Identify, with justification, what types of project evaluation that are referred in the above scenario. (7.5)  
(CO1)  
(PO11)
- (b) Discuss about the appropriate assignments for which the "Quality based selection (QBS)" method can be used for consultant selection. Also explain when we can use 'Fixed budget based selection (FBS)' method for consultant selection. (10)  
(CO2)  
(PO06)
- (c) Describe what kind of industry/workplace is best run using a "pluralist perspective" workplace relationship. Provide justification to your choice. (7.5)  
(CO3)  
(PO8)
3. (a) Find out the types of evaluation that are mentioned in the following scenario- (7.5)  
(CO1)  
(PO11)
- "HALP, a renowned NGO, is specialized in delivering services in poverty reduction, literary improvement and health education etc. sectors. HALP was recruited by a multilateral development partner named South Regional Bank to implement an employment creation and poverty reduction project for the remote southern part of the country. This part of the country is economically significantly lagging behind than rest of the country. This 2-year project was completed recently and it was completed within budget and time. After passing of one year of the completion of the project, the HALP's evaluation department started to measure what difference did the project make on the project beneficiaries. The evaluation department also compares status of those who are selected for the project and those who are not- in order to verify any difference in terms of outcome of the project. Along with HALP's own evaluation, the development partner i.e. South Regional Bank has also engaged a third party Evaluation consultant to evaluate the outcome and impact of the project."
- (b) Give ONE situational example for each for the following integrity related issues in the context of procurement and contract management. Provide justification to your answer. (10)  
(CO2)  
(PO06)
- i. Fraudulent practices
  - ii. Obstructive practices
- (c) Write down the fundamental principles of ASCE code of ethics 2020. (7.5)  
(CO3)  
(PO8)

4. (a) "The Wye Ltd, a renowned real estate company, has high reputation in the sector for ensuring good quality and timely delivery of projects. Recently another large business conglomerate named Zed Ltd is preparing to enter in real estate sector. Zed's main advantage is its high quality in-house design team comprising professionals like Urban Planner, Architects, Structural Engineer, Geotechnical Engineer, Plumbing and Sanitary Engineer, Fire Safety Engineer etc. Due to in-house capacity, Zed is able to prepare the designs faster than those companies that are depended on external consultants. Concerned about this, Wye was recently pondering to create an in-house design team in order to 'not get defeated' by Zed. The finance manager of Wye has completed a detail scenario based ratio calculation to compare whether the benefit of creating an in-house team will justify the expense associated with creating the in-house team. The finance manager also calculated how many years it will take to recoup the investment for this endeavor. Based on the market scenario and calculations, the finance manager of Wye decided to undertake the project of creating an in-house design team. (7.5)  
(CO1)  
(PO11)

In the meantime, while working in a construction project of Wye, one of the concrete pump suddenly became inoperable and would require significant repair work. Wye has only two concrete pumps for aiding in high rise construction work and it totally depends on these pumps for its twenty numbers of running projects. So Wye has no other option but to take a project to repair the pump as soon as possible so that no time is wasted and with less business process interruption."

Explain all the 'Project Selection Approaches' that are considered in the above case scenario. Explain using relevant examples from the case.

- (b) Explain, with justification, what type of specifications are used in the following scenarios- (10)  
(CO2)  
(PO06)
- i. An educational institute has decided to purchase some wooden benches for its classroom. In the specification it wrote "2000mm (L) x 400mm (W) x 500mm (H) bench made with 18mm thick Teak wood". Detail drawings of the bench are also included with the specification.
  - ii. A construction company decided to purchase a water pump for its plumbing works. In the specification of the water pump, it wrote "The pump shall be able to lift 1000 m<sup>3</sup> water up to 30 m within an hour. Also, the body of the water pump shall be made of lightweight aluminum."

- (c) Discuss the benefits of labor union. Your response may encompass benefits generated for workers, owner/management as well as the society in general. (7.5)  
(CO3)  
(PO8)

5. (a) Consider an infrastructure project of your own choice. Now, with relevant examples from your chosen project, compare between the Formative Evaluation, Summative Evaluation and Participatory Evaluation. (7.5)  
(CO1)  
(PO11)

- (b) Identify and explain the type of integrity violation issues that are referenced in the following scenarios- (10)  
(CO2)  
(PO06)

- i. As per contract, the contractor of a 30 km expressway construction work has to provide awareness training in each quarter to the workers regarding contagious

diseases like COVID-19, HIV/AIDS etc. If the contractor fails to fulfill this duty, the Project Manager have to withhold the subsequent payment of civil works of the contractor. But the Project Manager was putting a blind eye to this requirement and certifying the payment of the contractor even though the contractor did not conduct any required training for the last two quarters. The Project Manager and the owner of the contractor company hails from same locality.

- ii. For the monitoring and inspection of the project work, the Project Manager instructed the Contractor to provide a luxury car. Though there was no provision to provide any vehicle in the contract, the contractor, fearing any undue repercussion from the Project Manager, complies to the instruction and provide the asked vehicle to the Project Manager.
- iii. For the monitoring and inspection of the project work, the Project Manager instructed the Contractor to provide an inspection vehicle. There was provision to provide vehicle for inspection of works in the contract. The contractor obliged to this instruction and provided the requested vehicle. The Project Manager started to use this vehicle for her official as well as personal use.

(c) Explain the practical implications of the following ethical responsibility of ASCE code of ethics 2020 for professional Engineers – “Engineers reject practices of unfair competition” (7.5)  
(CO3)  
(PO8)

6. (a) Find out the types of project selection approaches that are referenced in the following scenarios- (7.5)  
(CO1)  
(PO11)

- i. An old industrial building was constructed 30 years ago. This is a four storied building. After completion of construction, no major repair work was done for the building. During the year, the building was used for heavy industrial works and it sustained heavy vibrational loading. Recently, minor cracks begin to appear in some structure of the building. Being concerned, the owner of the building recruited a consultant to check whether the structure of the building is ok for the existing industrial loading. The consultant informed that the building’s structure is in emergency need for strengthening using retrofitting etc. solution. The owner then initiated a project to retrofit the structure as per the consultant’s advice.
- ii. The price of commercial space is getting higher day by day in the center of the capital city. Mr. Ragnor owns an 8 storied commercial building at a premium location. He was renting the whole building spaces to commercial establishments. Recently a friend of his, who happens to be a real estate market expert, informed him that Ragnor could earn a significant amount of money if he could increase his building’s space by increasing the height of the building by at least two stories. Upon hearing that, Ragnor recruited a consultant to check whether the existing building structure can be strengthened to incorporate two more stories above the existing 8 stories. Ragnor decided that if the consultant’s report is positive, then he

will take a project for necessary retrofitting solutions of building structures to construct two more stories above the existing eight stories.

- (b) Sylone is going to invite a bid for construction of multistoried building. Before bidding, Sylone was thinking about one of her recent experience where the 1<sup>st</sup> lowest responsive bidder, who quotes 5% less than the estimate, declined to sign the contract. Eventually Sylone had to sign contract with 2<sup>nd</sup> lowest bidder who quoted 4% less than the estimate i.e. 1% higher than 1<sup>st</sup> lowest bidder. Sylone was suspicious that there may be some kind of pact between the 1<sup>st</sup> lowest and 2<sup>nd</sup> lowest bidder for financial gain. So, Sylone was thinking to use some kind of provision in the bidding document to ensure that if a bidder is awarded the contract, the bidder will be obliged to sign the contract. Otherwise that bidder will be punished in some way. (10)  
(CO2)  
(PO06)
- i. Explain what kind of provision Sylone could incorporate in the bidding document in this context.
  - ii. Also explain what kind of integrity violation issue Sylone had suspected in her previous experience.
- (c) You are a member of bid evaluation committee for constructing a bridge. Seven bids were received till the submission deadline. After checking you found out that an employee of one bidder company is an acquaintance of you. That person was a junior in your school. But you are not that close to that person. Also that person is not directly involved for this bidding on behalf of the bidder. (7.5)  
(CO3)  
(PO8)
- Explain how you can assess whether there is a potential for conflict of interest in this scenario. Also explain how you can address any potential conflict of interest.
7. (a) Omta Cement limited is one of the renowned cement manufacturing company in the country. Based on sales volume, it holds 15% local market share. The company only produces CEM-I type of cement. Recently the CEO of the company instructed the production department to check the viability for production of CEM-II type of cement in the factory. The Head of the production department informs the CEO that they will need fly ash or slag or limestone etc. materials for production of CEM-II type of cement. The CEO informs the Head that Omta Cement has a sister concern named Omta Energy Limited which is a power generation company. This power generation company uses coal for power generation and fly ash with required specifications can easily be sourced from the power plant. The CEO is also assessing the existing market condition regarding demand and supply of CEM-II cement. (7.5)  
(CO1)  
(PO11)
- Assess TWO strengths, TWO weaknesses, TWO opportunities and TWO threats for this endeavor of the company i.e. producing new type of cement.
- (b) Give examples when we may require the following services in the context of contract management. Provide justification to your answer. (10)  
(CO2)  
(PO06)
- i. Proof Consultant
  - ii. Panel of Experts

- (c) Explain the practical implications of the following ethical responsibility of ASCE code of ethics 2020 for professional Engineers – “Engineers act as faithful agents of their clients and employers with integrity and professionalism;” (7.5) (CO3) (PO8)