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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER 1
SESSION 2015/2016**

COURSE NAME : SUSTAINABLE CONSTRUCTION
MANAGEMENT

COURSE CODE : BFC 32703

PROGRAMME : BACHELOR OF CIVIL ENGINEERING
WITH HONOURS

EXAMINATION : DECEMBER 2015/ JANUARY 2016
DATE

DURATION : 3 HOURS

INSTRUCTIONS : A) WRITE DOWN YOUR ANSWERS
IN THE ANSWER BOOKLET

B) ATTACH ALL NECESSARY
DOCUMENTS/PAPERS NEEDED

THIS QUESTION PAPER CONSISTS OF **EIGHT (8)** PAGES

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SECTION A (15 marks)**Instruction:**

Select **ONE** most appropriate answer for the following questions and write your answers in the answer script booklet

- Q1.** Maslow ranked Human needs from the highest to lowest.
- A. Self actualization; self promotion; social; security and physiological needs
 - B. Self esteem; self actualization; social; security and physiological
 - C. Self actualization; self esteem; social; security and physiological
 - D. Self fulfillment; self esteem; social; security and physiological
- Q2.** The process of identifying environmentally friendly building materials as well as harmful and toxic materials is referred to as _____.
- A. material selection
 - B. procurement
 - C. building and material reuse
 - D. health and safety
- Q3.** Maintaining a delicate balance between the human need and feeling of well-being as well as preserving natural resources and ecosystem are associated with _____.
- A. sustainable development
 - B. sustainable strategies
 - C. sustainable environment
 - D. sustainable planning
- Q4.** _____ in 1987 provided the most widely cited definition of sustainable definition, namely development which meets the needs of the present, without compromising the ability of future generations to meet their own needs.
- A. The Rio Earth Summit Report
 - B. The Egan Report
 - C. The Brundtland Report
 - D. The Global Sustainable Development Report
- Q5.** The primary components of the quality management function are:
- i. Plan Quality Management
 - ii. Quality Assurance
 - iii. Quantitative Assurance
 - iv. Quality Management Technique

- A. i.
 - B. i and ii.
 - C. i, ii and iii.
 - D. i, ii, iii and iv.
- Q6.** Choose the best tool or technique used in implementing a quality assurance program to enhance the existing quality control of construction activities.
- A. Quality audits
 - B. Statistical sampling
 - C. Pareto charts
 - D. Trend analysis
- Q7.** As a project manager for a large-scale construction project, you have successfully managed the project within the given time and budget. The client and the stakeholder of the project are very pleased with the result. Thus, your company director is giving you RM 25,000 as a reward. You have fifteen (15) members in your project team where one of them is giving less contribution as compared to the others. As a good project manager, decide your action on the rewards?
- A. Keep the money yourself as the company director gave it to you.
 - B. Divide the money equally among all the team members.
 - C. Ask the team members how they would divide the money.
 - D. Divide the money equally among the team members except for the substandard team member.
- Q8.** Which of the following methods can be used to monitor the progress of the construction project?
- i. Site visits
 - ii. Progress photographs
 - iii. Check-off lists
 - iv. Updated schedules
- A. i and iii
 - B. i, ii and iii
 - C. ii, iii and iv
 - D. All of the above

Q9.

Table Q9

Month	1	2	3	4	5	6	7	8
Monthly value of works (X RM10,000)	30	50	80	150	200	280	120	90
Profit as % of value	10	10	10	15	15	15	15	15

Based on the above information in **Table Q9**, calculate the total cost for this project .

- A. RM 8,580,000
- B. RM 8,858,000
- D. RM 10,000,000
- E. RM 11,420,000

(2 marks)

Q10. You have two tasks. You would like to start Task B 2 days after Task A has finished. How would you configure the predecessor field for Task B?

- A. FS+2 days
- B. FS-2 days
- C. SF+2 days
- D. SF-2 days

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Questions Q11 and Q12 refer to the following diagram as indicated in Figure Q11 and Q12 .

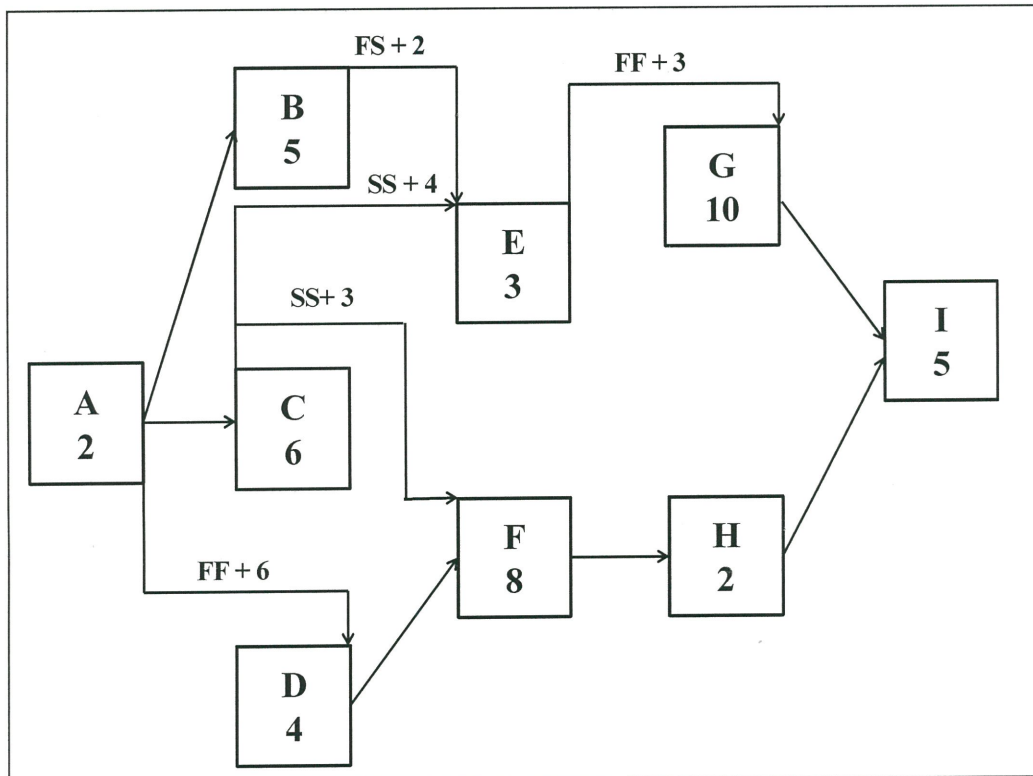


Figure Q11 and Q12

Q11. What is the duration to complete all the activities in the network diagram?

- A. 21 days
- B. 22 days
- C. 23 days
- D. 24 days

(3 marks)

Q12. Identify the critical path of the schedule.

- A. A-B-E-G-I
- B. A-C-E-G-I
- C. A-C-F-H-I
- D. A-D-F-H-I

SECTION B (35 marks)

Instruction:

Answer all questions

Q1.

- a) Human activities produce more than 2,500 million tons wastes per year, including industrial and agricultural wastes from rural and urban societies. This creates serious problems to the environment, health and also to the landfills. **Explain two (2)** examples of the use of industrial wastes for production of sustainable construction materials.
(5 marks)
- b) A suitable organisational structure may assist the project management team to achieve high performance in project through gains in efficiency and effectiveness. **Describe two (2)** types of project organisation structures and give their advantages and disadvantages for each type.
(5 marks)
- c) The quality of materials used in the project will be evaluated and accepted in various ways, whether by testing of samples, visual inspection, or certification of compliance. You as a Resident Engineer for specific projects has a responsibility to check the conformity of all materials delivered to the site in order to meet requirements of standard specification. Based on your understanding related to materials testing and inspection, **explain** an example of quality procedure for aggregate inspection which shall comprise information about types of testing and method of inspection at site.
(4 marks)

Q2. The construction activities of a new terminal bus project have the following durations, dependencies and resources as indicated in **Table Q2**

Table Q2

Activity	Duration (weeks)	Dependency	Resources (operatives/week)
A	2	-	3
B	4	A	6
C	6	B	4
D	3	A	2
E	7	B & D	8
F	5	C	5
G	2	F	4
H	1	C & E	6
J	4	E	8
K	6	H	3
L	3	J	2
M	2	K & L	4
N	4	G & K	5
O	2	N & M	6
P	2	O	2

Based on the information given, answer the following questions;

- a) Calculate Early Start (ES), Early Finish (EF), Late Start (LS), and Late Finish (LF) for each activity. (4 marks)
- b) Construct a bar chart from the network (3 marks)
- c) Construct a histogram for the resources (3 marks)
- d) Draw the cumulative resources “S” curve (2 marks)

- Q3.** A construction of Community Hall at Parit Raja has an original budget of RM 600,000.00 and after the first 4 months of a 16 months planned project time, the Schedule Costs, Actual Costs and Earned Values are as indicated in **Table Q3**:

Table Q3

	Month 1 (RM)	Month 2 (RM)	Month 3 (RM)	Month 4 (RM)
Schedule Cost	32,000	60,000	150,000	240,000
Actual Cost	35,000	70,000	160,000	250,000
Earned Value	30,000	50,000	140,000	230,000

Based on the information given, answer the following questions;

- a) Draw the curve for Scheduled Cost and Actual Cost
(2 marks)
- b) Calculate the cost variance for months 4
(1 mark)
- c) Calculate the Schedule Variance (cost based) for month 4
(1 mark)
- d) Determine the Cost Performance Index (CPI) for month 4
(1 ½ marks)
- e) Determine the Schedule Performance Index (SPI) (cost based) for month 4
(1 ½ marks)
- f) Justify on the project status based on question 3(d) and 3(e) (C6)
(2 marks)

-END OF QUESTIONS-