FACULTY OF ENGINEERING

B.E. 4/4 (Civil) II – Semester (Main) Examination, May / June 2015

Subject: Construction Management and Administration

Time: 3 Hours   Max.Marks: 75

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1 Explain scheduling and controlling as a function of Construction Management.   3
2 Explain the basic concepts in the development of Construction plans.   3
3 Draw a typical time scaled network   3
4 Explain the following terms:
   a) Activity float and schedules   2
   b) Precedence networks   2
   c) Project variance   2
   d) Information to be furnished in tender notice   2
   e) Contract agreement   2
5 Explain non-negativity restriction in LPP with an example.   3
6 How are slack, surplus and artificial variables introduced in case of a maximization
   problem of ≤, ≥, and = type constraints?   3

PART – B (50 Marks)

7 Explain line and staff organization with its salient features. Explain with a flow chart the
   role of construction team in the management of a construction projects.   (10)

8 Using the network given below, carry out necessary network calculations (forward and
   backward passes).   (10)
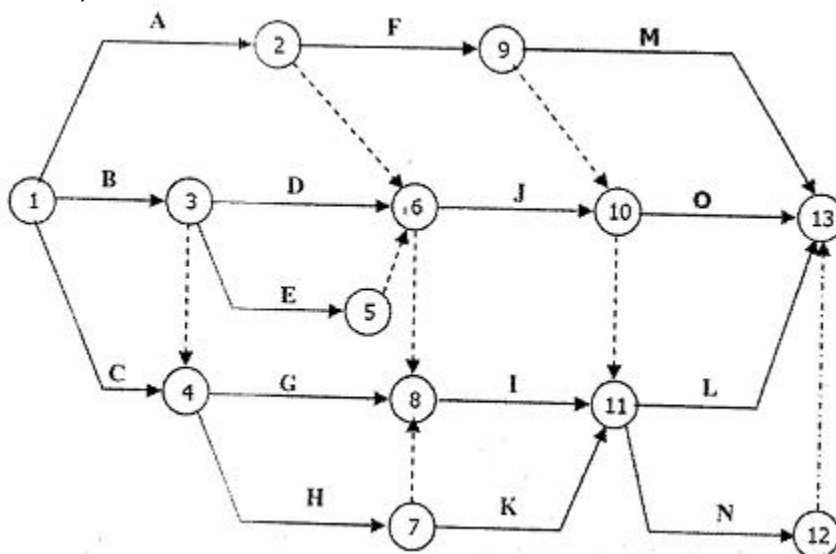
   a) Calculate the EST, EFT, LST, LFT, TF, FF and IF of each activity.
   b) If the activity A and M are delayed by 4 and 2 days, how many days will the project
      be delayed?

9   The relevant data for a project consisting of seven activities is given below: (10)

Activity	Dependence	Normal Duration (Days)	Crash duration (Days)	Normal Cost (Rs)	Crash Cost (Rs)
A	--	7	5	500	900
B	A	4	2	400	600
C	A	5	5	500	500
D	A	6	4	800	1,000
E	B, C	7	4	700	1,000
F	C, D	5	2	800	1,400
G	E, F	6	4	800	1,600

a) Find out the normal duration and the minimum duration.
b) What is the percentage increase in cost to complete the project in 21 days?

10 Explain briefly the provision of factory act with reference to health, safety and welfare of workers. Describe safety requirements for demolition works, and safety measures to be adopted for excavation.   (10)

11 Solve graphically the following LP problem   (10)
    Minimize $Z = 2.1x_1 + 1.7x_2$
    Subject to constraints:
        $0.15x_1 + 0.15x_2 \geq 1.5$
        $0.85x_1 + 1.70x_2 \geq 8.5$
        $1.30x_1 + 1.10x_2 \leq 14.40$
            $x_1, x_2 \geq 0$

12 Explain, why time cost trade off is necessary? Discuss various ways to reduce the activity duration.   (10)

13 Write short notes on any TWO of the following: 5+5
    a) Public private partnership
    b) Conditions of contract
    c) Demolition of buildings.

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FACULTY OF ENGINEERING

B.E. 4/4 (EEE) II - Semester (Main) Examination, May / June 2015

Subject : Utilization

Time : 3 Hours   Max. Marks: 75

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 What are the advantages of electrically produced heat?   (2)

2 Mention the various types of electric resistance welding. Give its merits and demerits.   (3)

3 Why synchronous motor is not inherently self starting? Explain.   (3)

4 What is meant by over load relays?   (2)

5 What do you understand by float switch? Give examples.   (3)

6 State and explain laws of illumination.   (3)

7 Why is tungsten selected as the filament material?   (2)

8 Why 1-phase AC system is preferred for main line railway service?   (2)

9 Compare the use of dc series motor and ac series motor in electric traction.   (2)

10 Discuss about rating of batteries.   (3)

PART – B (50 Marks)

11 Define the following terms: (10)
   (a) Luminous flow
   (b) MHCP
   (c) Lumen
   (d) Brightness
   (e) Solid angle

12 (a) Explain direct reversing of a 3-phase induction motor with help of neat power
       circuit diagram.   (5)
   (b) Explain remote control operation of a 3-phase induction motor with neat
       schematic diagram.   (5)

13 (a) Describe with neat sketches any three types of resistance welding.   (5)
   (b) Differentiate AC welding and DC welding.   (5)

14   A low frequency induction furnace operating at 10V in the secondary circuit takes
      400 kw at 0.5 p.f. when the hearth is full. If the secondary voltage be maintained at
      10V, estimate the power absorbed and the p.f. when the hearth is half full. Assume
      the resistance of the secondary circuit to be thereby doubled and the reactant to
      remain the same.   (10)

15   Explain the constructional details and maintenance of lead acid batteries.   (10)

16   An electric train weighing 200 tonnes runs a uniform up-gradient of 1% with
      following speed time curve.   (10)
      Uniform acceleration of 2 kmphs for 30 sec
      Constant speed for 40 sec
      Coasting for 30 sec
      Braking at 2.5 kmphs to rest
      Stop at station 15 sec
          If the tractive resistance is 40 N / tonne, rotational inertia effect 10% of dead
      weight and overall efficiency of transmission and motor is 75%, determine
      (a) Schedule speed
      (b) Specific energy consumption
      (c) Total energy consumption
      (d) Distance between two stations.

17   Write short notes on the following: (10)
      (a) Speed – time curve
      (b) Mechanics of train movement
      (c) Mercury vapour lamp

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FACULTY OF ENGINEERING

B.E. 4/4 (EEE/Inst.) II - Semester (Main) Examination, May / June 2015

Subject : Electronic Instrumentation Systems

Time : 3 Hours   Max. Marks: 75

Note: Answer all questions from Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1 Why is a A/D converter usually considered as a encoder?   (3)
2 Draw the schematic of a 5 bit resistive ladder.   (2)
3 Explain the principle of operation of a digital time measurement.   (3)
4 Compare with true r.m.s meter with an average responding meter.   (2)
5 What is the difference between a wave analyzer and a harmonic distortion analyzer?   (3)
6 State the applications of spectrum analyzer.   (2)
7 List the different distortions caused by amplifiers.   (2)
8 Describe IEEE-488 Data bus.   (3)
9 Brief about the magnetic material used for tape.   (3)
10 How is the electron beam focused on to a fine spot on the face of the CRT?   (2)

PART – B (50 Marks)

11 With necessary diagrams explain in detail about any two methods of analog to digital
   (A/D) conversion.   (10)

12 Explain the following in detail related to digital meters:
   (i) Scaling and checking modes
   (ii) Input signal conditioning and counting errors   (10)

13 (a) With necessary diagrams discuss in detail about successive limiting type pf Log
       IF amplifier.   (5)
   (b) Explain in detail about phase locked circuit for local oscillator.   (5)

14 With necessary diagrams explain in detail about IEEE 488 interface bus.   (10)

15 (a) Explain in detail about Possibilities and Limitations of improving Deflection
       Sensitivity of CRT.   (4)
   (b) With necessary diagrams explain in detail about digital storage oscilloscope.   (6)

16 (a) In a video cable, a particular channel program is selected at 78.5 MHz. Explain
       how you measure its harmonics using Spectrum Analyzer. What are different
       harmonic frequencies for the above channel?   (5)
   (b) Determine detection sensitivity of a CRO, given that with usual notation,
       l = 2.5cm, L =20 cm, d =2.5 mm, V_d =5V & V_a =2000V.   (5)

17 Write short notes on the following
   (a) Dual slope ADC   (5)
   (b) Automatic instrumentation   (5)

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FACULTY OF ENGINEERING

B.E. 4/4 (Mech./Prod.) II – Semester (Main) Examination, May / June 2015

Subject : Production and Operations Management

Time : 3 hours   Max. Marks : 75

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1 Define plant layout and give its objectives.

2 What are incentives? How these help the production?

3 State the objectives of forecasting.

4 Briefly describe Delphi technique.

5 What are the objectives of aggregate planning?

6 What are the main features of Enterprise Resource Planning (ERP).

7 Describe the importance of inventory control.

8 Briefly explain Fulkerson's rule.

9 List out assumptions in EOQ.

10 Differentiate between event and activity.

PART – B (5 x 10 = 50 Marks)

11 a) Differentiate between process layout and product layout with the help of a
      neat figure.   5

   b) What is the difference between method study and work measurement?   5

12 a) Distinguish between moving average, exponential smoothing and trend
      projection methods of forecasting.   5

   b) What are the common measures of forecast error? Explain.   5

13 a) Distinguish between MRP and MRP II.   4

   b) What is aggregate planning? What are the techniques available to prepare
      aggregate planning?   6

14 a) Compare between quantity and periodic reorder inventory systems.   4

   b) Determine   i) EOQ   ii) Total cost for the following :   6
      Demand = 1200 units per month
      Carrying cost = Rs.40 per unit / yr.
      Ordering cost = Rs.75 per order
      No. of working days = 240 days / yr.

15 The following information is given :   10

Activity	Estimated duration in days		
	t_o	t_m	t_p
1-2	2	5	14
1-6	2	5	8
2-3	5	11	29
2-4	1	4	7
3-5	5	11	17
4-5	2	5	14
6-7	3	9	27
5-8	2	2	8
7-8	7	13	31

Draw the network diagram for the above and calculate
i)   Critical path and total project duration
ii) Variance for each activity

16 a) Define scheduling. Describe the factors affecting scheduling.   5

   b) Distinguish between job production and batch production.   5

17 Write short notes on :   10

   i)   Forecast errors

   ii)   Master scheduling

   iii) Break even analysis

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FACULTY OF ENIGNEERING

B.E. 4/4 (A.E.) II - Semester (Main) Examination, May / June 2015

Subject : Alternative Fuels and Energy System for Automobiles

Time : 3 Hours   **Max. Marks: 75**

Note Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1   Explain the need of alternative fuels.

2   Why hydrogen is referred as a freedom fuel?

3   Write the advantages of Liquid hydrogen.

4   Describe some of the important properties of CNG.

5   What is the composition of LFG?

6   What are the advantages of ammonia fuels?

7   What do you mean by alternative power trains?

8   Describe the water fuel cell.

9   What is the composition of biogas?

10   What are the advantages of SVO (straight vegetable oils)?

PART – B (50 Marks)

11   Describe any two methods of hydrogen production in detail.   (10)

12 (a) Describe the production process of Liquid hydrogen.   (5)

    (b) Describe the storage of Liquid hydrogen.   (5)

13   Describe the production of LNG and write its properties.   (10)

14   What are the modifications required for CI engine to run on SVO?   (10)

15   Discuss storage facilities for LPG.   (10)

16   Explain the electronic control system used in electrical hybrid vehicles.   (10)

17   Write short notes on the following:

    (a) Advantages of Hybrid vehicles   (5)

    (b) Advantages and disadvantages of CNG   (5)

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FACULTY OF ENGINEERING

B.E. 4/4 (CSE) II – Semester (Main) Examination, May / June 2015

Subject: Data Mining

Time: 3 Hours   **Max.Marks: 75**

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1	Define preprocessing	2
2	Define nominal, ordinal and ratio scaled variables	3
3	What is an iceberg query	2
4	Differentiate between clustering and classification	2
5	Define Bayes theorem	3
6	What are the various ways to visualize the discovered patterns?	3
7	Define outliers. How they are different from normal data	2
8	Describe two challenges to data mining regarding performance issues.	2
9	Define confusion matrix	3
10	How does association rule mining works	3

PART – B (5x10 = 50 Marks)

11	a) Explain the architecture of a typical data mining system.	5
	b) Explain various data mining functionalities with examples.	5
12	a) Explain conceptual schemas for multidimensional data models with example.	5
	b) Explain various types of OLAP servers.	5
13	What is back propagation? Explain classification by back propagation.	10
14	Explain the construction of frequent pattern – growth tree with an example.	10
15	a) Describe the working of DBSCAN algorithm.	5
	b) Discuss the metrics for evaluating classifier performance.	5

16 Apply the K-means algorithm to cluster points into three clusters, where the points are
        A_1 (2, 10), A_2 (2, 5), A_3 (8, 4)
        B_1 (5, 8), B_2 (7, 5), B_3 (6, 4)
        C_1 (1, 2), C_2 (4, 9).
Initially assume A_1, B_1, and C_1 are the centroids.   10

17 Write short notes on any two of the following: 10
        a) K-nearest neighbor classifiers
        b) Data similarity and dissimilarity
        c) Text mining.

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