FACULTY OF ENGINEERING

B.E. 4/4 (Civil) I – Semester (New) (Main & Backlog) Examination,

November / December 2018

Subject: Construction Management and Administration

Time: 3 Hours   Max.Marks: 75

Note: Answer all questions from Part – A and any five questions from Part – B.
PART – A (10x2.5 = 25 Marks)

1   What are the objectives of construction management?

2   Mention various schedules to be prepared for construction project management?

3   What is work break down structure?

4   Mention the advantages of large scale production?

5   Mention the reasons for project time acceleration?

6   Define rate of crashing?

7   What do you mean by rescheduling? Why is it essential?

8   What is DPR?

9   What is decision variable?

10 Write the limitations of linear programming?

PART – B (50 Marks)

11 a) Describe construction team and their relationship in detail.   (5)
   b) Explain the functions of construction management?   (5)

12 A project consists of following activities with their durations in week. Develop the network diagram and determine project completion time?   (10)

Activity	a	b	c	d	e	f	g	H
Immediate predecessor	-	-	-	a,b	a,b	d	d	c,e,g
Duration	4	6	3	8	4	7	5	8

13 Details of the activity cost in Rs. and durations in week of a project are given in the following table. Indirect cost is Rs.10000/week, Determine the optimum duration and cost of the project?   (10)

Activity	Normal Duration	Normal Cost Rs.	Crash Duration	Crash Cost Rs.
1-2	8	6000	5	3000
1-3	4	4000	2	2000
2-3	0	--	--	--
2-4	6	5000	3	3000
3-5	5	7000	3	5000
4-5	6	8000	4	1000
4-6	8	5000	6	3000
5-6	7	6000	4	6000

..2

14 a) Write the importance of safety in construction? Mention the safety measures to be taken during the excavation works? (5)

  (b) Write a brief note on Project delivery methods. (5)

15 Solve graphically the following LP problem (10)
     Maximize Z = 15x + 10y
     Subject to constraints: - x – y   - 8
                             - 3x – 2y   - 6
                             2x + 4y = 10 and x, y   0

16 a) What are the limitations of bar charts? and what are the advantages of network diagrams? (5)

  b) Write the salient features of workmen compensation act? (5)

17 a) Write a brief note on Canonical Form of LP? (5)

  b) Write briefly about PERT? (5)

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FACULTY OF ENGINEERING

B.E 4/4 (Civil) I-Semester (OLD) Examination, November / December 2018

Subject : Estimating and Specifications

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

Note: Answer All Questions from Part-A and Any Five Questions From Part-B.

PART–A (25Marks)

1. Define earnest money deposit and security money deposit
2. What is a measurement book? What are its uses?
3. Differentiate between revised estimate and supplementary estimate.
4. What are the rights of a contractor?
5. What do you understand by economical depth?
6. Mention the deductions and additions to be applied in case of plastering and pointing.
7. Write the specifications for DPC (1:1:5:3)
8. Find out the quantity of cement and sand required for one square meter of cement plastering (1:6), 1.25 cm thick.
9. What is the purpose of valuation?
10. Differentiate between work charged establishment and contingent establishment

PART–B (50 Marks)

11. Prepare a detailed estimate of the following items of a two roomed building with verandah from the given figure 1.
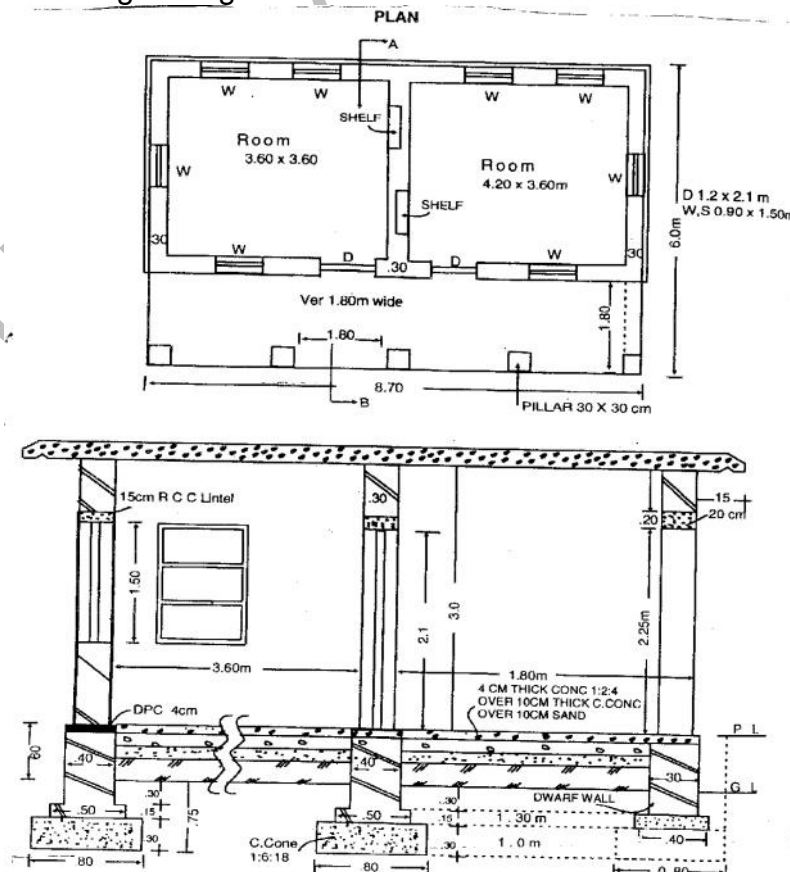
     a) Earthwork in Excavation in foundation
     b) 2.5 cm DPC
     c) I-Class Brick work in foundation and plinth 1:6

12. Prepare a detailed estimate of a building given in Figure1. For the following items
     a) Lime concrete in foundation
     b) I-class brick work in super structure in lime mortar
     c) RB work in lintels

13. Reduced levels of ground along the centre line of a proposed road from chainage 20 to chain age 30 are given below. The formation level at the 20th chain age is 105 and the road is in downward gradient of 1 in 130 up to the chain age 24 and the gradient changes to 1 in 80 down ward. Formation width of the road in 12m and side slope in banking 1.5:1. Length of the chain 30m. Prepare an estimate of Earth work.

Chain age	20	21	22	23	24	25	26	27	28	29	30
RL of Ground	103.00	103.60	103.44	103.80	103.40	103.28	103.00	102.20	102.10	102.00	101.20

14. Prepare a detailed estimate for RCC beam as shown in Figure.2

Figure 2
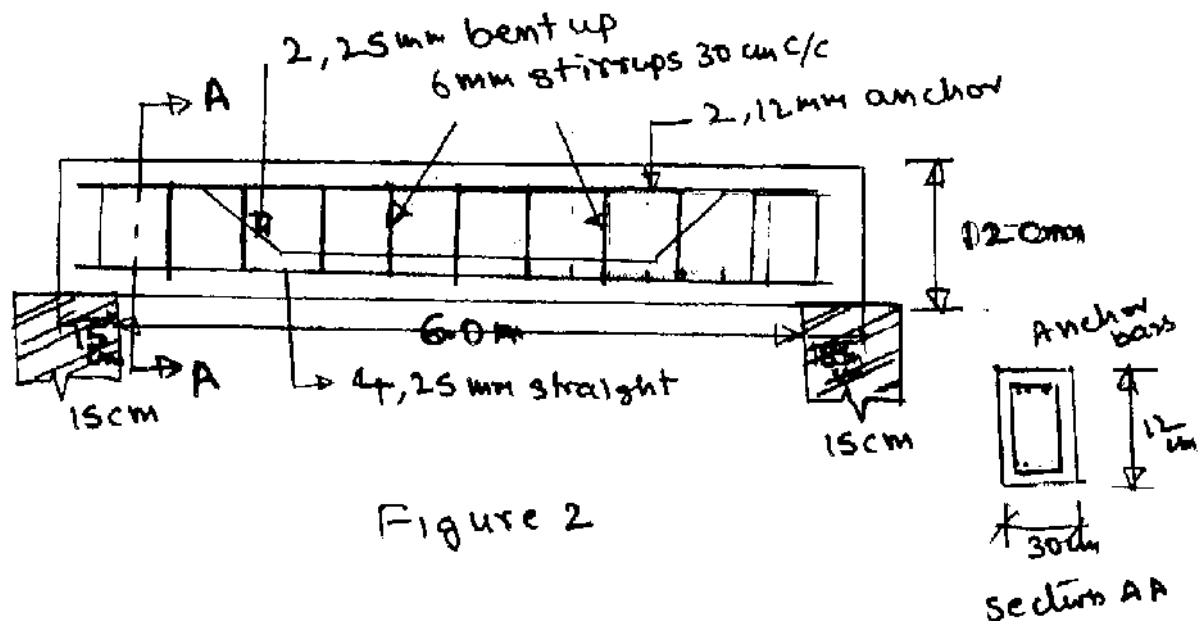
15. Give the groups of conditions of contract which are generally accommodated in the civil engineering contract. Explain them briefly.

16. a) Explain briefly parts of a muster rool. What is the function of each Part?
    b) Explain how pre-tender planning is done.

17. a) Describe the methods for execution of work done in PWD
    b) Discuss various methods of working out the approximate cost of a building.

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FACULTY OF ENGINEERING

B.E.4/4 (Inst.) I-Semester (Main & Backlog) Examination, November/ December 2018

Subject : Virtual Instrumentation

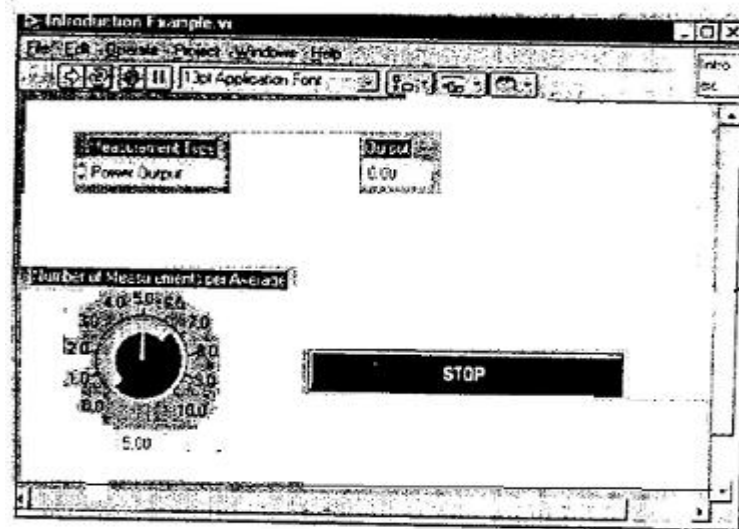**Time: 3 Hours**   **Max. Marks: 75**

PART-A (25 Marks)

Note: Answer all questions from Part – A and Any five Questions from Part – B

1. Give an overview of virtual instrumentation in Engineering application   [2]

2. Compare and contrast virtual instruments versus traditional instruments   [3]

3. Explain the figure given below   [3]

4. Explain about numeric and Boolean controls and indicators with an example.   [2]

5. Draw the CKT diagram of any one ADC   [3]

6. Mention the differences between DAC versus ADC   [2]

7. Explain the concept of RS232C   [2]

8. List out the properties of PXI.   [2]

9. What is Fourier transform? Write a program for FT   [3]

10. Draw the diagram of Image processing VI.   [3]

PART-B (50 Marks)

11. Explain conventional programming technique and how lab view programming is different

from conventional programming with suitable example.   [10]

12. a) What are local and global variable? Explain with suitable examples.   [5]

   b) What are the various modes of waveform chart? Explain.   [5]

13. a) With sketches explain the DAC architecture type.   [5]

   b) Write short notes on software and hardware installation.   [5}

14. a) Explain the given palette in detail.   [5]
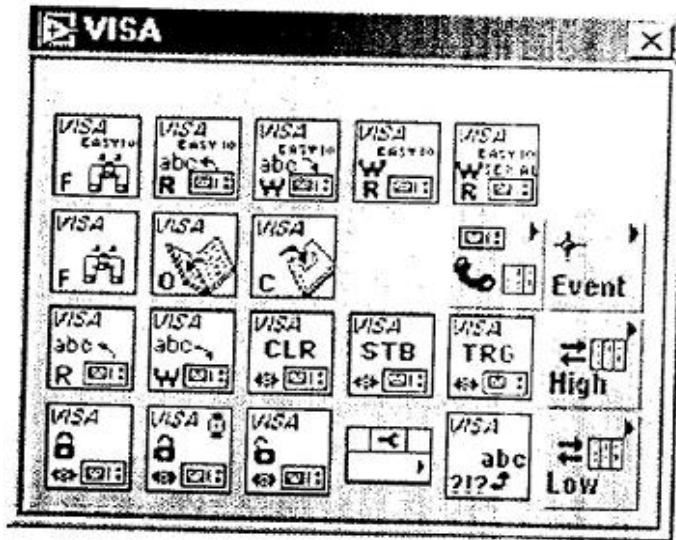
b) Explain with suitable diagram Interface buses [5]

15. a) Explain the concept of filtering with suitable Vis. [5]

  b) With help of VI explain servo motor application. [5]

16. a) Discuss briefly architecture of virtual instrument. [5]

  b) Write short notes on current loop [5]

17. a) What is the operation in the given fig. in detail? [5]
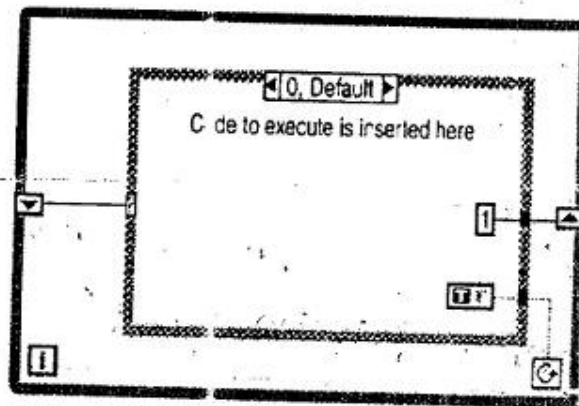
b) Write short notes on system buses. [5]

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FACULTY OF ENGINEERING

B.E. 4/4 (ECE) I-Semester (New) (Main & Backlog) Examination,

November / December 2018

Subject: Electronic Instrumentation

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

Note: Answer All Questions From Part-A & Any five Questions From Part-B.

Part – A (25 Marks)

1) What is traceability of a measurement (2)
2) Write on ISO 9001 management principles (2)
3) What factors are considered for selection of a transducer (3)
4) Give examples of Active and passive transducers and
   write on the difference between them (3)
5) Define Sound pressure level, Sound power level.
   What is the measurement unit of Sound pressure and why is it chosen (3)
6) What is the difference between resistance wire and thermistor temperature
   measurement. (2)
7) Define Relative humidity.
   Write on the principles of different types of Hygrometer (3)
8) Write on Filter bank spectral analyser and its operation (2)
9) Purpose of invasive and non-invasive bio potential electrodes (2)
10) Compare X-ray and CT scan imaging (3)

PART B (50 Marks)

11) a) For the set of six measurements as below, 12.8.mA, 12,2mA
    ,12.5mA,13.1mA, 12.7 mA, and 12.4mA.Find mean and Mean deviation of the
    measurements. (4)
    b) What are the standards of measurement. Write on the type measurement
    standards and their use (6)

12) a) How is measurement of acceleration and displacement made using seismic
    displacement transducer. Draw the diagram and explain the functioning of
    seismic accelerometer. (5)
    b) What parameters can be measured using capacitive transducer. How do you
    monitor the thickness of a dielectric material using capacitive transducer? (5)

13) a) What are the different type of temperature transducers. Give advantages and
    disadvantages of each type (5)
    b) What is the principle of humidity measurement. Discuss any one method of
    humidity measurement with diagram (5)

14) a) What is quantising error . How it effects the measurement in digital format.
    Write on the Successive Approximation digital conversion with an example. (6)
    b) Draw and explain the specifications of subsystems of a DAS. Write a short notes
    on SCADA (4)

15)a) What is Action potential. Discuss different potential variations with reference to Na-K pump (5)
   b) Write on invasive and non-invasive type of bio potential electrodes. (5)

16)a) Derive the balancing condition of a Wheatstone bridge.
   Derive an expression of gage factor for strain gauge in terms of Poisson's ratio. (5)
   b) Define Sound intensity Write on different type and principles of micro phones (5)

17) Write notes on two of the following
   a) ISO 9001 Management principles (5)
   b) Swept frequency Spectrum analyser (5)
   c) MRI Imaging (5)

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FACULTY OF ENGINEERING

B.E. 4/4 (ECE) I – Semester (Old) Examination, November / December 2018

Subject: Computer Networks

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

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

PART – A (25 Marks)

1   Briefly describe the importance of MAC sub layer.   (2)

2   Bring out the necessity of sliding window protocol.   (3)

3   Differentiate circuit switched network, datagram networks and virtual circuit network.   (3)

4   Compare pure ALOHA and slotted ALOHA with reference to channel utilization.   (2)

5   Describe the principles of Internetworking.   (2)

6   What is Count-to-Infinity problem.   (3)

7   Define sockets and port. List out four well known ports.   (2)

8   Describe how TCP performs path MTU discovery.   (3)

9   What is the necessity of plug-in. Name few plug-ins.   (2)

10 Describe the process of sending the E-Mail when both the sender and receiver are connected to the mail server via a LAN or a WAN.   (3)

PART – B (50 Marks)

11 a) Describe various transfer modes and frame format of HDLC.   (7)
    b) Compare Network topologies.   (3)

12 a) Describe IEEE 802.3 standard with its frame structure.   (5)
    b)   Describe Bluetooth and its applications.   (5)

13 a) Differentiate IPv4 and IPv6 header frames.   (5)
    b) Describe various methods of controlling congestion.   (5)

14 a) Describe UDP and differentiate it with TCP.   (5)
    b) Describe ATM AAL Layer protocol.   (5)

15 a) Describe client and server side of web browser.   (5)
    b) Explain DES algorithm.   (5)

16 a) Describe and contrast symmetric key and public key algorithms.   (6)
    b) Explain Domain Name System.   (4)

17 Write notes on any two of the following: (10)
    a) Transport service primitives
    b) IP addresses
    c) Authentication protocol.

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FACULTY OF ENGINEERING

B.E. 4/4 (Mech.) I - Semester (Main & Backlog) Examination, November / December 2018

Subject : Thermal Turbo Machines

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

Note: i) Answer **all** questions in **PART-A** and any **five** questions from **PART-B**.
ii) Answer to the questions of part-A must be at one place and in same order as they occur in the question paper.
iii) Missing data if any may suitably be assumed.
iv) Use of data book is permitted.
v) Unless otherwise stated $=1.4, C_P=1.005kJ/kg\text{-}K$ for air.

PART-A [10x2.5=25 Marks]

1 Define nozzle efficiency, blading efficiency and stage efficiency of steam turbines.
2 Define: chord, angle of attack and camber in an aerofoil.
3 Derive an expression for maximum entropy on Fanno flow?
4 Show that the limiting value of Mach no. for Rayleigh flows for maximum entropy is unity.
5 Write the differences between centrifugal and axial flow compressors.
6 Explain stalling in compressors.
7 Write the differences between steam turbines and gas turbines?
8 Why axial flow compressors are used in aircraft propulsion systems?
9 Draw the velocity triangles for 50% reaction compressors.
10 What are stagnation properties and critical properties?

PART-B [5x10=50 Marks]

11 (a) With the help of neat labelled explain the principle and working of (i) ramjet and (ii) pulse jet engine.
    (b) Derive Euler's equation for turbo machines.

12 Derive Prandtl-Meyer relation for a normal shock.

13 Derive the expressions for stagnation pressure, stagnation temperature, stagnation density .Also derive the critical conditions at throat section of a nozzle.

14 A centrifugal compressor has an inlet eye 15 cm diameter. The impeller revolves at 20,000rpm and the inlet air has an axial velocity of 1107m/s, inlet stagnation temperature 294K and inlet pressure 1.03 bar. Determine theoretical angle of the blade at this point and Mach number of the flow at the tip of the eye.

15 The efficiencies of the compressor and turbine of a gas turbine are 70.42% and 71% respectively. Theheat added in the combustion chamber per kg of air is 476.35 kJ /kg. Find a suitable pressure ratio such that the work ratio is 0.0544.Also find the corresponding temperature ratio. The inlet total temperature of air is 300 K.

16 In a single impulse turbine the nozzles are inclined at 20° to the direction of motion of the moving blades. The steam leaves the nozzles at 375 m/s. The blade speed is 165 m/s. Find suitable inlet and outlet angles for the blades in order that the axial thrust is zero. The relative velocity of steam as it flows over the blade is reduced by 15% by friction. Also determine the power developed for a flow rate of 10kg/s.

17 (a) Define slip factor and pre whirl in centrifugal compressors with the help of velocity diagrams.
   (b) What is the maximum heat transfer criterion for Rayleigh flow phenomenon?

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FACULTY OF ENGINEERING

B.E. 4/4 (Prod.) I - Semester (Main & Backlog) Examination,
November / December 2018
Subject: Control System Theory

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

Note: Answer All Questions From Part – A, any FIVE Questions From Part - B

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PART-A (25 Marks)

1. Find the laplace transform of $f(t) = 2e^{-t} - 2e^{-2t} - 2te^{-2t}$ 3

2. What are analogous systems? What are the advantages of studying non-electrical syst 2
   in terms of their electric analogs?

3. For the system $G(s) = 9/(s^2 + 2s + 9)$. What is the steady state error for ramp input?   2

4. Explain briefly about Mason'Gain formula?   3

5. Mention the effects of PI compensation on the nature of the system.   2

6. Define the terms 'Gain Margin' and 'Phase Margin'?   3

7. Explain briefly about Lead compensation?   2

8. State Nyquist stability criterion?   3

9. What are the properties of State Transition Matrix(STM)?   3

10. What are the advantages of state space analysis?   2

Part – B (*5 x 10 = 50 Marks*)

11. Determine the transfer function Y2(S)/F(S) of the system shown in fig.   10
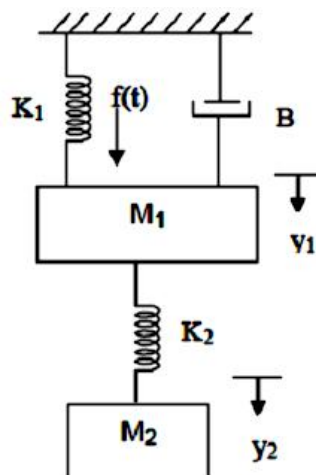
12. Determine the overall transfer function C(S)/R(S) for the system shown in fig.   10
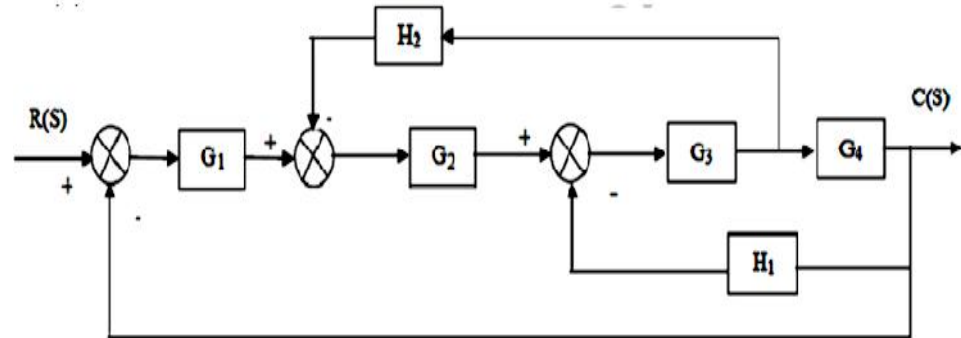
13. Sketch the root locus for the characteristics equation $s^3+3s^2+(K+2)s+5k=0$ 10

14. Sketch the Bode plot and hence find Gain cross over frequency, Phase cross over frequency, Gain margin and Phase margin.   10

$$G(S) = \frac{10(S+3)}{S(S+2)(S^2+4S)100}$$

$$\frac{}{S(S+2)(}$$

15. Given $G(s) = \frac{4}{s(s+2)}$ and $H(s) = 1.$ Design a Lead compensator for the system so that the static velocity error constant, $K_v = 20\ sec^{-1}$, the Phase Margin is at least 50^0 and the Gain Margin is at least 10dB.   10

16. a) Determine the state variable representation of the system whose transfer function is given as $\dfrac{Y(s)}{U(s)} = \dfrac{s^2+3s+4}{s^3+2s^2+3s+2}$ 5

    b) Test the controllability & observability of the system whose state space representation is given as   5

$$\begin{bmatrix} X_1 \\ X_2 \end{bmatrix} = \begin{bmatrix} 2 & 1 \\ -1 & 2 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix} + \begin{bmatrix} 1 \\ 1 \end{bmatrix} \begin{bmatrix} U_1 \\ U_2 \end{bmatrix}$$

17. Write short notes on   10
    a) Routh's criterion for stability
    b) Explain about Nyquist stability criteria
    c) Linearization of Non-linear systems
    d) Advantages of Bode's plot

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FACULTY OF ENGINEERING
**B.E. 4/4 (A.E.) I-Semester (Main & Backlog) Examination,
November / December 2018**

Subject : Transport Management

Time : 3 Hours   Max. Marks: 75

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

PART – A (25 Marks)

1 State the functions of Personnel Management.
2 State the principles (characteristics) of good personnel policy.
3 What is 'Running time' and maintenance time?
4 Differentiate between Public and Private Transport.
5 What are the details required to register the new vehicle?
6 What is the necessity of Registration of Vehicles?
7 Name different break down equipment.
8 Differentiate between preventive maintenance and break down maintenance.
9 What are the aims and objectives of Industrial Psychology?
10 What is spread over?

PART – B (50 Marks)

11 (a) State the training objectives and their advantages.
   (b) Explain the procedure of conducting interview.

12 (a) Explain in detail about the various functional wings of transport system.
   (b) Explain elements of costs and their relation to selling price.

13 (a) Explain the requirements of good fare system.
   (b) Explain designing of 'Fare' structure.

14 (a) Explain constructional regulations and description of Tankers, Tippers,
       recovery vans and fire fighting vehicles.
   (b) Explain 'Permit' and its classifications.

15 Explain causes for uneven tyre wear and their remedies.

16 Write short notes on :
   (a) Job description
   (b) Employment tests

17 Prepare brief report on :
   (a) Ticketing system and types of tickets
   (b) Peak hour and slack hour demand.

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FACULTY OF ENGINEERING

**B.E. 4/4 (CSE) I-Semester (Main & Backlog) Examination,
November / December 2018**

Subject : Distributed Systems

Time : 3 Hours   Max. Marks: 75

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

PART – A (25 Marks)

1   List out the goals of distributed systems.   (3)

2   What is an intranet?   (2)

3   Differentiate between Marshalling and Unmarshalling.   (3)

4   Differentiate between RPC and LRPC.   (2)

5   Explain briefly about Reliable multicast.   (2)

6   Discuss about physical clocks and logical clocks.   (3)

7   What is a global state?   (2)

8   What are fault – tolerant services?   (2)

9   State the basic design issues in the distributed shared memory system.   (3)

10 List out various tasks of recovery manager.   (3)

PART – B (50 Marks)

11 (a) Discuss briefly about the architectural models of distributed systems.   (5)
   (b) Explain Resource sharing in distributed systems.   (5)

12 What is interprocess communication? Discuss general characteristics of IP
   communication with example.   (10)

13 (a) What are the election algorithm? Discuss abut Bully algorithm.   (5)
   (b) Explain about distributed debugging.   (5)

14 (a) Explain in detail about nested distributed transactions with proper examples.(5)
   (b) Explain about concurrency control algorithms.   (5)

15 What is sequential consistency ? Describe various methods for implementing
   sequential consistency.   (10)

16 Explain the implementation and working of X-500 directory service.   (10)

17 Write short notes on the following:
   (a) Fault Tolerant Services   (4)
   (b) Logical time and Logical clocks   (3)
   (c) Name service   (3)

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