FACULTY OF ENGINEERING

B.E. 4/4 (Civil) I-Semester (Main &Backlog) Examination, Nov./Dec. 2018

Subject : Surface and Ground Water Management (Elective-I)

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 the concept of system.	2
2	What are slack and surplus variables?	3
3	What is the concept of basin management?	3
4	Why is the method artificial recharge adopted?	2
5	Write the advantages occurring from conjunctive use of water.	3
6	Write the uses of sand tank model.	3
7	What are the methods to control sea water intrusion into coastal aquifers?	3
8	Explain about advantages of surface geophysical method.	2
9	How would you evaluate perennial yield?	2
10	Write the general water balance equation and list out all variables.	2

PART – B (50 Marks)

11 a) What is the concept of basin management of ground water? Explain all the features of it.   6

    b) Distinguish between optimization and simulation modeling.   4

12 a) Solve the following LP problem either graphically or analytically.   5

$$\text{Max} \quad Z = 3x_1 + 2x_2$$
$$\text{Subject to} \quad x_1 + 2x_2 \le 6$$
$$2x_1 + x_2 \le 8$$
$$-x_1 + x_2 \le 1$$
$$x_2 \le 2$$
$$x_1, x_2 \ge 0$$

    b) Explain in detail about solution procedure involved in linear programming.   5

13 a) Explain about analog model and membrane models with their merits and demerits.   5

    b) Explain how dynamic programming is applied to irrigation operation.   5

14 a) Define artificial recharge. What is the need to adopt it and what are the factors which governs the feasibility of artificial recharge?   6

    b) Explain in detail about waste water recharge for use.   4

15 a) What are the different components and applications of water balance equation of inflow and outflow from the basin?   5

    b) State importance of induced recharge method.   5

..2

16 a) What do you understand by surface geophysical investigations? 5
   b) What are the different types of simulation model? Explain. 5

17 Write short notes on :
   a) Viscous fluid models
   b) Sea water intrusion
   c) Data collection and field work required in GW management

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FACULTY OF ENGINEERING
B.E. 4/4 (Civil) I–Semester (Main & Backlog) Examination,
November / December 2018
Subject: Prestressed Concrete (Elective - I)

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.	State the reasons for use of high tensile steel in prestressed concrete.	(2)
2.	Describe the Freyssinet post-tensioning anchorage system.	(3)
3.	What is partial prestressing?	(2)
4.	Differentiate between cable line and C-line with sketch.	(3)
5.	What is effective reinforcement ratio?	(2)
6.	List the different ways of improving shear resistance of concrete by prestressing.	(2)
7.	Explain the importance of control of deflections.	(3)
8.	Describe the concept of load balancing.	(3)
9.	Explain the Guyon's method.	(3)
10.	Define secondary moment	(2)

Part – B (50 Marks)

11. a) Explain the various types of losses of prestress in pre-tensioning system. (5)

  b) A pre-tensioned rectangular concrete sleeper 150 × 100 mm is prestressed by (5)
  means of four 6 mm wires located 25 mm from the bottom and two 4 mm wires
  located 30 mm from the top of the sleeper. If the wires are tensioned to an initial
  stress of 600 N/mm^2, calculate the percentage loss of stress and prestressing
  force in wires immediately after transfer allowing for the loss of stress due to
  elastic deformation of concrete only. Take Es = 200 kN/mm^2 and Ec = 25
  kN/mm^2.

12. A PSC simply supported beam of span 6 m supports a live load of 20 kN at mid-   (10)
  span. The beam has T-section with an overall depth of 500 mm. The thickness of
  flange and web are 100 mm and 100 mm respectively. The width of the flange is
  200 mm. The beam is to be prestressed by an effective prestressing force of 300
  kN at a suitable eccentricity such that the resultant stress at the soffit of the
  beam at centre of the span is zero. Find the eccentricity required for the force. If
  the tendon is concentric, what should be the magnitude of prestressing force for
  the resultant stress to be zero at the bottom fibre of the central span section?
  Concrete weight is 24 kN/m^3.

13. A post-tensioned prestressed concrete beam of rectangular section 250 mm wide   (10)
  and 500 mm deep is to be designed for an imposed load of 6 kN/m, uniformly
  distributed on a simple span of 5 m. The stress in concrete must not exceed 15
  MPa in compression or 1.5 MPa in tension at any time and loss of prestress may
  be assumed to be 20%. Design minimum prestressing force and corresponding
  eccentricity.

14. A PSC simply supported rectangular beam, 200 mm wide and 300 mm deep, is subjected to a live load 2 kN/m throughout over a span of 3 m. The beam has an effective prestressing force of 400 kN at an eccentricity of 100 mm. If the cube strength of concrete is 40 N/mm^2, Design the shear reinforcement using Fe 250 grade steel at support section. Take weight of concrete as 24 kN/m^3. (10)

15. A concrete beam having a rectangular section, 300 mm wide and 400 mm deep is prestressed by a parabolic cable having an eccentricity of 100 mm at centre of span towards the soffit and zero at support section. The effective force in the cable is 500 kN. If the modulus of elasticity of concrete is 30 kN/mm^2 and the beam is simply supported over a span of 9 m. Calculate short-term deflection at the centre of span under prestress, self weight and live load. Also find long-term deflection at the centre of span under prestress, self weight and live load assuming the loss ratio as 0.8 and creep coefficient as 1.6. (10)

16. The end block of a prestressed concrete beam is 300 mm wide and 500 mm deep. The beam is post-tensioned by two anchorages of 200 mm wide and 100 mm deep with the center at 150 mm from top and bottom of the beam. The force transmitted by each cable is 600 kN. As per IS 1343 code recommendations, design and detail an anchorage zone reinforcement using Fe-415 grade HYSD bars. (10)

17. A continuous prestressed concrete beam ABC (AB = BC = 3.6 m) having a rectangular section with a width of 150 mm and depth of 300 mm is prestressed by a parabolic cable carrying an effective force of 200 kN. The cable is concentric at end supports and having an eccentricity of 100 mm towards the soffit of the beam at the centre of spans and 50 mm towards the top at mid-support. Calculate the secondary and resultant moments developed at B in the beam due to prestressing. Also locate the resultant line of thrust. Take weight of concrete as 24 kN/m^3. (10)

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FACULTY OF ENGINEERING
B.E. 4/4 (Civil) I - Semester (Main & Backlog) Examination, Nov./Dec. 2018

Subject : Operation Research (Elective-I)

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

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

PART – A (25 Marks)

1. Define Operations research.
2. State assumptions made in Linear Programming Problem.
3. What is the use of sensitivity analysis .
4. How do you confirm that transportation problem has multiple optimal solution.
5. Why VAM is popular in solving a transportation problem.
6. How do you select key row and key column in dual simplex problem?
7. Classify Replacement policies.
8. What is game theory .
9. Define balking.
10. What are the assumptions made while dealing with sequencing problem?

PART – B (50 Marks)

11. Use Big-M method to solve following LPP   (10 M)
    Minimize $Z = x_1 + x_2$
    Subjected to constraints
    $2x_1 + x_2 \quad 4$
    $x_1 + 7x_2 \quad 7$
    $x_1, x_2 \quad 0$

12. Use dual simplex method to solve the following LPP   (10 M)
    Maximize $Z = -3x_1 - 2x_2$
    Subjected to constraints
    $x_1 + x_2 \quad 1$
    $x_1 + x_2 \quad 7$
    $x_1 + 2x_2 \quad 10$
    $x_2 \quad 3$ $x_1, x_2 \quad 0$

13. a) How is the Hungarian method applied for obtaining a solution if matrix is unbalanced.   (3 M)
    b) Consider the following unbalanced transportation problem and find the optimal solution.   (7 M)

		I	II	III	IV	Supply
	A	2	4	6	11	50
	B	10	8	7	5	70
To	C	13	3	9	12	30
	D	4	6	8	3	50
	Demand	25	35	105	20	

Stores

14. a)Explain pure strategy in a game theory. (3 M)

   b) A firm is considering the replacement of a machine, whose cost price is Rs12,200, and its scrap value is Rs 200.Running cost are found to be as follows. When should the machine be replaced. (7 M)

Years	1	2	3	4	5	6	7	8
Running Cost, Rs.	200	500	800	1200	1800	2500	3200	4000

15 a) Explain the procedure to solve 2 jobs and m machines using graphical method. (3 M)
   b) A flow shop has two machines. The processing time (M min.) is given as follows. Determine the optimal make span. (7 M)

Job	A	B	C	D	E	F
M/C 1	2	3	7	9	6	5
M/C 2	10	8	5	1	4	3

16.a) Explain Kendall's notation used in queuing models. (3 M)

   b) A manager has to decide to hire one of the two repairmen A and B. On an average three machine breakdown every hour and breakdown follows Poisson distributor. Non-productive time of a machine is considered to cost Rs.15 per hour. Mechanic 'A' charges Rs.20 per hour and repairs the machines at the rate of 6 machines /hr, while mechanic 'B' charges Rs.12 per hour and repairs the machines at the rate of 4 machines/hr. The service follows exponential distributor. Which repairman should be hired? (7 M)

17 Write short notes on
   a) Degeneracy in simplex method (5 M)
   b) Bounded solution space and unbounded solution space (5 M)

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FACULTY OF ENGINEERING
BE 4/4 (CE/EE/Inst./M/P) I-Semester (Main & Backlog) Examination,
November / December 2018
Subject : Entrepreneurship (Elective-I)

Time: 3 Hours   Max. Marks: 75

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

PART-A (2 ½ x 10 = 25 Marks)

1. State four types of business organizations
2. State four major rural industries zones in india
3. Stare four sources idea generation for Engineering Entrepreneur
4. Indentify four important qualities of entrepreneur
5. What is market demand – define
6. What necessities a project planning give reasons
7. How project planning control of features are useful to Enterprises
8. State the importance of human factor in project planning
9. What is entrepreneur concept human value?
10. How is a personality define?

PART-B (50 Marks)

11. a) Explain ten major Linkages between small, medium and heavy industries in terms of raw materials
    b) Explain in detail the Challenges of entrepreneur in the age of Internet of Thing (IoT) in 21st century

12. a) Explain ten problems faced by First Generation Entrepreneurs in the Age of internet of Things (IoT)
    b) Discuss success attributes of woman entrepreneurs

13. a) Explain the two methods of analyzing the Market demand
    b) Explain five institutions involved in project financing with specific application to particular industry

14. a) Draw the network from the following activites and find a critical apthe and total Duration.

Activity	A	B	C	D	E	F	G
Predessor	--	A	A	A	B,C	C,D	E,F
Duration	10	5	4	7	6	4	7

   b) Draw the network from the following activites and find a critical apthe and total duration.

Activity	1-2	2-3	2-4	2-5	3-6	4-7	6-8	5-8	7-8	5-9	8-10	9-10
Duration	2	3	5	7	8	1	2	4	5	7	4	2

15. a) Explain two models of behavior of Entrepreneur in the Age of INTERNET
    b) Explain two approaches to Time Management with their advantages

16. a) Explain the Technical Analysis of Project Formulation in detail of each step
    b) Explain the two methods of Evaluation of ideas of Entrepreneur till the implementation of the Project

17. a) Explain ten reasons as to hw the Environment influence in the development of Entrepreneur
    b) Draw the network from the following activities and (ii) calculate EST, EFT, LST, FLT for all the jobs (ii) tabulate total float, free float, Independent float.

Activity/job	A	B	C	D	E	F	G	H	I	J	K	L
Precedence	1-2	1-3	1-4	3-2	2-5	2-6	3-7	4-5	5-6	6-7	6-8	7-8
Duration	10	4	6	5	12	9	12	11	6	6	4	7

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

Subject : Power Quality (Elective – I)

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 are the problems related to grounding?	(3)
2	Power quality is voltage quality – Justify.	(2)
3	Discuss the various types of voltage sags.	(3)
4	What is the effect of resistive load under resonance in power system?	(2)
5	What are Triplen-harmonics?	(2)
6	What is Ferro resonance?	(2)
7	Draw the CBEMA curve and explain various events in the curve.	(3)
8	Define wave form distortion and DC offset.	(2)
9	What are the the monitoring objectives?	(3)
10	Define (i) Total harmonic distortion and (ii) Total demand distortion	(3)

PART – B (50 Marks)

11 (a) What are the major power quality issues? Explain in detail. (5)
   (b) Define power quality. Explain the reasons for increased concern in
       power quality. (5)

12 (a) What is the need of estimating sag performance? (5)
   (b) Explain the different methods of estimating voltage sag performance. (5)

13 (a) Using block diagram approach, explain the operation of AC and DC drive. (5)
   (b) Explain the voltage sag due to starting of large induction motor in
       distribution system with waveforms. (5)

14 (a) Discuss the effects of harmonic distortion on transformers and motors. (5)
   (b) Explain how commercial and industrial loads are responsible for harmonic
       distortion. (5)

15 (a) Explain the mechanism of lightning. (5)
   (b) Explain the phenomena of Ferro resonance in transformers. (5)

16 With neat diagram discuss the application of expert system for power quality
   monitoring. (10)

17 Explain the terms with waveforms. (10)
   (a) Voltage sag
   (b) Voltage interruption
   (c) Sag with harmonics

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FACULTY OF ENGINEERING

BE 4/4 (EEE) I Semester (Main & Backlog) Examination, November/December 2018

Subject: HVDC Transmission (Elective-I)

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

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

Part – A (25 Marks)

1. Mention the disadvantages of DC transmission. [2]
2. Give the limitations of DC transmission. [3]
3. Deduce the equivalent circuit of a rectifier. [3]
4. Define pulse number. [2]
5. Explain the term extinction angle and its significance in inverter control. [3]
6. Mention the limitations of manual control. [2]
7. What is a Bypass valve? [2]
8. What is meant by an Arc back? Mention causes for the same. [3]
9. Draw a typical series MTDC system. [2]
10. State the applications of MTDC systems. [3]

Part – B (50 Marks)

11. a) Discuss the different types of HVDC links. [5]
    b) Explain the corona loss in ac and dc systems. [5]

12. a) From fundamentals obtain the equivalent circuit of a HVDC bridge rectifier. [5]

    b) Explain the operation of a HVDC converter as an inverter. [5]

13. Explain the following:

    a) Power reversal in HVDC link [4]

    b) Constant extinction angle control. [6]

14. a) Explain the operation of a DC circuit breaker with current and voltage

      waveforms. [5]

    b) Explain the phenomena of commutation failure. [5]

15. a) Explain the types of MTDC systems. [5]

    b) Explain the control methodologies of MTDC systems. [5]

16. a) Explain the protection of HVDC converter against short circuit currents. [5]

    b) Discuss about the inverter operation. [5]

17. Write short notes on the following:

    a) Planning for HVDC transmission. [5]

    b) Desired control features of a HVDC link. [5]

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

Subject : Automation in Process Control

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 What is the use of Power Amplifier in process control applications?   (2)
2 What is meant by loading effect due to high impedence probes?   (2)
3 What is the common Implementation of Opto coupler?   (2)
4 Write 3 advantages of SCADA system.   (2)
5 Briefly write about local terminal units of DCS system.   (2)
6 Define a HART protocol.   (3)
7 What is the difference between sensor and smart sensor?   (3)
8 What is the physical realization of digital PID algorithm?   (3)
9 What types of communication protocols are used in Process control applications? (3)
10 Write the advantages and disadvantages of EMR's.   (3)

PART – B (50 Marks)

11 (a) With a neat block diagram explain DAS and DDS.   (6)
   (b) With a neat diagram explain power operational amplifier used as
       continuous actuator.   (4)

12 With a neat diagram explain the SCADA system. What are the applications of
   SCADA systems?   (10)

13 With a neat block diagram explain the computer control of Online optimization of
   distillation column.   (10)

14 With a neat diagram explain Smart temperature transmitter.   (10)

15 (a) Explain the topology of field bus system.   (5)
   (b) Explain what is HART protocol.   (5)

16 Draw and explain the hierarchy of DCS system.   (10)

17 Write short notes on any **two** of the following: (10)
   (a) SCADA RTU's
   (b) Temperature control of plastic injection molding process
   (c) Smart temperature transmitter

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FACULTY OF ENGINEERING

B.E. 4/4 (ECE) I-Semester (Old) Examination, November / December 2018
Subject: Embedded Systems (Elective I)

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. Write the salient features of embedded processors.
2. Why should be the embedded CPU clock speed is suggested to be in the range of MHz clock instead of GHz clock?
3. What is the nomenclature of ARM{x}{y}{z}TDMI core?
4. What are the factors for selecting a processor during the system design phase?
5. Write any three important advantages of PCI/PCI-X compared with Industry Standard Architecture (ISA).
6. What is the distinct advantage of SPI protocol compared with other protocols?
7. Why is a host system used for most stages of development, test and simulation?
8. Mention the tools used for hardware software co-design of an embedded system.
9. Give examples of hardware dependent and hardware independent codes.
10. Give two advantages of Instruction set simulators.

PART-B (50 Marks)

11. a) Describe the life cycle of embedded system design.
    b) Briefly explain classifications of embedded systems.

12. a) Draw and explain CPSR of ARM.
    b) What is a RISC processor? How does the ARM thumb instruction overcome the code density problem?

13. a) What is I2C protocol? Explain use of each control bit of I2C bus.
    b) Describe the various Internet enabled system network protocols.

14. a) Draw the diagram of a native tool chain. Mention the requirement of cross-Assembler and cross-compiler in native tool chain when applied to embedded system.
    b) What is a target system? How does the target system differ from the final embedded system?

15. a) What is an in-circuit emulator? Describe clearly with an example.
    b) Explain the different modes of operation of a logic analyzer.

16. a) What are the various hardware and software debugging techniques being adopted for testing the embedded system design?
    b) Brief about the facilities being provided in Keil µ Vision IDE for debugging the embedded application without connecting the hardware.

17. Write short note on any two of the following:
    a) AMBA bus architecture.
    b) IEEE 1394 bus standard.
    c) System on chip.

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FACULTY OF ENGINEERING
BE 4/4 (ECE) I-semester (Main & Backlog) Examination, November / December 2018
Subject: Digital Image Processing (Elective-I)

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. Find the number of bits required to store a 128 X 128 image with 16 gray levels   [2]
2. What are the properties and applications of DCT?   [3]
3. What is bit plane slicing?   [2]
4. Differentiate between image restoration and image enhancement   [2]
5. Define Gradient Operator.   [2]
6. Explain different redundancies in an image.   [3]
7. Define the terms a) 4-adjacancy b) 8-adjacancy and c) m-adjacancy.   [3]
8. List the reasons for the degradation of images.   [3]
9. Give the point detection mask.   [2]
10. Draw the lossy predictive encoder and decoder models used in image compression.   [3]

PART - B (50 marks)

11. (a) Describe neatly all the components of a general purpose image processing system.   [5]
    (b) Define the terms sampling and quantization. What is their role in image quality and size?   [5]
12. (a) Define Discrete Fourier Transform of two variables and write its properties.   [4]
    (b) Prove the Periodicity and Translation properties of 2-D DFT.   [3+3]
13. (a) Write an algorithm to generate Haar transformation matrix and hence find the transformation matrix of order 4.   [7]
    (b) Explain about Image Smoothing in spatial domain   [3]
14. (a) Describe Histogram equalization.   [3]
    (b) Obtain Histogram equalization for the following image segment of size 5X5? Sketch the histogram of the image segment before and after equalization.   [7]

22	22	22	18	16
15	15	16	18	15
15	15	19	15	17
15	17	20	18	16
20	18	17	20	15

15 (a) List out the differences between lossy image compression and Loss less image compression.   [5]
    (b) Encode the word HELLO by using Arithmatic coding.   [5]
16. (a) Discuss Image Segmentation based on various thresholding techniques.   [5]
    (b) Perform the linear convolution between the two images   [5]

$x(m,n)=$

4	5	6
7	8	9

$h(m,n)$

1
1
1

17. Write short notes on
    a. Image zooming techniques.
    b. Transform coding.
    c. Region based segmentation.

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FACULTY OF ENGINEERING

BE 4/4 (ECE) I Semester (Main & Backlog) Examination November/December 2018

Subject: Artificial Neural Networks (Elective – I)

Time: 3 Hours   Max. Marks 75

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

PART – A (25 Marks)

1. With a neat diagram, explain the mathematical models of an artificial Neural Network. (3)
2. Write any two learning laws for training the Neural Networks. (2)
3. Define learning & classify them briefly. (3)
4. Distinction between the activation & synaptic dynamic models of Neural Networks. (2)
5. What is stochastic activation model of a Neural Network? (2)
6. Contrast LTM & STM of a Neural Network. (3)
7. Briefly explain pattern clustering task with an example. (3)
8. Write the perception Neural Networks solution of XoR problem. (3)
9. What are feed forward & feed backward Neural Networks? (2)
10. What is a stochastic Neuron? (2)

PART – B (50 Marks)

11. (a) Explain in detail perception Neuron model. (5)
    (b) Implement AND logic gate with it. (5)

12. Explain in detail shunting activation model. (10)

13. (a) Explain in detail pattern association task with an example (5)
    (b) Explain in detail Hetero associative Neural Network memory. (5)

14. State & Prove Perceptron Convergence theorem. (10)

15. Explain in detail back propagation Neural Network with its topology, training algorithm, features, limitations & extensions. (10)

16. Explain with a neat diagram Boltzman machine, its training algorithm & limitations. (10)

17. Explain in detail Hopfield Neural Network with its Capacity & energy function. (10)

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FACULTY OF ENGINEERING

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

Subject: Non Conventional Energy Sources (Elective – I)

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 NCES, state the types of renewable energy sources
2   Define Solar Constant ,Zenith angle and Solar Azimuth angle.
3   Brief about the types of instruments employed for solar radiation measurement.
4   Write the applications of wind energy ?
5   Discuss the advantages and disadvantages of horizontal and vertical axis windmills
6   What is the difference between bio mass and bio gas.
7   What are the materials used for bio gas generation.
8   Define Geo Thermal Source.
9   What are the components of Tidal power plants.
10 What are the advantages and limitations of Tidal Power Generation.

PART –B (5x10=50 Marks)

11 a) What are conventional and un-conventional energy sources.Descibe briefly.
   b) What are the prospects of non conventional energy sources in India.

12.(a) What are the main components of a flat plate solar collector explain the function of each.
   (b) Briefly explain the different solar energy storage systems.

13 a) Write short note on Savonius and Darrius rotor windmill..
   b) Explain characteristic curves of velocity and power in windmill.

14 a) Classify Geothermal energy sources and explain them in brief.
   b)Explain the constructional details of gasifier with neat sketch

15 a) What are Biomass conversion technologies ? Draw a schematic diagram to explain the various technologies
   b) Discuss the features of geothermal energy..

16 a) What are the basic principle of ocean thermal energy conversion (OTEC).
   b) Explain in detail about the various methods of Ocean thermal electric power generation.

17.a) Write working principle of Cluad and Anderson OTEC systems.
   b) What are the advantages and disadvantages of tidal and wave energy

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FACULTY OF ENGINEERING

B.E. 4/4 (AE) I – Semester (Main & Backlog) Examination, December 2018
Subject: Vehicle Dynamics (Elective – I)

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 natural frequency. What is it important to determine the natural frequency of vibrating system?
2 Determine the natural frequency of a simple pendulum by energy method. If the mass of the rod is not negligible.
3 Explain different types of damping with a sketch.
4 What is transmissibility and magnification factor?
5 What are the materials used in vibration isolation? Explain the vibration isolation materials.
6 Explain the 'Seismic' instrument and how it will be used to measure displacement and acceleration.
7 What do you understand by 'critical speed' of shafts? Why does it occur?
8 How is the disc designed to improve brake cooling?
9 Explain the causes of vibration and effects of vibration.
10 Write an engineering brief on the whirling of rotating shafts.

PART – B (5x10 = 50 Marks)

11 In a single-degree damped vibrating system, a suspended mass of 8 kg makes 30 oscillations in 18 seconds. The amplitude decreases to 0.25 of the initial value after 5 oscillations. Determine
   i)   The stiffness of the spring
   ii) The logarithmic decrement
   iii) The damping factor
   iv) The damping coefficient.

12 What are the principle of the vibrometer and accelerometer? What is the difference between these two?

13 A cooling unit weighing 40 kgf is to be supported by three springs of stiffness 'k' each. If the unit operates at 480 rev/min, what should be the value of spring constant 'k' if only 10% of the shaking force of the unit is to be transmitted to the supporting structure?

14 a) What is a tyre ply?
   b) Why is a radial-ply tyre more comfortable at speed than cross-ply tyre?

15 Explain Stodola's method to estimate the natural frequency and mode shapes of multi-degree freedom systems.

16 Explain with a neat sketch working principle of the accelerometer. Discuss the effects of amplitude distortion in such an instrument.

17 a) What do you mean by degrees of freedom with examples for single, two and multi-degrees of freedom system.
   b) What is static and dynamic balance of a wheel?
   c) What is natural frequency? Explain the term with respect to a vehicle.

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FACULTY OF ENGINEERING
B.E. 4/4 (AE) I–Semester (Main& Backlog) Examination,
November / December 2018
Subject: Production and Operations Management (Elective-I)

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

Note: Answer all Questions from Part-A, & any Five Questions from Part-B.

PART – A (25 Marks)
1. Briefly explain about the factors affecting plant location
2. What is Standard time? How is it calculated?
3. Distinguish between Job shop, Batch shop and Mass production systems with respect to variety and volume.
4. Explain the importance of work Study as a tool for improving productivity.
5. Briefly explain master production scheduling.
6. Briefly explain Aggregate Planning Strategies
7. What is inventory control? Explain the types of Inventory models
8. Write down the expression of EOQ, defining each term in it.
9. Explain briefly the differences between PERT and CPM
10. Explain the basic steps in project management?

PART – B (50 Marks)
11. In assembly an electrical gadget, the selected time was 1.8 minutes. With a rating factor of 112% and allowances of 5%, calculate the standard time taken for assembly of the gadget.
12. Calculate the trend value from the following data using the least squares method and estimate sales for the year 1998.

Year	1991	1992	1993	1994	1995	1996
Sales Rs. crore	20	30	35	40	38	47

13. Define Plant Layout & its types with an examples.
14. (a) Explain objectives and strategies in aggregate planning.
    (b) Explain master production scheduling.
15. A company makes bicycles. It produces 450 bicycles a month. It buys the tires for bicycles from a supplier at a cost of $20 per tire. The company's inventory carrying cost is estimated to be 15% of cost and the ordering is $50 per order. Find EOQ?
16. Write short notes on any three of the following:
    i)   Break even analysis   ii) Delphi technique
    iii) Forecast errors   iv) Features of ERP packages

17. A small project is composed of activities as shown below.

Activities		Time in weeks		
I	J	T_o	T_m	T_p
1	2	1	1	7
1	3	1	4	7
1	4	2	2	8
2	5	1	1	1
3	5	2	5	14
4	6	2	5	8
5	6	3	6	15

Draw the network diagram for the above and calculate the critical path and expected project duration.

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

Subject : Software Project Management (Elective – I)

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. What is a project? What is the importance of management in a project? (2)
2. In what way is a software project different from traditional engineering projects? (3)
3. What are the functions of a project manager? (2)
4. What are the symptoms exhibited by projects that fail using conventional process? (3)
5. What are the five basic parameters of cost estimation model? (3)
6. What are the various phases of modern software process? (2)
7. What is the difference between iteration and increments? (2)
8. What is programme management? (2)
9. List the five basic stages of team development. (3)
10. What is Work Breakdown Structure (WBS)? How is it different from an evolutionary WBS? (3)

PART – B (50 Marks)

11. (a) What the key practices that improve overall software quality with a modern process? (5)
    (b) What are the top five principles of modern software management and how are they improvements compared to waterfall model? (5)

12. What are the engineering and production phases of modern process? Explain the differences in emphasis regarding life-cycle aspects (risks, products, activities, assessment, economics and management) between the two stages. (10)

13. (a) Discuss the seven top workflows of the software process. (7)
    (b) What is leadership and how can you measure leadership styles? (3)

14. Discuss the following core metrics: (a) Work and Progress (b) Budgeted cost and expenditure (c) Breakage and Modulatory (d) MTBF and Maturity (10)

15. (a) What are the five basic stages of team development? How can one become a good team member? (5)
    (b) What is organizational behaviour? In what way does this theory help in project management ? Give an example. (5)

16. (a) What are contracts? Discuss their classification. (5)
    (b) What are the different models of motivation that have been proposed to motivate team members to work effectively? (5)

17. Write short notes on :
    (a) CMM (5)
    (b) ISO 12207 (5)

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FACULTY OF ENGINEERING

B.E. 4/4(CSE) I – Sem. (Main & Backlog) Examination, November/December 2018

Subject: Mobile Computing (Elective – I)

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

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

PART – A (25Marks)

1. Why do hidden and exposed terminal problems arise?   3
2. Explain the role of HLR entity of GSM network.   3
3. Discuss the concept of tunneling and Encapsulation.   3
4. Define handover.   2
5. Discuss the design goals of mobile IP.   2
6. Write the advantages and disadvantages of mobile TCP   3
7. Write short notes on WAE.   2
8. Give reasons for handover in GSM and problems associated with it.   3
9. Briefly explain use of TCP over 2.5/3G wireless networks.   2
10. Explain about WWW?   2

PART – B (50 Marks)

11. a) Compare SDMA, FDMA, TDMA and CDMA   5

     b) How can we avoid hidden and exposed terminal problems? Explain.   5

12. a) With neat sketch of GSM architecture, discuss the key features of GSM Systems   6

     b) What are the functions of authentication and Encryption in GSM?   4

13. a) Explain about DECT.   5

     b) Explain about digital video broadcasting?   5

14. a) Briefly discuss about Bluetooth?   5

     b) Explain about DHCP   5

15. a) Describe the process of IP pocket delivery with neat sketch   6

     b) Define care of address (CoA) and what are two different possibilities for the location of CoA   4

16. Explain the concept behind traditional TCP. What are the improvements that are made into classical TCP?   10

17. a) Explain in detail about protocol architecture of WAP   5

     b) Explain about java card support for mobility.   5

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FACULTY OF ENGINEERING

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

Subject: Grid Computing (Elective – III)

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 meant by "single sign on"? (2M)

2. List the universes in Condor version 7 (3M)

3. List the traditional job scheduling policies (3M)

4. Define authentication, authorization with reference to Grid Computing (2M)

5. What is the concept behind SOA (Service Oriented Architecture) (2M)

6. Write the structure of a WSDL version 1.1. Document (3M)

7. What is the main advantage of Remote Procedure call (2M)

8. What is Grid Enabling an application? (2M)

9. Write about MPI_Recv () function (3M)

10. Write about MPI_Bcast () function (3M)

PART – B (50 Marks)

11 a) Explain the benefits of Grid computing (5M)
   b) What is Grid resource Allocation Management (GRAM). Explain (5M)

12. Explain the internal steps to execute a job in Condor with a neat diagram (10M)

13. a) Discuss the Advance Reservation Feature of scheduler (5M)
   b) Write about Directed Acyclic Graph Manager (DAG Man) Meta-Scheduler. (5M)

14. a) Discuss about symmetric / secret key cryptography. (5M)
   b) Discuss the components of Public Key Infrastructure. (5M)

15. a) Explain about service registry with a neat diagram (5M)
   b) Explain the steps to access a web service from a Web service container (5M)

16. a) Discuss the features of Workflow Editors (5M)
   b) Explain about arguments Enumerated in a List (5M)

17. Write short notes on
   a) gLite (5M)
   b) Job Submission (5M)

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FACULTY OF ENGINEERING

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

Subject : Software Reuse Techniques (Elective – III)

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 software reuse? Mention the advantages of software reuse.   (3)
2 What are the reasons to reuse use case components?   (3)
3 List the different Creational patterns.   (2).
4 Write the intent of abstract factory & builder pattern.   (3)
5 What are the advantages of chain of responsibility pattern?   (2)
6 When can you apply proxy pattern?   (2)
7 Write the Consequences of State Pattern.   (2)
8 List the advantages of Pipes and Filters.   (3)
9 What are the challenges establishing requirements for a component system? (3)
10 Define Object Oriented Business engineering.   (2)

PART – B (50 Marks)

11 (a) How can software reuse be adapted systematically and incrementally?   (6)
   (b) Write about applications, components & subsystems?   (4)

12 (a) Explain the intent, structure, participants of factory method?   (6)
   (b) What are Different Types of Variation Points?   (4)

13 Describe the intent, motivation, applicability and participants of
   (a) Singleton pattern   (5)
   (b) Prototype pattern   (5)

14 Explain the intent, structure, motivation, participants, applicability, implementation,
   consequences, and known uses of flyweight pattern?   (10)

15 Write short notes on:
   (a) Black board pattern   (5)
   (b) Layers pattern   (5)

16 (a) Explain the intent, motivation, applicability of adapter pattern?   (5)
   (b) Write the intent, motivation, structure and known uses of Observer
       pattern?   (5)

17 Briefly describe the software engineering process in the reuse business.   (10)

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FACULTY OF INFORMATICS

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

Subject : Semantic Web (Elective-III)

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	What is an ontology?	2
2	Define Description logic.	2
3	Specify RDF graph notation.	3
4	List out the Rule ML tags to represent the knowledge.	3
5	State the 3 expressive sublanguages of OWL.	3
6	Define a web service.	2
7	Show UDDI registry	3
8	What is a Word Net?	2
9	Write what is not a semantic web.	2
10	Define Vcard, PICS and FOAF.	3

PART – B (50 Marks)

11 a) Explain the semantic web architecture in detail.   7
   b) Give the differences between taxonomies and ontologies.   3

12 a) Illustrate RDF statements with the help of RDF / XML document.   6
   b) List out the notations, constructions and reasoning techniques supported by description logic.   4

13 Specify the requirements of web ontology description language.   10

14 Explain Lexicon-Based ontology development method.   10

15 Discuss about various agent forms along with diagram which shows the attributes of agent.   10

16 a) Write an example and illustrate how classes will be used in OWL.   6
   b) List out the web service security standards.   4

17 Write short notes on :
   a) Uschold and king ontology development method   4
   b) Metadata standards   6

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FACULTY OF ENGINEERING

BE 4/4 (ECE) I Semester (Old) (Main) Examination, November/December 2018

Subject: Optical Fiber Communication (Elective – I)

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

Note: Answer all questions from Part – A, & Any five questions from Part – B.

PART – A (25 Marks)

1) Explain Total Internal Reflection?   2
2) Define cutoff wavelength?   2
3) Explain Rayleigh scattering Losses?   3
4) Define Group Delay?   2
5) Explain Light Emitting Diodes (LEDs) Concept?   2
6) A Silica optical fiber with a core diameter large enough to be considered by ray theory analysis has a core refractive index of 1.50 and a cladding refractive index of 1.47. Determine
   a) The critical angle at the core cladding interface?
   b) The numerical aperture for the fiber?   3
7) Write Advantages and Disadvantages of LASER DIODE?   3
8) Define Avalanche multiplication noise?   2
9) What is SONET? Give Applications?   3
10) What is the need for WDM?   3

PART – B (50 Marks)

11. a) What are the advantages of optical fiber communication?   5
    b) Calculate the NA, acceptance angle and critical angle of the fiber having n1 (Core refractive index) = 1.50 and refractive index of cladding = 1.45.   5

12. When mean optical power launched into an 8 km length of fiber is 12 µW, the mean optical power at the fiber output is 3 µW. Determine –
    a) Overall signal attenuation in dB.
    b) The overall signal attenuation for a 10 km optical link using the same fiber with splices at 1 km intervals, each giving an attenuation of 1 dB.   10

13. a) Compare the performance parameters of surface emitting LED and Edge emitting LED?   5
    b) A double hetero junction InGaAsP LED operating at 1310 nm has radiative and non-radioactive recombination times of 30 and 100 ns respectively. The current injected is 40 mA. Calculate –
    i) Bulk recombination life time.
    ii) Internal quantum efficiency.
    iii) Internal power level.   5

14. Explain the structure and principle of working of APD.   10

15. Draw & Explain the point to point fiber optical link block diagram and system considerations?   10

16. Explain the fiber materials used in fabrication requirements.   10

17. a) Explain the structure of Fabry-Perot resonator?   5
    b) State the factors on which the power launching capability of source is dependent? 5

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FACULTY OF ENGINEERING

BE 4/4 (ECE) I Semester (Old) Examination, November/December 2018

Subject: Digital Image Processing (Elective – I)

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

Note: Answer all questions from Part – A, & Any five questions from Part – B.

PART – A (25 Marks)

1) Explain about Image sampling and quantization Process?	3
2) What are the components of digital image Processing system?	3
3) Write about the basic relationship between pixels?	2
4) What is the need of image transform, Define DFT?	2
5) Write notes on Hadamard transform.	3
6) Explain the purpose of image enhancement.	2
7) Write notes on local or neighborhood operation.	3
8) Explain Image Compression model with neat diagram	2
9) Differentiate between lossless and lossy coding.	3
10) What is thresholding? Explain about global thresholding?	2

PART – B (50 Marks)

11. a) With neat Diagram explain the elements of visual perception.	6
Write notes on (i) Neighbors of pixel (ii) Applications of Image transform	4
12. Explain the concept of 2-diamensional FFT	10
13. a) What is meant by image restoration? Explain model of Image degradation.	6
b) Explain Smoothing filters in frequency domain.	4
14. a) Explain about the significance of Histogram Equalization.	6
b) Explain Spatial filters in image enhancement.	4
15. a) Explain a method of generating variable length codes with an example.	6
b) Explain bit Plane slicing?	4
16. a) Explain about region based segmentation?	4
b) Write about point and line detection for segmentation?	6
17. a) Draw and explain the Block Diagram of Transform coding in detail?	4
b) Write notes on (i) Zonal and threshold coding (ii) Image Zooming Techniques.	6

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FACULTY OF ENGINEERING

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

Subject: Automobile Engineering (Elective-I)

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. What are the different or main components of an electric and a hybrid vehicle?

2. What are the functions of a frame in an automobile?

3. What is a thermostat? Name the different types of thermostats used in automobiles.

4. What are anti-freeze mixtures? Name some of them and explain their functions?

5. What do you understand by Caster angle and Camber angle? Explain with sketches.

6. What are the advantages and disadvantages of an independent suspension system?

7. State the importance of a Universal coupling in an automobile.

8. State the functions and working of a master cylinder.

9. What is a catalytic convertor? What is the catalyst used in catalytic convertors of automobiles?

10. State the Bharath norms of air pollution.

PART-B (50 Marks)

11. Compare the mechanical fuel injection systems with the electronic fuel injection system.

12. What is the function of a carburetor? Describe the working of a simple carburetor with a neat sketch.

13. What is Battery ignition system? Explain the different parts in detail with the help of a neat sketch.

14. Explain in detail about the Splash lubricating system with the help of a diagram.

15 (a) Explain the different parts of a steering system along with steering geometry.

   (b) Describe the rack and pinion mechanism in steering system.

16. (a) Describe the principle of a torque convertor. Discuss the advantages and disadvantages of the same.

   (b) Explain the principle, working and functions of a clutch.

17. (a) Explain the general over-hauling and servicing procedures of automobiles.

   (b) How does an automobiles contribute towards pollution of the atmosphere? Discuss the methods to reduce the emission of pollutants in exhaust gases.

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FACULTY OF ENGINEERING

B.E. 4/4(CSE) I – Sem. (Main & Backlog) Examination, November/December 2018
Subject: Mobile Computing (Elective – I)

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.	Write short notes on signals and Antennas	3
2.	What is SDMA? How it is achieved?	2
3.	What is a cyclic representation of data?	3
4.	Explain about signal propagation?	3
5.	Explain about cellular systems?	2
6.	Differentiate Infrared vs radio transmission?	3
7.	Explain about Infrastructure vs Adhoc networks?	3
8.	What is Traditional TCP?	2
9.	Explain about TCP over 2.5/3G wireless networks?	2
10.	Give an example for WML script.	2

PART – B (50 Marks)

11.	a) Explain about spread spectrum?	5
	b) Comparison between SDMA, TDMA, FDMA and CDMA?	5
12.	a) Explain about digital video broadcasting?	5
	b) Discuss about GSM architecture?	5
13.	a) Explain about Hidden & Exposed terminals and near and far terminals?	5
	b) Explain about localization and calling?	5
14.	a) Explain different ways of location of care of address?	5
	b) Explain about Bluetooth and its architecture?	5
15.	a) Explain about architecture of Hyperlan 2 briefly	5
	b) Explain about Bluetooth and its architecture?	5
16.	Explain briefly about snooping TCP and mobile TCP with advantages and disadvantages?	10
17.	Explain thi features of Operating systems for mobile devices briefly?	10

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