

**FACULTY OF ENGINEERING****B.E. 4/4 (Civil) I – Semester (Backlog) Examination, March / April 2021****Subject: Pre-Stressed Concrete (Elective – I)****Time: 2 hours****Max. Marks: 75****Note: Missing Data, if any, may be suitably be assumed.****PART – A****Answer any seven questions.****(7x3 = 21 Marks)**

- 1 List the types of losses in prestressed concrete beam.
- 2 Distinguish between partial and fully prestressing.
- 3 Explain the mechanism of shear failure in the beams.
- 4 How do you estimate the shear strength of PSC beams?
- 5 Differentiate between short term deflections and long term deflections.
- 6 Define kern points.
- 7 What is concentric tendon?
- 8 Write a note on end zone reinforcement in end block.
- 9 What is concordant cable profile?
- 10 Explain the term End blocks?

**PART – B****Answer any three questions.****(3x18 = 54 Marks)**

- 11 a) What is pre tensioning and post tensioning. Why high strength materials are used in PSC?  
b) Explain with sketches Freyssinett system of post tensioning?
12. A beam is of simply supported span 8m. The size of the beam is 350mm x 700mm. A prestressing force of 100kN was applied. The cable is parabolic with an eccentricity of 100mm at centre and zero at the supports. It is subjected to an udl of 20kN/m. Compute the extreme stresses at the mid span.
13. A prestressed concrete beam is of unsymmetrical I section having top flange width and thickness 750mm and 250mm respectively. The bottom flange width and thickness are 500mm and 250mm respectively. The total depth is 1700mm. Thickness of web is 200mm. The area of prestressing steel is 1400mm<sup>2</sup>. The prestressing steel is provided at a distance of 100mm from the soffit of the beam.  
If  $f_{ck} = 40\text{MPa}$  and  $f_{pu} = 1700\text{MPa}$ , Calculate the ultimate flexural strength using IS CODE.
- 14 a) What are the different types of flexural modes observed in prestressed concrete beams?  
b) Write the steps involved in the design of end blocks by Guyon's method.
15. A concrete beam with a rectangular section, 100mm wide and 300 mm deep is stressed by 3-cables, each carrying an effective force of 240 kN. The span of the beam is 10m. The first cable is parabolic with an eccentricity of 50mm below the centroidal axis at the centre of span and 50mm above the centroidal axis at the supports. The second cable is parabolic with zero eccentricity at the supports and an eccentricity of 50mm at the centre of span. The third cable is straight with a uniform eccentricity of 50mm below the centroidal axis. If the beam supports a uniformly distributed live load of 5 kN/m and  $EC = 38 \text{ kN/mm}^2$ , estimate the instantaneous deflection at the following stages.
  - i) Prestress + self weight of beam, and
  - ii) Prestress + self weight + live load.

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16. A two span continuous beam ABC ( $AB = BC = 10\text{m}$ ) is of rectangular section, 200mm wide and 500mm deep. The beam is prestressed by a parabolic cable, concentric at end supports and having an eccentricity of 100mm towards the soffit of the beam at centre of spans and 200mm towards the top of beam at mid support 'B'. The effective force in the cable is 500 kN.
- Show that the cable is concordant
  - Locate the pressure line in the beam, when in addition to its self weight, it supports an imposed load of 5.6 kN.
- 17 A pretensioned beam 250 mm wide and 300 mm deep is prestressed by 12 wires each of 7 mm diameter initially stressed to  $1200\text{ N/mm}^2$  with their centroids located 100 mm from the soffit. Estimate the final percentage loss of stress due to elastic deformations, creep, shrinkage and relaxation using IS: 1343 code and the following data:
- Relaxation of steel stress =  $90\text{ N/mm}^2$   
 $E_s = 210\text{ KN/mm}^2$ ,  $E_c = 35\text{ kN/mm}^2$   
Creep coefficient = 1.6  
Residual shrinkage strain =  $3 \times 10^{-4}$ .

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**FACULTY OF ENGINEERING**  
**BE 4/4 (CE/EE/EIE/M/P) I-Semester (Backlog) Examination, March/April 2021**

**Subject: Entrepreneurship (Elective – I)**

**Time: 2 hours**

**Max. Marks: 75**

**Note: Missing Data, if any, may be suitably be assumed.**

**PART – A**

**Answer any seven questions.**

**(7x3 = 21 Marks)**

- 1 What are the salient features of small scale industries?
- 2 Write short notes on small enterprise.
- 3 Discuss the concept of project life cycle.
- 4 Define the term Project. How will you classify the projects?
- 5 What are the different aspects to be studied for making financial analysis of the project?
- 6 What do you understand by dummy activity and loops in project network?
- 7 What is the time analysis in project network?
- 8 State differences between PERT and CPM.
- 9 Define Project finance.
- 10 What are the environmental considerations in project?

**PART – B**

**Answer any three questions.**

**(3x18 = 54 Marks)**

- 11 (a) How do entrepreneurs contribute in the development of economy of a country?  
(b) What are the different types of forms of an Enterprise?
- 12 What makes a successful entrepreneur?
- 13 Define project management and outline its features clearly.
- 14 (a) What are the different activity floats?  
(b) What is critical path? What is the procedure for determining the critical path?
- 15 What are the behavioural characteristics of entrepreneurs? Explain in detail.
- 16 What are the seven time management strategies for busy entrepreneurs?
- 17 Discuss in detail financial institution structure in India.

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**FACULTY OF ENGINEERING**

**B.E. 4/4 (EEE) I – Semester (Backlog) Examination, March / April 2021**

**Subject: High Voltage Engineering (Elective – I)**

**Time: 2 hours**

**Max. Marks: 75**

**Note: Missing Data, if any, may be suitably be assumed.**

**PART – A**

**Answer any seven questions.**

**(7x3 = 21 Marks)**

- 1 Explain Townsend's first ionization coefficient.
- 2 Describe sparking potential Paschen's law.
- 3 Explain electrostatic generator.
- 4 Describe series resonant circuit.
- 5 Explain impulse generator circuit.
- 6 Describe multistage impulse generator circuit.
- 7 Explain specifications on sphere gap.
- 8 Describe testing of power transformers.
- 9 Explain testing of circuit breakers.
- 10 Describe short circuit test plants.

**PART – B**

**Answer any three questions.**

**(3x18 = 54 Marks)**

- 11 Explain with diagram the application of electrolytic tank for evaluating electric field distribution in dielectric medium or electrical equipment.
- 12 Discuss various factors which affect breakdown of gases.
- 13 Explain thermal breakdown in solid dielectrics. How this mechanism is more significant from the other mechanisms?
- 14 Explain with neat sketches Cockroft Walton voltage multiplier circuit. Explain clearly its operation when the circuit is loaded.
- 15 Draw an equivalent circuit of an impulse generator and indicate the significance of each parameter being used.
- 16 Describe the construction of various components used in the development of an impulse generator.
- 17 Explain the construction of an uniform field spark gap and discuss its advantages and disadvantages for high voltage measurement.

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## FACULTY OF ENGINEERING

B.E. IV/IV (EIE) I – Semester (Backlog) Examination, March / April 2021

Subject: Automation in Process Control (Elective-I)

Time: 2 Hours

Max.Marks: 75

Note: Missing data, if any, may be suitably assumed

## PART-A

Answer any seven questions.

(7x3=21 Marks)

1. How do we interface input analog signals to a PC?
2. What are the guidelines to be followed in selecting an add-on-card?
3. Mention the two mode of working of RTU.
4. Draw distributed SCADA structure.
5. Draw the block diagram of distributed computer control.
6. What are different layers of computer network?
7. Explain computer control of liquid level system.
8. Give the flow sheet of plastic injection moulding process.
9. What are smart sensors? Give the advantages of using it.
10. Draw the diagram of smart control valve positioner.

## PART-B

Answer any three questions.

(3x18=54 Marks)

11. a) Explain the concept involved in data acquisition system using PC add-on-card.  
b) Write the guidelines in selecting the appropriate DA and C boards.
12. a) Draw the block diagram of SCADA and explain the basic function carried out by the SCADA system.  
b) Compare SCADA, PLC, DCS and smart instruments. Also write the applications of SCADA system in process control.
13. a) Explain three kinds of communication network protocol in DCS.  
b) Write short notes on DCS integration with PLC.
14. a) Explain on-line optimizing control of a distillation column.  
b) Explain with suitable diagram computer control heat exchanger.
15. Explain main features field buses FIP and PROFIBUS in detail.
16. a) Discuss briefly IEE 488/GPIB bus.  
b) Explain peer-to-peer based network.
17. a) Write short notes on smart sensors.  
b) Write short notes on main frame DDC.

**FACULTY OF ENGINEERING****B. E. 4/4 (ECE) I– Semester (Old) Examination, March / April 2021****Subject: Optical Fiber Communication (Elective-I)****Time: 2 hours****Max. Marks: 75****Note: Missing Data, if any, may be suitably be assumed.****PART – A****Answer any seven questions.****(7 x 3 = 21 Marks)**

1. Define the terms Acceptance angle and total internal reflection.
2. What is the significance of numerical aperture.
3. Compare step index fiber with graded index fibre.
4. Draw different types of refractive index profile with neat sketches.
5. Differentiate between LED and Laser diodes.
6. What is fiber splicing? Why it is done?
7. What is the role of preamplifiers in optical detectors?
8. What are different error sources in optical communication system.
9. How WDM is different from FDM? What are the applications of WDM.
10. Explain about SONET.

**PART – B****Answer any three questions.****(3 x 18 = 54 Marks)**

11. a) Draw and explain the detailed block diagram of optical fiber communication system over other general type of communication system.  
b) Differentiate between step index and graded index fibers.
12. a) Discuss about different modes in cylindrical waveguide fiber.  
b) What are the advantages of optical fibre communications.
13. a) Explain different types of attenuation in optical fiber.  
b) Derive an expression for the pulse spread due to material dispersion using group delay concept.
14. a) Explain the working of edge emitting and surface emitting LEDs with neat sketches.  
Differentiate between them.  
b) Derive the expression for internally generated power and efficiency in a LED.
15. a) Give the comparison between PIN diode and APD considering the different parameters.  
b) Define fiber optic splice. With the help of neat diagram, explain any two types of splicing techniques.
16. Write notes on a) Noise sources in optical rea. b) Burst mode receiver.
17. a) Derive an expression for carrier to noise ratio of an analog OFC system.  
b) Write notes on preamplifiers in optical communication receiver.

**FACULTY OF ENGINEERING**  
**BE IV/IV (ECE) I-Semester (Old) Examination, March / April 2021**

**Subject: Digital Image Processing (Elective-I)**

**Time: 2 Hours**

**Max .Marks: 75**

**Note: Missing data, if any, may be suitably assumed**

**PART – A**

**Answer any seven questions.**

**(7x3=21 Marks)**

- 1 What is meant by digital image processing? Explain how digital images can be represented.
- 2 What are the elements of image sensing and acquisition?
- 3 Give the properties of 2-D DCT.
- 4 Write the properties of hadamard transform.
- 5 Explain sharpening filters in frequency domain.
- 6 Give the mask for laplacian for image enhancement in spatial domain.
- 7 What is noise? State the various noise models.
- 8 What is bit plane slicing? Mention it applications?
- 9 Differentiate image enhancement and image restoration?
- 10 What is meant by morphological image processing?

**PART – B**

**Answer any three questions.**

**(3x18= 54 Marks)**

- 11 (a) What is digital image processing? Draw the block diagram and explain the various fundamental steps involved in digital image processing?  
 (b) Image transmission is done in packets. A packet consists of a start bit, a byte of data and a stop bit.
  - (i) How many minutes would it take to transmit a 512x512 image with 256 grey levels at  
 baud rate.
  - (ii) What would be the time at 9600 baud rate?
- 12 (a) Show that 1-D DCT can be implemented via N-point FFT.  
 (b) Generate slant transformation matrix for N=4.
- 13 (a) Discuss smoothing spatial filters? What is ringing effect?  
 (b) Find the histogram of the following image.
 

1	2	4
1	4	5
4	3	4
- 14 (a) Explain image compression model with neat diagram.  
 (b) Explain laplacian in frequency domain.
- 15 (a) What is thresholding? Explain about global thresholding.  
 (b) Draw and explain the block diagram of transform coding in detail.
- 16 (a) Explain histogram specification for image enhancement.  
 (b) Bring out the differences between spatial domain and frequency domain image enhancement approaches.
- 17 Write short notes on:
  - (a) Discuss various adjancies in an image.
  - (b) Speckle noise and removal techniques.
  - (c) Lossless predication coding.

**FACULTY OF ENGINEERING**

**B.E. 4/4 (ECE) I – Semester (New) (Backlog) Examination, March/April 2021**

**Subject: Optical Fiber Communication (Elective-I)**

**Time: 2 hours**

**Max. Marks: 75**

**Note: Missing Data, if any, may be suitably be assumed.**

**PART – A**

**Answer any seven questions.**

**(7x3 = 21 Marks)**

- 1 Draw the schematic of a single mode fiber structure and explain it.
- 2 Which three bands of wavelength are used for optical fiber communication?
- 3 What are different types of bending losses in optical fiber?
- 4 Differentiate between inter and intra modal dispersion.
- 5 Compare LED and Laser diodes.
- 6 Draw the schematic of high radiance surface emitting LED.
- 7 Draw the cross section of Ga Al As double hetero-junction structure LED. What is its significance?
- 8 Explain about avalanche multiplication noise.
- 9 What are different error sources in optical communication system?
- 10 Compare PIN and APD optical detectors.

**PART – B**

**Answer any three questions.**

**(3x18 = 54 Marks)**

- 11 a) Using simple ray theory, describe the mechanism for the transmission of light within an optical fiber.  
b) What are the reasons for pulse broadening in fibers?
- 12 a) Write detailed notes on linear and nonlinear scattering in optical fibers.  
b) Explain different types of absorption mechanism in optical fibre?
- 13 a) What is the need for double hetero-junction structures in optical sources?  
b) Sketch and explain Fabry-Perot resonator cavity of a laser diode.
- 14 a) What is the significance of lensing schemes in power launching in fiber optics. Write about different lensing schemes.  
b) What are fiber splices? Explain any one fiber splicing technique.
- 15 a) Elaborate on the structure of SONET/SDH protocols.  
b) Write a short note on Wavelength Division Multiplexing with a neat diagram.
- 16 a) Explain the probability of error & BER analysis in optical receivers.  
b) List out different types of pre-amplifiers and explain briefly.
- 17 Write short note on :
  - i) Fiber Splicing
  - ii) Link power budget

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**FACULTY OF ENGINEERING****BE 4/4 (ECE) I-Semester (New) (Backlog) Examination, March/April 2021****Subject: Digital Image Processing (Elective-I)****Time : 2 Hours****Max. Marks: 75****Note: Missing Data, if any, may be suitably be assumed.****PART – A****Note: Answer any Seven Questions****(7x3 = 21Marks)**

1. Specify the elements of DIP system.
2. What are the types of light receptors?
3. State the convolution property of 2D DFT.
4. Write about KL transform.
5. What are the applications of image enhancement?
6. Differentiate spatial and frequency domain filtering.
7. Differentiate enhancement and restoration.
8. Draw the image degradation model.
9. What is interpixel redundancy?
10. What is bitplane decomposition?

**PART – B****Note: Answer any Three Questions****(3x18 = 54Marks)**

11. a) With neat diagrams explain the elements of visual perception.  
b) Explain the basic relationships between pixels.
12. a) Explain about discrete cosine transform.  
b) State and prove any two properties of 2D fourier transform.
13. a) Explain image enhancement in frequency domain.  
b) Discuss histogram processing.
14. a) Explain about algebraic approach to restoration.  
b) Write about image restoration model.
15. a) Differentiate lossless from lossy compression and explain transform coding.  
b) Write about redundancies for image compression.
16. a) Obtain slant transform basis matrix for N=4.  
b) Write about Hotelling transform.
17. a) Write about predictive coding.  
b) Explain Huffman coding with an example.

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**FACULTY OF ENGINEERING****BE 4/4 (M/P) I-Semester (Backlog) Examination, March/April 2021****Subject: Automobile Engineering (Elective – I)****Time : 2 Hours****Max. Marks: 75****Note: Missing Data, if any, may be suitably be assumed.****PART – A****Note: Answer any Seven Questions****(7x3 = 21Marks)**

1. What are the basic part of an Automobile?
2. What is the function of a differential
3. What do you understand by thermo siphon cooling
4. What do you mean by ignition timing
5. What is a torsion bar
6. What are the requirements of a steering system
7. What is a master cylinder and what are its main components, diagrammatically explain.
8. Explain the need for a gear box in an automobile
9. What do you understand by over hauling
10. Name different positively controlled methods to reduce exhaust emissions from an S.I. engine,

**PART – B****Note: Answer any Three Questions****(3x18 = 54Marks)**

11. a. Differentiate between wet liner and dry liner.  
b. Explain the constructional features of any modern carburettor.
12. a. Explain dry sump lubrications system with neat sketch  
b. Explain the working of a thermostat in liquid cooled engine
13. a. Explain the working of an electronic ignition system.  
b. Describe the constructional features of a storage battery.
14. a. Describe the functions of wheels and tyres.  
b. Explain in detail about the wheel alignment.
15. a. Explain various steering troubles and suggest their remedies.  
b. Explain the working of an independent suspension system.
16. a. Explain with neat sketch the working of manual gear box.  
b. what are the merits of hydraulic brakes over mechanical brakes.
17. a. What is the general maintenance works to be done on an automobile.  
b. Explain the working of a catalytic converter with neat diagram.

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**FACULTY OF ENGINEERING****B. E. 4/4 (AE) I – Semester (Backlog) Examination, March/April 2021****Subject: Production and Operations Management (Elective – I)****Time: 2 hours****Max. Marks: 75****Note: Missing Data, if any, may be suitably be assumed.****PART – A****Answer any seven questions.****(7x3 = 21 Marks)**

1. State the features of Production and Operations Management.
2. Explain the importance of Work Study as a tool for improving productivity.
3. What do you mean by Survey method?
4. Define the term Time Series Analysis.
5. What do you mean by Mixes Strategy?
6. Write about material flow in MRP.
7. What are the various stages involved in inventory control?
8. Write about fixed order quantity system.
9. With respect to network analysis explain critical activity and dummy activity.
10. Define term stack and event.

**PART – B****Answer any three questions.****(3x18 = 54 Marks)**

11. For selecting a site for a thermal power plant, state the important factor to be considered.
12. A company experienced the following demands for the shaft in the last one year.

Month	Forecast demand (Nos.)	Actual Demands (Nos.)
January	400	380
February	450	400
March	450	420
April	480	460
May	420	410
June	420	480
July	500	480
August	480	450
September	420	410
October	430	410
November	470	440
December	440	430

Calculate MAD and Bias.

13. (a) Explain the Deterministic and Stochastic Inventory model.
- (b) Alaric Industries Ltd. requires 1300 components per month throughout the year for manufacturing electronic equipment's. If ordering cost is Rs.80 per order, unit cost is Rs.5 per component and annual inventory carrying costs are 10%, find EOQ. If the company decides to operate with a back order cost to be Rs.7.50 per unit per year, find revised EOQ.
14. (a) What do you mean by MPS plan? What are the measures to be taken for a good master production schedule design?
- (b) Explain techniques of aggregate planning.
15. (a) Briefly discuss the various types of incentive method.
- (b) Explain the methodology of forecasting by least square.
16. The network of PERT diagram contains normal time and crash time for each activity along with their normal cost and crash cost given in the table. Find the optimum schedule and optimum project duration. Indirect cost given is Rs.1,500/- per week.

Activity	Normal		Crash	
	Time (Week)	Cost (Rs.)	Time (Week)	Cost (Rs.)
1-2	9	7,000	4	10,000
1-3	5	6,000	3	8,000
2-3	0	0	0	0
2-5	7	9,000	2	11,500
3-4	8	2,500	6	3,000
4-6	13	10,000	9	16,000
5-6	16	12,000	11	16,000
5-7	8	12,000	7	14,000
6-8	6	10,000	6	10,000
7-8	15	6,000	8	7,400
7-9	9	6,000	6	12,000
8-9	7	6,000	5	7,800

17. Write short notes on the following:
- Issue in Aggregate Planning.
  - Q/R Inventory system.
  - Network Fundamental.
  - Tracking Signal.

**FACULTY OF ENGINEERING**

**B. E. 4/4 (CSE) I – Semester (Backlog) Examination, March / April 2021**

**Subject: Software Project Management (Elective-I)**

**Time: 2 hours**

**Max. Marks: 75**

**Note: Missing Data, if any, may be suitably be assumed.**

**PART – A**

**Answer any seven questions.**

**(7 x 3 = 21 Marks)**

1. Give any two formal definitions of Project Management?
2. What is work break down structure? What is its role in SPM?
3. What is Programme Management?
4. Differentiate between metaprocess and macroprocess.
5. List the various stages of team development.
6. What are the functions of a project manager?
7. What is a project? How is it different from task?
8. What is process automation?
9. What are periodic status assessments? Why are they needed?
10. What is gantt chart? Give an example.

**PART – B**

**Answer any three questions.**

**(3 x 18 = 54 Marks)**

11. (a) What is model-based software architecture? What is its importance in the life-cycle of a software project? Give an example.  
(b) What are the key practices that improve overall software quality with a modern process?
12. (a) What are the top five principles of modern software management and how are they improvements compared to waterfall model?  
(b) What should be the features of the next-generation cost estimation models and what are the two major improvements expected in those cost estimation models?
13. Discuss the following core metrics: (i) Work and Progress (ii) Budgeted Cost and Expenditure (iii) Breakage and Modularity (iv) MTBF and Maturity.
14. (a) List and explain five staffing principles proposed by Barry Boehm.  
(b) Discuss the concept and various levels of SEI-CMM. How does this standard help the software companies is becoming marker leaders.

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15. (a) What are contracts? Discuss their classifications.  
(b) What are the different models of motivation that have been proposed to motivate team members to work effectively?
16. Discuss the concept, purpose and five distinct processes in ISO 12207.
17. Write short notes on:  
(a) Management Artifacts  
(b) Engineering Artifacts

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**FACULTY OF ENGINEERING**  
**B.E. 4/4 (CSE) I-Semester (Backlog) Examination, March/April 2021**

**Subject : Mobile Computing**

**Time: 2 hours**

**Max. Marks: 75**

**PART – A**

**Answer any seven questions.**

**(7x3 = 21 Marks)**

- 1 What is reservation TDMA access scheme?
- 2 Write about Frequency Hopping Spread Spectrum.
- 3 What are the security services provided by GSM?
- 4 How convergence of broadcasting is enabled?
- 5 What is a Piconet? Explain with example.
- 6 What are the advantages and disadvantages of Radio Transmission?
- 7 What is IPV6?
- 8 What is the need for Ad Hoc Networks?
- 9 What is ficus?
- 10 How selective retransmission is performed?

**PART – B**

**Answer any three questions.**

**(3x18 = 54 Marks)**

- 11 (a) What is the difference between classical Aloha and Slotted Aloha?  
Explain.  
(b) Describe about Cellular Systems.
- 12 (a) Discuss Routing in Satellite networks.  
(b) Explain briefly about DECT with a neat diagram of the system architecture.
- 13 (a) Compare IEEE 802.11, HiperLAN and Bluetooth with regard to their ad-hoc capabilities. Where is the focus of these technologies?  
(b) Explain about MAC management and write about its functional.
- 14 Discuss about different protocols in Manets.
- 15 (a) Describe briefly about features of Windows CE.  
(b) Explain Javacard support for Mobility.
- 16 Explain about Tunneling and Encapsulation and write about different types of encapsulations.
- 17 Write about the following:  
(a) Advanced Phase Shifting Key.  
(b) SDMA

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**FACULTY OF ENGINEERING**  
**BE VII - Semester (CBCS) (Main & Backlog) Examination, March / April 2021**

**Subject: Green Building Technologies (Elective-II)**

**Time: 2 Hours**

**Max .Marks: 70**

**Note: Missing data, if any, may be suitably assumed**

**PART – A**

**Answer any five questions.**

**(5x2=10 Marks)**

- 1 List the benefits of green building over conventional buildings.
- 2 Write a short note on IGBC.
- 3 How soil erosion is controlled in green building.
- 4 Define water metering.
- 5 Write the concept of operational energy.
- 6 Write a note on zero ozone depleting potential materials.
- 7 How embodied energy can be reduced in building materials.
- 8 How separation of household waste is carried out in green building.
- 9 What is building acoustics in case of green buildings?
- 10 Write a short note on low VOC paints and day lighting.

**PART – B**

**Answer any four questions.**

**(4x15= 60 Marks)**

- 11 (a) Define a green building and mention its features and benefits towards sustainability.  
(b) Identify and compare green building rating systems.
- 12 (a) What are the criteria for site selection of green building.  
(b) What are the various water efficient methods of green buildings?
- 13 (a) What are the various impacts of building construction on environment.  
(b) Discuss various methods involved in reducing operational energy.
- 14 (a) Explain in detail the various methods to reduce embodied energy.  
(b) What are the different waste management methods in green building?
- 15 (a) Describe the various methods to maintain indoor air quality?  
(b) What are the different codes related to green building.
- 16 (a) How preservation of landscape can be carried out during construction of green building.  
(b) Explain in detail the energy efficient building envelopes.
- 17 How embodied energy can be reduced in building materials, write in detail by considering the following:  
(a) Use of local building materials  
(b) Use of materials with recycled contents



**FACULTY OF ENGINEERING**

**B.E. VII - Semester (CBCS)(Main & Backlog) Examination, March/April 2021**

**Subject : Data Science using R Programming**

**Time: 2 hours**

**Max. Marks: 70**

**Note: Missing Data, if any, may be suitably be assumed.**

**PART – A**

**Answer any five questions.**

**(5x2 = 10 Marks)**

1. What is Data Science? How it is different from Business Intelligence?
2. List out the applications of Eigen vectors and Eigen values in Data Science?
3. How random variables are different from traditional variables used in algebra?
4. List out the properties of Probability Mass and Density functions?
5. What is linear regression? List out the critical assumptions of linear regression?
6. What is logistic regression? Explain with an example?
7. List out the various control structures supported by R Programming Language?
8. Write a program to find a given number is prime or not using R Programming Language?
9. List out the various performance metrics for classification?
10. Define clustering. List out the applications of clustering technique?

**PART – B**

**Answer any four questions.**

**(4x15 = 60 Marks)**

11. Why Linear Algebra is significant in Data Science? How Linear Algebra is applied in Data Science?
12. What is statistical hypothesis? Briefly describe the various test statistics?
13. Explain K-Nearest Neighbours Algorithm and its implementation in R Programming Language?
14. Write the syntax for various data structures supported by R and explain with suitable examples?
15. Explain K-Means Algorithm and its implementation in R Programming Language?
16. What is Predictive modeling? Discuss about evaluation of Predictive models?
17. Why logistic regression is used for classification? Explain model building strategies for logistic regression.

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**FACULTY OF ENGINEERING****B.E. VII-Semester (CBCS) (Main & Backlog) Examination, March/April 2021****Subject : Fundamentals of IoT (Elective-II)****Time : 2 Hours****Max. Marks: 70****Note: Missing data, if any may be suitably assumed.****PART – A****Note: Answer any Five Questions****(5x2 = 10Marks)**

1. Define Internet Of Things?
2. List various Architectural Constraints of REST. ?
3. Distinguish between HTTP and HTTPS protocols?
4. List the features of Raspberry Pi?
5. Enlist Debugging techniques used while writing Embedded code?
6. Explain about 3D printing?
7. How is Raspberry Pi different from Desktop Computer?
8. Differentiate between a Python Module and Package?
9. Why Python is the preferred Language for IoT Devices?
10. What is a Cloud, explain?

**PART – B****Note: Answer any Four Questions****(4x15 = 60Marks)**

11. a) Explain the Characteristics of IoT?  
b) Briefly discuss various functional blocks of IoT?
12. a) Explain the use of various Protocols used in communication layer of IOT  
b) What is Static and Dynamic IP addresses?
13. Explain with an Architectural view of cloud based IoT weather monitoring station?
14. Write a Python Program for controlling LED with a switch and also explain its connection diagram?
15. Explain with an Architectural view of cloud based IoT platform for smart cities?
16. a) What is the use of SPI and I2C interfaces in Raspberry Pi?  
b) Penlight about Ethical issues of IoT?
17. Write a short note on
  - a) IoT communication Models.
  - b) CNC Milling.
  - c) Data types in Python

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**FACULTY OF ENGINEERING**  
**BE VII - Semester (CBCS) (Main & Backlog) Examination, March / April 2021**

**Subject: Non-conventional Energy Sources (Elective-II)**

**Time: 2 Hours**

**Max .Marks: 70**

**Note: Missing data, if any, may be suitably assumed**

**PART – A**

**Answer any five questions.**

**(5x2=10 Marks)**

- 1 What is need for non-conventional energy sources?
- 2 What are disadvantage of fuel cells.
- 3 List the application of solar energy.
- 4 Discuss solar radiation of India.
- 5 Explain the concept of power in wind energy.
- 6 List the application of wind energy.
- 7 What are different types of geo thermal energy system?
- 8 List the advantage of tidal power generation.
- 9 What are disadvantage of biogas generation.
- 10 Classify the different biogas plant.

**PART – B**

**Answer any four questions.**

**(4x15= 60 Marks)**

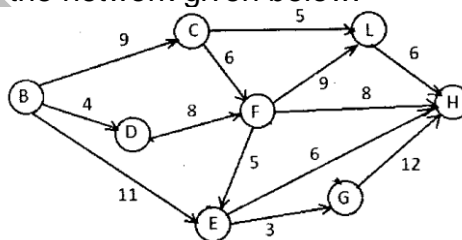
- 11 (a) Explain about solid oxide electrolyte cells.  
(b) Give in detail the about regenerative fuel cell.
- 12 With help of usual expression, explain the beam, diffuse and reflected solar radiation.
- 13 (a) With neat sketch explain the horizontal axis wind machine.  
(b) Explain about wind energy collector.
- 14 With neat sketch, explain the working principle of OTEC (closed) plant.
- 15 Sketch and explain the working of floating gas holder type biogas plant used in India (KVIC plant)
- 16 (a) Explain in briefly the parameter affecting the performance of flat plate collectors.  
(b) Write short notes on collector efficiency factor and collector heat removal factor.
- 17 What are main application of bio gas. Explain briefly the sources of production of biomass.

**FACULTY OF ENGINEERING****B.E. VII - Semester (CBCS) (Main & Backlog) Examinations, March / April 2021****Subject: Entrepreneurship (Elective-II)****Time : 2 Hours****Max. Marks: 75****Missing data, if any may be suitably assumed****Note: Answer any Seven Questions PART – A****(7x3 = 21Marks)**

1. What is definition of entrepreneur?
2. What is an enterprise?
3. Who are first generation enterprenurers?
4. What is a project in entrepreneurship?
5. Mention the characteristics of project?
6. What is cost-benefit analysis?
7. Differentiate between PERT and CPM?
8. What are the disadvanctes of PERT and CPM project network analysis?
9. What is value for society and business?
10. What is time in business and society?

**PART – B****Note: Answer any Three Questions****(3x18 = 54Marks)**

11. a) What are characteristic of entrepreneur  
b) Explain role DIC (District Industrices Centers) in India.
12. a) Explain the first woman entrepreneurs and how woman successful in India.  
b) What the steps taken by the Government to fund SSI in E-commerce?
13. a) Explain the factors in the selection of Technology for Entrepreneurship.  
b) What the benefits of project network analysis?
14. Determine the Critical Path in the network given below.



15. a) Explain two leadership models subtiabile to E-commerce industry.  
b) Explain five successful behavioural aspects of entrepreneur.
16. a) Explain the personality of entrepreneur.  
b) Explain the functions and procedre for funding agencies for SSI in India.
17. a) What is importance of enterprenship for society?  
b) Explain the content of project feasibility analysis-financial analysis.

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**FACULTY OF ENGINEERING**  
**BE IV/IV (EEE) I-Semester (Backlog) Examination, March / April 2021**

**Subject: Power Quality (Elective-I)**

**Time: 2 Hours**

**Max .Marks: 75**

**Note: Missing data, if any, may be suitably assumed**

**PART – A**

**Answer any seven questions.**

**(7x3=21 Marks)**

- 1 Define (a) Harmonics (b) Interruption
- 2 How power quality data can be analyzed?
- 3 How the voltage sag magnitude is monitored?
- 4 What are the effects occurred due to phase angle jumps?
- 5 What are adjustable speed drives and write their applications?
- 6 What are the effects of voltage sag on AC motors?
- 7 Mention the devices for controlling harmonic distortion?
- 8 What are the guidelines for limiting voltage harmonics?
- 9 Define voltage flicker according to IEEE standards?
- 10 What is the effect of voltage sag on the load connected?

**PART – B**

**Answer any three questions.**

**(3x18= 54 Marks)**

- 11 (a) Explain the remedies to improve power quality.  
(b) Explain the how power quality data can collected?
- 12 Explain the sag performance evaluation methods in radial distribution systems.
- 13 Explain how characterization of voltage sags experienced by three-phase ASD systems?
- 14 (a) Explain how harmonics can be mitigated?  
(b) What are the effects of momentary voltage dips on the operation of induction motor?
- 15 (a) How are the harmonics can be analyzed for industrial customers?  
(b) What is the impact of distribution system capacitor banks on the power quality?
- 16 (a) Explain about the technical barrier in adjustable speed drivers?  
(b) What are the harmonic effects on transformers?
- 17 (a) What are reasons for increased concerned about the power quality in power system?  
(b) How is PQ data base created? What are the basic requirements?