

**FACULTY OF ENGINEERING**  
**B.E. IV / IV (CSE) I - Semester (NON-CBCS) (Backlog) Examination,**  
**March / April 2022**  
**Subject: Elective - I**  
**Image Processing**

**Time: 3 hours**

**Max. Marks: 75**

**(Missing data, if any, may be suitably assumed)**

**PART – A**

**Note: Answer all questions.**

**(25 Marks)**

1. What is the function of image sensor?
2. What is Digital Image Processing?
3. Distinguish between spatial domain filtering and frequency domain filtering
4. What is image smoothing and sharpening?
5. What is full color image processing?
6. Explain briefly about Edge Detection.
7. Explain about Requirements of Image Compression.
8. State any two applications of image segmentation?
9. Explain about the CMYK color models?
10. Define Fidelity Criteria?

**PART – B**

**Note: Answer any five questions.**

**(5 x 10 = 50 Marks)**

- 11 Write a Brief notes on various components of Digital Image Processing System?
- 12 Explain any two Low pass frequency domain filters?
- 13 What is Thresholding? Explain about Global Thresholding.
- 14 a) Draw and explain a general compression system model?  
b) Draw the relevant diagram for source encoder and source decoder.
- 15 Explain in detail about the following color models:  
a) RGB  
b) HIS
- 16 a) Write short notes on Quantization?  
b) Discuss about region based Image segmentation?
- 17 a) Briefly Explain Arithmetic Coding?  
b) Explain converting colors from RGB to HIS?

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**FACULTY OF ENGINEERING**  
**B.E. IV / IV (CSE) I – Semester (NON-CBCS) (Backlog) Examination,**  
**March / April 2022**  
**Subject: Elective – I**  
**Mobile Computing**

**Time: 3 hours**

**Max. Marks: 75**

**(Missing data, if any, may be suitably assumed)**

**PART – A**

**Note: Answer all questions.**

**(25 Marks)**

- 1 What is multiple access type? List its application.
- 2 Draw the MSK bit for 1 0 1 0 0 1 0.
- 3 Write functionalities of the services by mobile GSM.
- 4 Write the basic for satellite system.
- 5 Write the features of the Bluetooth.
- 6 List the functionalities of link manager of Bluetooth.
- 7 How does java card's support in mobility?
- 8 List various applications of mobile adhoc networks.
- 9 What is mobile IP?
- 10 Write the role played by the DHCP in mobility.

**PART – B**

**Note: Answer any five questions.**

**(5 x 10 = 50 Marks)**

- 11 (a) What is multiplexing? Discuss different types of multiplexing.  
(b) What is spread spectrum? Thereby explain the techniques used to spread spectrum.
- 12 Describe the functional architecture of GSM for signaling with the help of a diagram.
- 13 Discuss the protocol stack of Bluetooth with the help of a diagram.
- 14 Discuss Tunneling and Encapsulation mechanism of Mobile IP.
- 15 Discuss in detail the protocol architecture of WAP.
- 16 (a) Explain briefly about the TETRA frame structure.  
(b) Compare and contrast traditional TCP and classical TCP.
- 17 Write short notes on:  
(a) HIPERLAN  
(b) DVB

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**FACULTY OF ENGINEERING**

**B.E IV / IV (Civil) I - Semester (NON-CBCS) (Backlog) Examination, March / April 2022**

**Subject: Elective – I  
Pre-Stressed Concrete**

**Time: 3 Hours**

**Max. Marks: 75**

**(Missing data, if any, may be suitably assumed)**

**PART – A**

**Note: Answer all questions.**

**(25 Marks)**

- 1 Why mild steel cannot be used as Prestressing steel.
- 2 Distinguish between concentric and eccentric tendons.
- 3 List the factors influencing the short term and long term deflections.
- 4 Discuss the load transfer mechanism in pre-tensioned and post-tensioned members.
- 5 Draw a sketch showing the stress distribution in end block by double anchor plate.
- 6 Explain the ways by which shear resistance of structural concrete members can be improved
- 7 What is the basic principle of pre stressed concrete.
- 8 How do you calculate the Elastic deformation?
- 9 Why loss due shrinkage is more for pre tensioned member compared to post tensioned Member.
- 10 Discuss the measures to be adopted for counteracting elastic loss and friction loss in case of post tensioned members.

**PART – B**

**Note: Answer any five question.**

**(5 x 10 = 50 Marks)**

11. (a) Define Prestressed concrete and bring out the differences between RCC and PSC.  
(b) Explain any two methods of post-tensioning system with neat a sketch.
12. (a) Write a short note on cracked and uncracked sections.  
(b) Describe the codal provisions for analysis of two span continuous beam.
13. A prestressed concrete pile 250 mm square, contains 60 pre-tensioned wires, each of 3mm diameter, uniformly distributed over the section. The wires are initially tensioned on the prestressing bed with a total force  $P_0$  500 kN. Calculate the final stress in concrete and the percentage loss of stress in steel after all losses, given the following data:  
 $E_s = 210 \text{ kN/mm}^2$  &  $E_c = 32 \text{ kN/mm}^2$   
Shortening due to creep =  $30 \times 10^{-6}$  mm/mm per N/mm<sup>2</sup> of stress  
Total shrinkage =  $200 \times 10^{-6}$  per unit length  
Relaxation of steel stress = 5 per cent of initial stress  
Prestressing force,  $P = 400 \text{ kN}$ .
14. (a) Describe Magnels method for end block design  
(b) Discuss in detail various types of shear cracks?

15. A post tensioned beam of 15m of rectangular cross section, 250 mm wide and 475 mm deep, is 10 m long and carries an applied load of 10kN/m UDL on the beam. The effective prestressing force in the cable is 650 kN. The cable is Parabolic with zero eccentricity at the supports and a maximum eccentricity of 150mm at the center of span. Calculate the principal stresses at the supports.
16. A pre stressed concrete beam of rectangular section 300mm wide by 600mm deep, spans over 12m. The beam is pre stressed by a straight cable carrying an effective force of 550kN at an eccentricity of 80mm. The modulus of elasticity of concrete is 50kN/m<sup>2</sup>. Compute the deflection at centre of span under prestress and self-weight.
17. Write short notes on any **TWO** of the following:
- (a) Composite sections.
  - (b) Kern points.
  - (c) Load balancing method.

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**FACULTY OF ENGINEERING****B.E. IV / IV (Civil) I - Semester (NON-CBCS) (Backlog) Examination, March / April 2022****Subject: Elective – I  
Entrepreneurship****Time: 3 Hours****Max. Marks: 75****(Missing data, if any, may be suitably assumed)****PART – A****Note: Answer all questions.****(25 Marks)**

- 1 List out the objectives of Government towards Entrepreneurship.
- 2 Distinguish between Sole Proprietorship and Partnership form of Business.
- 3 Explain briefly about first generation entrepreneur.
- 4 What are the attributes of an Entrepreneur?
- 5 Discuss about the concept and importance of Project Formulation.
- 6 Write about feasibility Analysis of a Project.
- 7 Explain importance of assessing Tax Burden.
- 8 State the differences between PERT and CPM network in project management.
- 9 What is behaviour? Explain the role of motivation in behaviour of an entrepreneur.
- 10 List out the different approaches of Time Management.

**PART – B****Note: Answer any five question.****(5 x 10 = 50 Marks)**

- 11 (a) Explain the linkages between small, medium and large industries.  
(b) Explain role of entrepreneurs in economic growth with respect to social empowerment.
- 12 (a) What factors have a bearing on choice of technology? What are the ways of acquiring technology?  
(b) Define idea. Explain various sources of idea.
- 13 (a) Explain the Profitability analysis if small scale engineering industries.  
(b) Discuss in detail about technical analysis of project formulation.
- 14 (a) What are the three estimates needed for PERT analysis? How they are used for computing activity time and standard deviation of a project?  
(b) Draw the network diagram and find the critical path for the following problem.

Activity		1-2	1-3	2-4	3-4	2-5	4-5
Time (in weeks)	$t_o$	9	6	1	4	10	1
	$t_m$	12	12	1.5	8.5	14	2
	$t_p$	21	18	5	10	2	3

- 15 Draw the "Time Management Matrix" and explain the importance of each matrix.

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- 16 (a) What is time management and why is it important? List out various approaches of time management.  
(b) Explain the situational theory of Leadership.
- 17 Write short notes on any **three** of the following:  
(a) Partnership enterprise  
(b) Collaborative interaction for Technology development  
(c) Human aspects of project management  
(d) Project financing in India  
(e) Urgency addiction

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**FACULTY OF ENGINEERING**

**B.E. IV / IV (ECE) I - Semester (NON-CBCS) (BACKLOG) Examination, March/April 2022**

**Subject: Elective – I  
Digital Image Processing**

**Time: 3 Hours**

**Max. Marks: 75**

**(Missing data, if any, may be suitably assumed)**

**PART – A**

**Note: Answer all questions.**

**(25 Marks)**

- 1 What is meant by illumination and reflectance?
- 2 Define resolution.
- 3 What is connectivity among pixels?
- 4 Give the block diagram of image restoration.
- 5 Give the Laplacian mask.
- 6 Define gradient operator.
- 7 Define compression Ratio.
- 8 Give two properties of cosine transform.
- 9 What is contrast stretching?
- 10 Explain bit plane coding.

**PART – B**

**Note: Answer any five question.**

**(5 x 10 = 50 Marks)**

- 11 (a) Explain fundamental steps in image processing.  
(b) Explain brightness adaptation and discrimination ability of human eye.
- 12 (a) Explain periodicity and translation properties of 2D DFT.  
(b) Obtain the Hadamard transform Matrix for  $N = 4$ .
- 13 (a) What is histogram? Explain histogram equalization.  
(b) Explain spatial filtering?
- 14 (a) Give the reasons for degradation of images.  
(b) Derive the expression for Wiener filtering.
- 15 (a) Explain image zooming techniques.  
(b) Explain frequency domain enhancement techniques.
- 16 (a) Explain Huffman coding with an example.  
(b) Explain lossy and lossless compression with the help of block diagram.
- 17 Write short note on:
  - (a) Transform coding technique.
  - (b) Inverse filtering.
  - (c) Distance measures.

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**FACULTY OF ENGINEERING**  
**B.E. IV / IV (EEE) I - Semester (NON-CBCS) (Backlog) Examination,**  
**March / April 2022**  
**Subject: Elective - I**  
**Embedded Systems**

**Time: 3 Hours**

**Max. Marks: 75**

**(Missing data, if any, may be suitably assumed)**

**PART – A**

**Note: Answer all questions.**

**(25 Marks)**

1. Define an Embedded System. Mention any two applications of Embedded system
2. Mention any six quality attributes of embedded system.
3. Explain the difference between RISC and CISC features
4. List out the Instruction set of RISC ARM processor
5. What is pre-processor directive
6. Brief the significance of Device Driver ISR
7. Give the difference between thread and process in an RTOS
8. Explain the different possible states of a under Vx Works RTOS
9. Explain the difference between simulator and emulator
10. What is the difference between assembler and cross assembler?

**PART – B**

**Note: Answer any five question.**

**(5 x 10 = 50 Marks)**

11. (a) Explain in detail the various challenges in embedded system design.  
(b) Explain Characteristics of an embedded system.
12. (a) Explain Different features of ARM7 processor  
(b) Explain Instruction level parallelism in advanced processor
13. (a) Briefly explain different structural elements in a C program  
(b) What is the advantage of a re-entrant function in embedded software?
14. (a) Explain design Principles for Real Time Operating System.  
(b) Explain various features of Vx-Works RTOS
15. (a) Explain different features of integrated development environment (IDE)  
(b) Explain Simulators and Emulators
16. Explain What EDLC is and explain the need of EDLC
17. Write short notes on
  - (a) Water fall model for embedded software development process
  - (b) Trends in embedded industry



**FACULTY OF ENGINEERING**  
**B.E. IV / IV (MECH) I - Semester (NON-CBCS)(Backlog) Examination,**  
**March / April 2022**  
**Subject: Elective – I**  
**Automobile Engineering**

Time: 3 hours

Max. Marks: 75

(Missing data, if any, may be suitably assumed)

**PART – A**

**Note: Answer all questions**

**(25 Marks)**

- 1 Classify the automobiles w.r.t. (a) capacity and (b) the transmission.
- 2 What are the functions of a frame?
- 3 Explain the purpose of piston rings.
- 4 What are the different types of radiator core used in cooling systems?
- 5 Write in detail the functions of a tyre.
- 6 What is the principle of a clutch?
- 7 List out the advantages of water cooled systems w.r.t air cooled systems.
- 8 What are anti-freeze mixtures?
- 9 What is the need of pollution control norms?
- 10 What is the material used in mufflers for absorbing noise and carbon oxides?

**PART – B**

**Note: Answer any five questions**

**(5 x10 = 50 Marks)**

- 11 Explain the valve mechanism in the engine block of an automobile.
- 12 Explain the working of a simple plain tube carburetor.
- 13 What is the advantage of using a multi-plate clutch system?
- 14 Write in detail about the Mac Pherson strut suspension system.
- 15 Explain the working of a hand brake system.
- 16 How can we control the air pollution of automobiles?
- 17 a) What is the function of a catalytic convertor?  
b) Briefly write about the function of a flywheel.

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