

Seat No.	
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**B.E. (Electronics & Telecommunication) (Semester - VIII)
(Revised) Examination, May - 2019
OPERATING SYSTEM (Elective-II)
Sub. Code : 67822**

Day and Date : Wednesday, 22 - 05 - 2019

Total Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Assume suitable data if necessary.
 - 3) Figures to the right indicate full marks.

SECTION - I

Q1) Solve any two **[16]**

- a) Define Thread? Explain Thread usage in detail.
- b) Explain need and functions of Operating system.
- c) What is deadlock? Explain methods used for deadlock detection.

Q2) Solve any two **[16]**

- a) Draw and explain Process state diagram.
- b) Write and explain bounded buffer algorithm for producer consumer problem.
- c) Discuss hardware support for Operating system.

Q3) Solve any two **[18]**

- a) What is Critical Section Problem? What is the solution to critical solution problem.
- b) Explain the different types of system calls.
- c) What is Mutual exclusion? Which are the requirements for it.



P.T.O.

SECTION - II

Q4) Solve any two [16]

- a) With neat diagram explain Disk Structure.
- b) Explain any two page replacement algorithms with example.
- c) What is Swapping? With neat diagram explain Swapping of two process using a disk as Backing store.

Q5) Solve any two [16]

- a) With neat diagram explain Direct Memory Access in detail.
- b) Explain Booting System in Linux System.
- c) What is Multiprocessor Operating Systems? Explain its types.

Q6) Solve any two [18]

- a) Which are the principles of I/O Software explain in brief.
- b) Discuss memory management in Linux Operating System.
- c) Explain file allocation algorithms in detail.

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B.E. (Electronics & Telecommunication), (Part-IV)
(Semester - VIII) (Revised) Examination, May - 2019
MECHATRONICS (Elective-II)
Sub. Code : 67819

Day and Date : Wednesday, 22 - 05 - 2019
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

SECTION-I

Q1) Solve any two **[16]**

- a) Explain with block diagram Programmable Logic Controllers.
- b) With block schematic explain different parameters measured in mechatronics.
- c) Explain different steps of design process in mechatronics.

Q2) Solve any two **[18]**

- a) Classify the actuators based on their design and principle of operation.
- b) Discuss a method for varying the speed of D.C. shunt Motor along with its example.
- c) What is value? Describe the principle of operation of solenoid valve with schematic diagram.

Q3) Solve any two **[16]**

- a) Describe with diagram any application of Proportional controller & Their limitations.
- b) Explain with diagram & application Gears & Gear trains.
- c) Explain with applications Pneumatic actuators & Piezoelectric actuators.



P.T.O.

SECTION-II**Q4) Attempt any two****[16]**

- a) Draw & explain basic structure of PLC in detail.
- b) Differentiate between PLC & Computer.
- c) Explain any two logic functions using Ladder diagram.

Q5) Attempt any two**[16]**

- a) Compare NC & CNC with conventional system.
- b) What are the basic elements of Robot? Explain them briefly.
- c) With neat diagram explain Numerical Control system.

Q6) Write short note on (Any 3)**[18]**

- a) Sensors & actuators in an EMS.
- b) High speed tilting trains.
- c) Automatic car parking system.
- d) Coin counter.



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B.E. (ETC) (Part - IV) (Semester - VIII)

Examination, May - 2019

VIDEO ENGINEERING

Sub. Code: 67816

Day and Date : Tuesday, 14-05-2019

Total Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Assume suitable data, if necessary.
 - 3) Figure to the right indicates full marks.

Q1) Solve any two.

[16]

- a) Draw and explain vertical sync pulses for odd field of TV transmission.
- b) Explain vertical resolution, horizontal resolution & aspect ratio for television.
- c) With neat diagram explain simple and interlaced scanning in detail.

Q2) Solve any two.

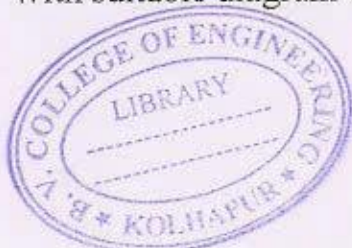
[16]

- a) With the help of suitable sketches explain how frequency interleaving is useful for reverse compatibility in case of color information.
- b) Explain with neat block diagrams SECAM coder & decoder.
- c) Draw and Explain chromaticity diagram.

Q3) Solve any two.

[18]

- a) With suitable diagrams explain any two camera tubes in detail.
- b) Explain digital television receiver system.
- c) With suitable diagram explain the operation of PIL color picture tube.



P.T.O.

Q4) Solve any two.

[16]

- a) What is HDTV system and explain compatibility of HDTV standards.
- b) Explain video conferencing
- c) Define MAC signals and explain duo binary coding.

Q5) Solve any two :

[16]

- a) Explain the concept of stereoscopic effect in 3D TV.
- b) Explain plasma and conduction of charge in plasma TV.
- c) Draw and explain LCD matrix types and operation.

Q6) Write short note on any three.

[18]

- a) IR Remote control
- b) CATV
- c) CCTV
- d) DTH Receiver



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Total No. of Pages : 2

B.E. (E & TC) (Part - IV) (Semester - VII)
(Old) Examination, May -2019
WIRELESS COMMUNICATION
Sub. Code : 47927

Day and Date : Thursday, 9 - 05 - 2019

Total Marks : 100

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Assume suitable data, if necessary.
 - 3) Figures to the right indicate full marks.

SECTION - I

Q1) Attempt any two from three. [16]

- a) What is Umbrella cell approach? Explain in detail.
- b) Explain free space propagation model in detail. Find Fraunhofer distance for an antenna with maximum dimension of 1m & operating frequency of 900 MHz. If antenna have unity gain, calculate path loss.
- c) Explain basic propagation mechanism in mobile radio propagation.

Q2) Attempt any two from three. [16]

- a) Explain in detail two-way ground reflection model.
- b) Explain frequency reuse principle & prove that for a hexagonal geometry, the co-channel reuse ratio is given by $Q = \sqrt{3}N$, where $N = i^2 + ij + j^2$.
- c) Compare 2G & 3G wireless networks.

Q3) Attempt any two from three. [18]

- a) Write a note on Wireless Local Loop.
- b) What do you mean by shape factor for small scale fading wireless channels.
- c) Explain small scale multipath measurements.



P.T.O.

SECTION - II

Q4) Attempt any two.

[16]

- a) Compare FDMA & TDMA.
- b) Explain SDMA in detail.
- c) Explain spread spectrum multiple access.

Q5) Attempt any two.

[16]

- a) Explain ISDN in detail.
- b) Explain traffic routing in wireless networks.
- c) Discuss development of wireless networks.

Q6) Write a note on any three.

[18]

- a) GSM.
- b) Digital European Cordless Telephone.
- c) SS7
- d) Packet Radio.



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B.E. (Electronics & Telecommunication Engineering)
(Semester - VII) (Elective - I) (Revised)
Examination, May - 2019
ROBOTICS
Sub. Code : 67632

Day and Date : Thursday, 09 - 05 - 2019

Total Marks : 100

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Q1) Attempt Any Two of the following.

[2×8=16]

- a) Explain in detail classification of robot by co-ordinate system.
- b) Explain Robot Joint Control Design with neat diagram.
- c) Explain Position sensor in detail.

Q2) Attempt Any Two of the following.

[2×8=16]

- a) Explain Robot Drive System in Detail.
- b) Explain basic control system model with Transfer function and Block Diagram.
- c) Explain Proximity Sensor & Slip sensor in detail.

Q3) Write a note on Any Three of the following.

[3×6=18]

- a) Automation and Robotics.
- b) Actuators used in robotics.
- c) Accelerometer sensor.
- d) Response of system using characteristic equation.



P.T.O.

Q4) Attempt Any Two of the following.

[2×8=16]

- a) Explain Mechanical gripper in detail.
- b) Explain concept of Relocatable Branching with suitable example.
- c) Explain application of robot in material Transfer.

Q5) Attempt Any Two of the following.

[2×8=16]

- a) Explain Application of robot in Machine Loading and Unloading.
- b) Explain significance of WAIT, SIGNAL and DELAY commands using suitable example.
- c) Explain Vacuum, Magnetic and Adhesive Gripper in detail.

Q6) Write a note on Any Three.

[3×6=18]

- a) Consideration in Gripper Selection & design.
- b) Robot End Effector Interface.
- c) Lead Through Programming Method.
- d) Spot Welding.



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B.E. (Electronics and Telecommunication) (Part - IV)
(Semester - VIII) Examination, May - 2019
WIRELESS MOBILE COMMUNICATION (Revised)
Sub. Code: 67817

Day and Date : Thursday, 16-05-2019

Total Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Q1) Attempt any TWO :

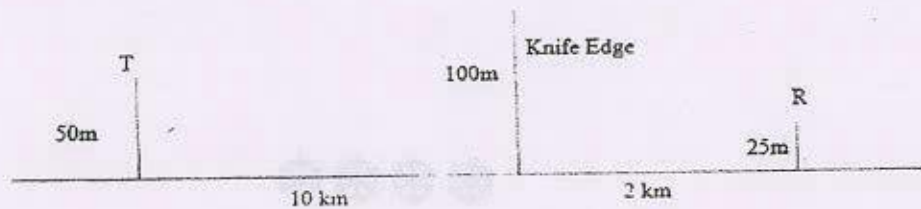
[16]

- a) Explain Basic Propagation Mechanisms in Mobile Radio Propagation.
- b) Explain in detail parameters of mobile multipath channels.
- c) Explain difference between Wireless and Fixed Telephone Networks.

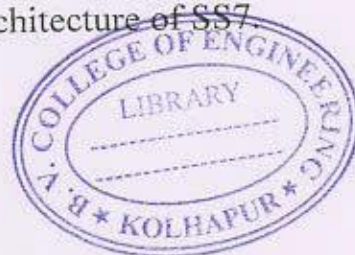
Q2) Attempt any TWO :

[16]

- a) Given the following geometry, determine i) The loss due to knife edge diffraction and ii) The height of the obstacle required to induce 6dB diffraction loss. Assume $f = 900$ MHz.



- b) Explain any one channel sounding technique.
- c) Draw and Explain Protocol Architecture of SS7.



P.T.O.

Q3) Write notes on any three :

[18]

- a) Ricean fading Distribution
- b) ISDN
- c) Any one Outdoor Propagation Model
- d) Global Cellular Network Interoperability

Q4) Attempt any Two :

[16]

- a) Give the details of evolution of public mobile & personal communication.
- b) What are hybrid spread spectrum techniques? Explain.
- c) Explain FHSS & DSSS offered by IEEE802.11.

Q5) Attempt any Two :

[16]

- a) Draw & explain Bluetooth security component & protocol architecture.
- b) Explain agent advertisement & packet format.
- c) Give the details of traditional & indirect TCP.

Q6) Write notes on any three :

[18]

- a) Transmission/time out freezing & Retransmission.
- b) Tunneling & Encapsulation.
- c) Space division multiple access (SDMA).
- d) Bluetooth protocol stacks.



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Total No. of Pages : 2

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B.E. (Electronics & Telecommunication) (Part - IV)
(Semester - VIII) Examination, May - 2019
DIGITAL IMAGE PROCESSING
Sub. Code : 67818

Day and Date : Monday, 20 - 05 - 2019

Total Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Assume suitable data wherever necessary.

SECTION - I

Q1) Solve any two: **[16]**

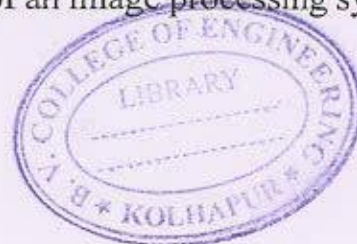
- a) What is meant by histogram of an image? Explain the significance of histogram equalization.
- b) Explain basic relationship between pixels.
- c) Explain linear and non - linear smoothing filters in spatial domain.

Q2) Solve any two: **[16]**

- a) Explain in detail image sensing and acquisition method.
- b) Explain in detail grey level slicing and bit plane slicing.
- c) Explain high pass filters in frequency domain.

Q3) Solve any two: **[18]**

- a) Explain unsharp masking and high boost filtering in spatial as well as frequency domain.
- b) Explain Hadamard and Slant transformation.
- c) Explain basic elements of an image processing system.



P.T.O.

SECTION - II**Q4) Solve any two questions.****[18]**

- a) Explain morphology with respect to image processing. With suitable small images explain Opening and Closing.
- b) Define image segmentation and discuss any two image discontinuities.
- c) What is image compression discuss inter pixel and psycho visual redundancy.

Q5) Solve any two questions.**[16]**

- a) Explain region filling with suitable example.
- b) Explain region segmentation using region growing technique.
- c) Explain lossy predictive coding.

Q6) Solve any two questions.**[16]**

- a) Explain thinning and thickening used in morphological processing.
- b) Explain edge models. Explain how Laplacian is used for edge detection?
- c) Explain RGB and HSV color model.



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Total No. of Pages : 3

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B.E. (E & TC) (Part - IV) (Semester - VII)
Examination, May - 2019
RF & MICROWAVE ENGINEERING
Sub. Code : 67631

Day and Date : Tuesday, 07 - 05 - 2019

Total Marks : 100

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :
- 1) Attempt all questions.
 - 2) Figures to the right indicate full marks.

SECTION - I

Q1) Attempt any two (8 marks each)

- a) Derive field equations for TE mode in rectangular waveguide. Show TE_{10} mode is dominant mode.
- b) Explain power losses in a waveguide
- c) The dimensions of a guide are 2.5×1 cms. The frequency is 8.6 GHz. Find the following:
 - i) Possible modes
 - ii) Outoff frequencies
 - iii) Guide wavelength

Q2) Attempt any two (8 Marks each)

- a) What is Scattering matrix? What are properties of Scattering Matrix?
- b) Explain types and working of directional coupler with S parameters. Mention its application
- c) Explain operation of E plane Tee. Derive scattering matrix for it.



P.T.O.

Q3) Attempt any two (9 Marks Each)

- a) What are different linear beam tubes? Explain Klystron in detail.
- b) Explain types of cross field tubes explain FWCFA in detail
- c) A two cavity klystron amplifier has the following specifications
 - i) Beam voltage : $V_0 = 900V$
 - ii) Beam Current : $I_0 = 30mA$
 - iii) Frequency: $f = 8GHz$
 - iv) Gapspace in either cavity : $L = 4\text{ cm}$
 - v) Effective shunt impedance : $R_{sh} = 49\text{ G}\Omega$

Determine :

- 1) The electron velocity
- 2) The dc transit time of electron
- 3) The input voltage for maximum output voltage
- 4) The voltage gain in decibels

SECTION - II

Q4) Attempt any two (8Marks Each)

- a) Explain Gunn Effect. Also explain Ridley- Watkins — Hilsum (RWH) theory.
- b) Explain with diagram PIN Diode. List any four applications of PIN diode.
- c) With structure of MESFET Explain its working characteristics in the microwave range.

Q5) Attempt any two (8 Marks Each)

- a) Explain with diagram low, medium and high microwave power measurement technique.
- b) Explain free space attenuation measurement technique
- c) Two identical 30dB directional couplers are used to sample the incident and reflected power in a waveguide. VSWR = 2 and the output of the coupler sampling incident power = 4.5mW. What is the value of the reflected power?

Q6) Attempt any two (9 Marks Each)

- a) Explain Microwave Hazards: HERO, HERF and HERP
- b) Explain different MMIC fabrication Techniques
- c) Write short note on Hybrid Integrated Circuit (HIC) fabrication

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