# PURBANCHAL UNIVERSITY

## 2021

Bachelor in Information Technology (B.I.T.)/Fifth Semester/*Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

**BIT307SH: Society & Ethics in IT** *(New Course)*

*Candidates are required to give their answers in their own words as far as practicable.*

*Figure in the margin indicate full marks.*

## Group A

**Answer TWO questions.** **2×12=24**

1. Define sociology and show the relationship of sociology with technology.
2. Define sustainable development and discuss about the various indicators of sustainable.
3. Define cast and ethnicity, and discuss about the caste system of Nepal.

## Group B

**Answer SEVEN questions.** **7×8=56**

4. Define society and point out the need and importance of IT in context of your society.
5. Define social change and discuss about the factors of social change.
6. How does the technology help to uplift the social status & society? Write in context of your society.
7. Highlight the characteristic of least developed country.
8. What is globalization? Give any two example of impact of globalization in Nepalese society.
9. What is plan? Mention the need and importance of plan.
10. Discuss on role of international community in bringing change in developing society.
11. Define profession and discuss about the code of conduct of technician.
12. Write short notes on any TWO: 2×4=8
    (a) Corporate Social Responsibility
    (b) National Integration (c) Technological innovation

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Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

**BIT375CO: Computer Graphics** *(New Course)*

*Candidates are required to give their answers in their own words as far as practicable.*

*Figure in the margin indicate full marks.*

### Group A

**Answer TWO questions.** **2×12=24**

1. Discuss Bresenham's line drawing algorithm for m<1 in detail. Rastertize the line with endpoints (5, 5) and (13, 9) using Bresenham's algorithm for m<1. 6+6
2. What is clipping and why is it needed? Explain in detail about Cohen Sutherland line clipping algorithm. 4+8
3. Differentiate between parallel and perspective projection. Explain Gourand shading surface rendering technique. Also write its advantages and disadvantages. 4+5+3

### Group B

**Answer SEVEN questions.** **7×8=56**

4. Define Computer graphics. What are the various applications of computer graphics? 2+6
5. Explain the difference between Raster and Vector display architecture with its applications and examples.
6. Explain the process of 2D window to viewport transformation.
7. What are translation, scaling and rotation in 2-Dimentional transformations? Explain pivot point rotation in 2D. 4+4
8. Explain Backface detection method and Depth buffer method in detail.
9. Explain Phong shading models.
10. What is the need for machine independent graphical languages? Write about any two graphical file formats. 4+4
11. Write shot on any TWO:
    (a) Touch screen (b) Open GL (c) 3D transformation

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## 2021

Bachelor in Information Technology (B.I.T.)/Fifth Semester/*Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

**BIT377CO: Operating System** *(New Course)*

*Candidates are required to give their answers in their own words as far as practicable.*

*Figure in the margin indicate full marks.*

### Group A

**Answer TWO questions.** **2×12=24**

1. What is inter-process communication? Explain multiprocessing and parallel processing. Discuss Peterson method in detail. 2+4+6

2. Discuss the different performance criteria of process scheduling. Explain first come first serve and round-robin process scheduling method with example. 4+8

3. Why page replacement algorithm is required? Calculate the total page fault for the given reference string using FIFO and LRU with four page frames. Reference string: 2, 3, 5, 2, 1, 3, 4, 7, 5, 6, 2, 1, 3, 2, 5, 7, 6, 3, 2, 1. 2+10

### Group B

**Answer SEVEN questions.** **7×8=56**

4. Distinguish between fixed-size partitioning and variable-size partitioning with examples.

5. Discuss operating system as an extended machine.

6. What is DMA? Explain the mechanism of DMA with illustrations.

7. What is directory? Explain different directory operations in detail.

8. Explain different conditions of deadlock. Discuss Banker's algorithm for single resource with example.

9. What are different methods of deadlock detection and recovery? Explain any one in detail.

10. Explain any two disk scheduling algorithms with suitable examples.

11. Write short notes on any TWO: 4+4

    (a) Terminal (b) File operation

    (c) Soft real time vs hard real time system.

# PURBANCHAL UNIVERSITY

## 2021

Bachelor in Information Technology (B.I.T.)/Fifth Semester/*Final*

Time: 03:00 hrs. Full Marks: 60 /Pass Marks: 24

**BIT372CO: Data Communication** *(New Course)*

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

## Group A

**Answer TWO questions.** **2×12=24**

1. Define Data Communication System with the help of simple communication model. What are the major communication tasks in Data Communication? 6+6

2. What is symbol? Define bit rate and baud rate. Explain synchronous and asynchronous mode of data transfer with their data formats and mention possible errors. 2+2+4+4

3. What is parity check for error detection? Define burst formatting. Explain *Digital Data-Analog Signal* Encoding Techniques with their types along with figures and necessary expressions. 1+2+3+3+3

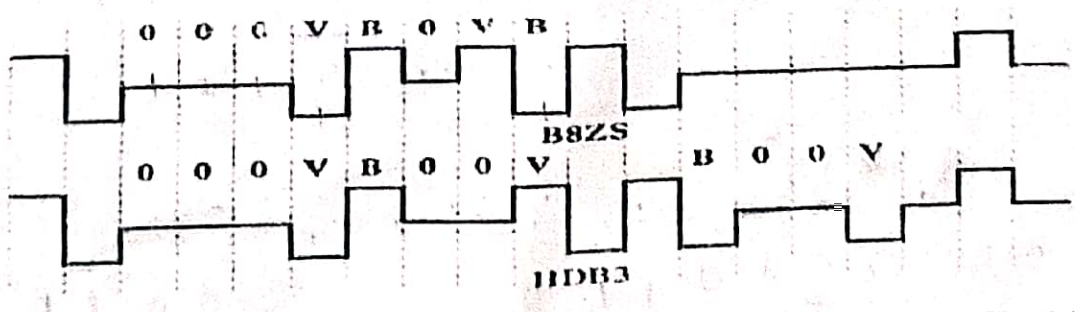
## Group B

**Answer SIX questions.** **6×6=36**

4. Calculate the maximum data rate of the telephone channel if SNR is specified to be 32 dB. If the data is represented by 512 levels, what will be the Nyquist data rate? 4+2

Or

Decode the following B8ZS and HDB3 coding into a Digital Binary form. 3+3




**Contd. ...**

5. What is Multiplexing? Differentiate TDM with FDM: 2+4

6. Define error in data transmission. What are transmission impairments? Discuss. 3+3

7. Define protocol with its elements. Explain OSI reference model. 2+4

8. An ISDN has 64 Kbps channel, 1 frame (1000 bits) with undetected error/day is expected. Calculate the number of frames/day and the probability that a frame is received with an undetected error (P2). 6

Or

Verify CRC or Polynomial method of error detection for a message bit:

11010011101100 with a divisor: 1011. 6

9. What is Flow Control? Explain Stop and Wait ARQ method of Error Control. 2+4

11. Write short notes on any TWO:

(a) Cellular Technology

(b) circuit switching Vs packet switching

(c)Switch Vs Bridge

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## 2021

Bachelor in Information Technology (B.I.T.)/Fifth Semester/*Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

**BIT374CO: Web Technology-II** *(New Course)*

*Candidates are required to give their answers in their own words as far as practicable.*

*Figure in the margin indicate full marks.*

## Group A

**Answer TWO questions.** **2×12=24**

1(a) How web server works? Differentiate between client side scripting and server side scripting. 2+6

(b) What is the difference between static and dynamic Web pages? 4

2. Write PHP code for CRUD operation. Design a web page and write a program in PHP to connect with MYSQL database and describe the parameters used in the functions. 4+8

3. What are XML syntax rule? Explain different templates used in XML with an example. 4+8

## Group B

**Answer SEVEN questions.** **7×8=56**

4. What is an Exception? How do you handle exceptions in PHP?

5. How to Create and Manipulate Strings in PHP?

6. Discuss web services with its components.

7. Is PHP object oriented programming? How to create and add properties to a class?

8. What is Responsive Web Design? Discuss on Responsive Web Design Basics.

9. Why Semantic Web is important? Briefly explain about RDF and OWL.

10. What is AJAX? Explain recursion in PHP with appropriate example.

**Contd. ...**

11. Define testing and debugging. Why validation is important for server side programming?

12. Write short notes on any TWO:
    (a) XML Schema
    (b) Authentication and Authorization
    (c) MVC Framework

# PURBANCHAL UNIVERSITY
## 2021

Bachelor in Information Technology (B.I.T.)/Fifth Semester/*Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

**BIT303SH: Probability & Statistics** *(New Course)*

*Candidates are required to give their answers in their own words as far as practicable.*

*Figure in the margin indicate full marks.*

## Group A

**Answer TWO questions.** **2×12=24**

1(a) Define normal distribution. Discuss the properties of normal distribution. 6

(b) A set of final examination grades in an introductory statistics course was found to be normally distributed with a mean of 73 and a standard deviation of 8. 6

(i) What is the percentage of students scored between 65 and 89?

(ii) What is the probability of getting a grade no higher than 91 on this test?

2(a) A problem in statistics is given to three students A, B and C whose chances of solving it are $\frac{1}{3}, \frac{1}{4}$ *and* $\frac{1}{2}$ respectively. What is the probability that the problem will be solved? 6

(b) What are the properties of binomial distribution? The probability of a bomb heating a target is $\frac{1}{5}$. Two bombs are enough to destroy a bridge. If six bombs are aimed at the bridge, find the probability that the bridge is destroyed. 6

3(a) Find the arithmetic mean, standard deviation and coefficient of variation from the following data. 6

| Marks obtained | 0-5 | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 |
|---|---|---|---|---|---|---|---|---|
| No of students | 2 | 5 | 7 | 13 | 21 | 16 | 8 | 3 |

(b) What do you understand by point estimate and interval estimate? Discuss the properties of a good estimator. 6

## Group B

**Answer SEVEN questions.** **7×8=56**

4. Represent the following data by means of histogram and frequencey polygon.

| Daily wages | 500-700 | 700-900 | 900-1100 | 1100-1300 | 1300-1500 |
|---|---|---|---|---|---|
| No. of Workers | 10 | 18 | 30 | 20 | 15 |

5. What is mathematical expectation? Determine the mathematical expectation and the variance of sum of numbers obtained in throwing of two dice.

6. A traffic office's study on driving speed and mileage for mid size automobiles resulted the following data:

| Driving speed | 30 | 50 | 40 | 55 | 30 | 25 | 60 | 25 | 50 | 55 |
|---|---|---|---|---|---|---|---|---|---|---|
| Mileage | 28 | 25 | 25 | 23 | 30 | 32 | 21 | 35 | 26 | 25 |

7. Five coins are tossed simultaneously. Find the probability of getting (a) no heads (b) at least one head (c) at most 2 heads (d) exactly 4 heads.

8. A sample of 500 bulbs of a company showed an average life 1400 hours with standard deviation of 30 hours. Obtain 95% and 99% confidence limits for population mean.

9. The advertisement expenses and sales of a new product are recorded below:

| Adv. Exr. (Rs' 000) | 1 | 5 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Sales (Rs'00) | 50 | 60 | 80 | 100 | 110 |

(i) Estimate the sales when the advertisement expenses is Rs 15,000.

(ii) Find the correlation coefficient between advertisement expenses and sales.

10. The mean and standard deviation of the marks in statistics obtained by all the 50 students of a certain college was computed as 60 and 10 respectively. Later on it was discovered that the score 76 was wrongly taken as 67. Find the correct mean and standard deviation after correction.

**Contd. ...**

11. What is testing of hypothesis? Write down the procedure of testing z-test for the difference of two means.

12. A random sample of 500 items is taken from a normal distribution whose mean and standard deviation are 4 and 0.8 respectively. Can the sample with mean 5.2 be regarded as truly random sample at 5% level of significance?

Ho

compute correlation coefficient and interpret the result for this data.