PURBANCHAL UNIVERSITY
Time-bound Home Exam 2020

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

Time: 03:00 hrs. (+2 Hrs. for Submission) Full Marks: 80 /Pass Marks: 32

BIT303SH: Probability & Statistics *(New Course)*

Instructions:

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Figure in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. Define binomial distribution. Write down the properties of binomial distribution. If 10 coins are tossed, find the probability of getting (i) at least 7 heads (ii) at most 4 heads.

2. If 50 students are selected at random from 500 students enrolled in a computer crashed programmer were classified according to the age and grade points giving the following data.

Grade points	Age(In Years)		
	20 and under	21 and under	Above 30
Up to 5.0	3	5	2
5.1 to 7.5	8	7	5
7.5 to 10	4	8	8

Test the level of significance of hypothesis that age and grade point are independent.

3. Distinguish between measure of central tendency and dispersion. State which share in more stable in value?

Share A	80	75	79	85	90	92	72
Share B	45	60	81	73	82	86	98

Group B

Answer SEVEN questions. **7×8=56**

4. Equation of two lines of regression are 4x + 3y + 7 = 0 and 3x+4y+8=0. Find the followings:
   (i) Mean of x and y respectively.
   (ii) Regression coefficient b_{xy} and b_{yx}
   (iii) Determine the coefficient of correlation

5. An urn contains 6 red and 4 white balls. If two balls are drawn one after another without replacement. Find the probability of:
   (i) Both white balls (ii) First red ball and second black ball
   (iii) Both black ball (iv) First black ball and second red ball

Contd. ...

6. Fit a Poisson distribution to the following data:

x	0	1	2	3	4	5	6
f	48	17	12	10	6	5	2

7. Calculate Spearman's Rank correlation coefficient from the following data of marks obtained by accountancy and statistics.

x	0	1	2	3	4	5	6
f	48	17	12	10	6	5	2

8. The mean value of 100 workers was found to be 40. Later on it was discovered that a salary 53 was misread as 83. Find the correct mean corresponding to the correct salary. What will be mean salary when the wrong salary is omitted?
9. What is mathematical expectation of a random variable? Determine the mathematical expectation and variance of number on dice.
10. The marks obtained by 100 students are normally distributed around the mean 45 and standard deviation 10. Find number of students having the marks (i) Between 40 and 50 (ii) more than 55 (iii) between 30 to 60.
11. A claim was made that ABC college student have an average IQ of 120. To test this claim, a random sample of 10 students was taken and their 10 score are recorded as follows:

    105, 110, 120, 125, 130, 120, 115, 125, 130, 128.

    At 5% level of significance, check the validity of the claim.
12. Write short notes on any TWO:

    (a) Probability

    (b) Primary and secondary data

    (c) Error in hypothesis

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Time: 03:00 hrs. (+2 Hrs. for Submission) Full Marks: 80 /Pass Marks: 32

BIT377CO: Operating System *(New Course)*

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Group A

Answer TWO questions. **2×12=24**

1. Define deadlock. Explain the four necessary Conditions for Deadlock. Explain how the Principle of Banker's Algorithm can be used to avoid deadlock. 3+9
2. Explain Race Condition in context of inter process communication with example. What is critical region? Briefly discuss the methods of achieving mutual exclusion. 5+2+5
3. Define Disks. Discuss different disk scheduling Algorithms with example. 3+9

Group B

Answer SEVEN questions. **7×8=56**

4. Define Operating system. Explain Operating system as a Resource Manager. 2+6
5. Define Process. Explain Different states of Process with diagram. 2+6
6. What are different Page Replacement Algorithms? Explain any two of them. 4+4
7. What do you mean by memory management technique? Explain management with dynamic partitions in detail. 3+5
8. Discuss file and directories with its operation. 3+5
9. What is distributed system? Explain the advantages of distributed system over personal computer. 3+5
10. What are the importance of clocks in operating system? Explain the types of terminals. 4+4
11. Write short notes on any TWO: 4+4
    (a) Virtual Memory
    (b) History of operating system
    (c) Real time system

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

Time: 03:00 hrs. (+2 Hrs. for Submission) Full Marks: 60 /Pass Marks: 24

BIT372CO: Data Communication *(New Course)*

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Group A

Answer TWO questions. **2×12=24**

1(a) Explain briefly the different layers of OSI model. 6

(b) What do you mean by line of sight transmission? Explain. 6

2(a) What do you mean by signal encoding? If a message signal 1000000001100000010 is to be transmitted, encode it using 6

(i) Bipolar-AMI (ii) B8ZS (iii) HDB3

(b) Explain with diagram the difference between circuit switching and packet switching data transmission methods. 6

3(a) Differentiate between synchronous and asynchronous data transmission. 6

(b) A message signal M(x)= 1110 is to be transmitted from a source device. Calculate the hamming code at the receiving end if the data was transmitted without any error. Use even parity. 6

Group B

Answer SIX questions. **6×6=36**

4. A Message signal M(x)= 11100101010 is to be transmitted using divisor value of 1100. Calculate the CRC at receiving end if the most significant bit was flipped during transmission.
5. Explain with diagram the difference between Go Back-N and Selective Repeat.
6. What do you mean by multiplexing? Explain with diagram FDM and TDM.
7. What do you mean by congestion? Explain the effect of congestion.
8. What do you mean by CDMA? Explain about different IEEE 802.11 standards.
9. What do you mean by IP address? Describe about IPv4 header.
10. What is modulation? Explain the need of modulation
11. Write short notes on any TWO:

(a) VPN (b) ASK (c) Routers and Switch

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Time: 03:00 hrs. (+2 Hrs. for Submission) Full Marks: 80 /Pass Marks: 32

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

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Group A

Answer TWO questions. **2×12=24**

1. Define sociology and show the relationship of sociology with political science and computer science.
2. Discuss the factors of socio-cultural changes and elucidate the consequences of the technological changes.
3. Describe approaches of development and highlight its indicators.

Group B

Answer SEVEN questions. **7×8=56**

4. Discuss 'Migration' as a process of transformation.
5. Explain the historical development of Nepal in brief.
6. Explain the role of innovation and diffusion in socio-cultural changes.
7. Describe different roles of state and the international community in the development of nation.
8. What is the importance of E-Governance in Nepal?
9. Discuss caste, gender and ethnicity in the context of Nepal.
10. Briefly explain the gender issues in Nepal.
11. Define profession and discuss the disciplinary action.
12. State the meaning of 'code of conduct' in information technology

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BIT375CO: Computer Graphics *(New Course)*

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Group A

Answer TWO questions. **2×12=24**

1. Explain mid-point ellipse drawing algorithm in detail.
2. Explain the algorithm to simulate diffuse reflection in detail.
3. Justify the need of projection. Explain different types of projections.

Group B

Answer SEVEN questions. **7×8=56**

4. Explain different applications of graphics in brief.
5. What are raster and vector system? Explain shadow mask method with diagram.
6. Explain pivot point scaling with explain.
7. Explain windows to viewport transformation in detail.
8. What are two dimensional transformations? Discuss rotation and scaling in brief.
9. What is clipping? Explain Cohen-Sutherland line-clipping algorithm in brief.
10. Discuss touch screen and tablet input devices in brief.
11. Explain different graphical languages and file formats.
12. **Write shot on any TWO:** **4+4**
    (a) Animation
    (b) Bezier curve
    (c) Z-buffer

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

Time: 03:00 hrs. (+2 Hrs. for Submission) Full Marks: 80 /Pass Marks: 32

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

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Group A

Answer TWO questions. **2×12=24**

1(a) What do you mean by server-side programming? Explain how web server works? 6

(b) What is regular expression? Explain with example. 6

2. What is XML schema? Write a valid XML document. Explain XSL and XSLT with suitable example. 12

3. Write a PHP function to insert, display, edit and delete the records from student table fields (rollno, name, semester, dob, year, gender, date of birth). Assuming your own database name. The form to insert and update the data are necessary. 12

Group B

Answer SEVEN questions. **7×8=56**

4. Explain different PHP arrays used in PHP with example.

5. What is inheritance? How can you implement inheritance in PHP? Explain with suitable example.

6. What is recursion? Write a PHP program to display the prime numbers between x and y, where x and y are user inputs.

7. Explain about login and authentication in detail.

8. What is difference between procedural and Object-Oriented programming? Explain about the core features of OOP.

9. Explain any four MySQL functions with examples.

10 What is responsive website? What are the advanced server-side issues?

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

(a) AJAX

(b) Resource description framework (RDF)

(c) MVC framework (code igniter)