Code No. D-2065/AICTE

FACULTY OF ENGINEERING

B.E. (EEE/EIE/CSE) IV - Semester (AICTE) (Backlog) Examination,
March / April 2022
Subject: Mathematics - III

Time: 3 Hours **Max marks: 70**

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

PART – A

Note: **Answer all questions**. **(10 x 2 = 20Marks)**

1. If $P(\overline{A}) = 0.7$, $P(B) = 0.7$ and $P(B/A) = 0.5$, then find $P(A/B)$.
2. A continuous random variable X has the pdf $f(x) = \begin{cases} \frac{L}{x^3}, 15 < x < 25 \\ 0 \ else\ where \end{cases}$. Find the constant L.
3. If X follows a binomial distribution such that $4P(X = 4) = P(X = 2)$ and if n=6, find p the probability of success.
4. Define Kurtosis of a distribution.
5. A continuous random variable X is uniformly distributed over (a, b) with mean 1 and variance 3. Find a and b.
6. Find the moment generating function of exponential distribution.
7. Prove that the arithmetic mean of regression coefficients is greater than the correlation coefficient.
8. Define null hypothesis and alternative hypothesis.
9. State the assumptions for applying F-test.
10. Write any two uses of χ^2 test.

PART – B

Note: **Answer any five questions**. **(5 x 10 = 50 Marks)**

11. a) State and prove Baye's theorem.
    b) Suppose 5 men out of 100 and 25 out of 10,000 are colour blind. A person in chosen at random. Assume that males and females are equal in number. Find the probability that the person is male.

12. a) Find the mean, variance and moment generating function of Poisson distribution.
    b) The first three moments of a distribution about the value 3 are 2,10,-30. Find the moments about x=0.

13. a) If the top 15% of the students receives A grade and bottom 10% receives F grade in Mathematics examination, determine the i) minimum mark to get A grade and ii) minimum mark to pass (not to get F grade). Assume that the marks are normally distributed with mean 76 and standard deviation 15.

b) If X is uniformly distributed in $[-2, 2]$, find $i)\ P(X < 1)\ and\ \ ii)\ P(|X - 1| \geq \frac{1}{2})$.

14. a) Find the rank correlation coefficient for the following data:

X :	2	4	5	6	8	11
Y :	18	12	10	8	7	5

b) A simple size of 400 was drawn and the sample mean was found to be 98. Test whether this sample could have come from a normal population with mean 100 and standard deviation 8 at 5% level of significance.

15. Fit a Poisson distribution to the following data and test the goodness of fit at 5% level of significance.

x:	0	1	2	3	4	5	6
f :	275	72	30	7	5	2	1

16. A random variable X has the following probability distribution.

X	-2	-1	0	1	2	3
P (X)	0.1	k	0.2	2k	0.3	k

Find i) the value of k ii) E(X) iii) Var (X) iv) $P(0 \leq X \leq 3)$ and v) the distribution function of X.

17. a) Prove that Poisson distribution is a limiting case of binomial distribution.

b) If θ is the acute angle between the two regression lines, show that $\tan\theta = \left(\frac{1-r^2}{r}\right)\frac{\sigma_x\ \sigma_y}{\sigma_x^{\ 2}+\sigma_y^{\ 2}}$. Explain the significance of the formula when $r = 0$ and $r = \pm 1$.

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Code No.D-2072/AICTE

FACULTY OF ENGINEERING

B.E. (ECE/M/P/AE) IV – Semester (AICTE) (Backlog) Examination,
March / April 2022
Subject: Industrial Psychology

Time: 3 Hours **Max. Marks: 70**

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

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1. Mention the types of organizations.
2. Discuss the concept of Industrial Engineering.
3. Indicate the methods of motivation.
4. What is the difference between fatigue and boredom?
5. Mention the factors responsible for high morale in industry.
6. What are the effects of advertising?
7. What is meant by consumer preference?
8. Explain the significance of efficiency at work.
9. Write short notes on allowances in time and motion study.
10. What are the human factors in job design?

PART – B

Note: Answer any five questions. **(5 x10 = 50 Marks)**

1. (a) Explain briefly the historical development of Industrial Engineering.
   (b) Explain in detail the organization theories.
2. Discuss briefly about the group dynamics in Industry Personal Psychology with its significance.
3. Explain the nature and scope of Engineering Psychology and its application to industry.
4. (a) What do you mean by job satisfaction? Explain in detail.
   (b) Explain the contribution and failure resistance to time and motion studies.
5. Explain briefly the criteria in evaluation of job-related factor and job design.
6. What are the causes of accidents situational and individual factors related to accident reduction?
7. Write short notes on:-
   (a) Organization charts.
   (b) Managing dissatisfaction and frustration.
   (c) Effects of illumination.

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Code No. D-2092/AICTE

FACULTY OF ENGINEERING

B.E. (CME) IV - Semester (AICTE) (Backlog) Examination, March / April 2022

Subject: Operating System Concepts

Time: 3 hours **Max. Marks: 70**

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

PART – A

Note: Answer all questions **(10 x 2 = 20 Marks)**

1 List various Synchronization Mechanisms.
2 Define Internal and External Fragmentation.
3 What is Critical Section?
4 What is demand paging?
5 List the methods used for file access.
6 What is a semaphore? Explain the operations that can be performed on it.
7 What is resource allocation graph?
8 What is the purpose of stable storage?
9 Write a short note on STREAMS.
10 List the design principles of UNUX.

PART – B

Note: Answer any five questions **(5 x 10 = 50 Marks)**

11 What is a process? Discuss the concept of process state with help of a diagram.

12 a) Write briefly about Memory Management Techniques.
b) Write about Virtual Memory, Page Fault, Demand Paging.

13 Discuss the concept of the following access methods.
a) Direct Access b) Sequential Access.

14 Write a short note on any two:
a) Directory implementation
b) RAID.

15 Explain briefly Page replacement algorithm.

16 Discuss the concepts of dining philosophers problem.

17 What are the design principle of LINUX?

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Code No. D-2095/AICTE

FACULTY OF ENGINEERING

B.E. (I.T.) IV - Semester (AICTE) (Backlog) Examination, March / April 2022

Subject: Database Systems

Time: 3 hours **Max. Marks: 70**

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

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1 What are the various levels of data abstraction?
2 Write about 1NF with example.
3 What are the ACID properties of a transaction?
4 Give any two examples of integrity constraints.
5 What is natural join and Theta join?
6 List few database applications.
7 What are the differences between generalization and aggregation?
8 State the two phase locking protocol.
9 Define the terms primary key and foreign key. Give an example of each.
10 What are SQL aggregate operators? Give an example of each.

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11 Draw and explain the architecture of database system. Explain its components.

12 (a) Define ER diagram. What are the various symbols used to draw an ER diagram?
(b) Explain extended ER features. Give example for each.

13 (a) Define timestamp. Explain timestamp ordering protocol.
(b) Explain the types of ordered indices.

14 Discuss about the fundamental and extended relational algebra operations.

15 (a) Write short notes on Nested Queries.
(b) What is NULL? Give an example to illustrate testing for NULL in SQL.

16 (a) Explain 3NF with example and also compare 3NF and BCNF.
(b) Explain the disadvantages of a file processing system.

16 (a) Explain with the help of an example how weak entity sets are represented in an ER diagram.
(b) Draw a B-Tree of order 3 by inserting the following data:
8, 5, 1, 7, 3, 12, 9, 6.

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