

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Simulation and Modeling (CT753)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt **All** questions.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.

1. What is Simulation and Modeling? Explain when simulation is appropriate and not appropriate tool. 7
[2+6]
2. Explain static mathematical model with suitable example. [6] 3
3. What is analog computer; explain with its pros and cons. Explain the analog computer model for liver with necessary figures. [4+6] 9
4. What are the characteristics of queuing system? Discuss any one practical application of queuing system. [5+5] 7
5. What are the key features of Markov chain? Given that chance of a Honda Bike user to buy Honda Bike at next purchase is 70% and that his next purchase will be Yamaha Bike is 30% and change of a Yamaha Bike user to buy Yamaha Bike at next purchase is 80% and change that his next purchase will be Honda Bike is 20%. What is the probability to buy Yamaha Bike after three purchase of a current Honda Bike user? 4
[2+4] -----
6. What are the properties of random number? Explain the steps of Gap test algorithm with example. 6
[4+6]
7. A sequence of 10,000 five digital numbers has been generated and analysis indicates the following combinations and frequencies. [8] 6

Combinations (i)	Observed Frequency (O _i)
All different	3400
One pair	4500
Two pair	1150
Three of a kind	750
Full house	85
Four of a kind	40
Five of a kind	15
Total	10,000

Based on Poker Test Check whether the number are independent. Use $\alpha = 0.05$ and $N = 6$ is 12.592

8. What is calibration and validation of models? Explain with practical example. [5] 3
9. Define initial Bias. Explain the methods for the elimination of initial bias. [5] 3
10. Explain in brief the simulation in JAVA with example. [6] 4
11. Explain the different level of abstraction for the simulation of computer system. [6] 4

Exam.	Regular		
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Subject: - Internet and Intranet (CT754)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What is internet backbone network? Explain the major components/organization of internet ecosystem. [2+8]
2. Define internet RFC. How differently IP datagram fragmentation is carried out in IPv4 and IPv6? Explain each with example. [2+8]
3. What do you mean by SMTP? Explain the types of FTP and its working principle. [2+8]
4. How are XML and JAVA SCRIPTS used together to develop client-side web applications? [2+8]
5. NITC building had 4 research labs each having 24 computers. All labs are located at the 1st floor. Each computer is to be connected in the network from NCR located at 2nd floor. Prepare a bill of quality (BoQ) with necessary network resources required for complete networking. The BoQ must include estimation of all network resources required. [12]
6. Compare intranet and internet in terms of benefits and drawbacks. Discuss in detail about firewall and content filtering. [4+6]
7. What do you mean by IRC and FoIP? Discuss in detail about the building blocks of e-commerce. [4+6]
8. Write short notes on: [4+4]
 - a) AJAX
 - b) Virtual web hosting

Exam.	Regular		
Level	BE	Full Marks	40
Programme	All (Except B. Arch)	Pass Marks	16
Year / Part	IV / II	Time	1 ½ hrs.

Subject: - Engineering Professional Practice (CE752)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt any **Four** questions.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.

1. What is social change? What are the factors causing social change? Describe the role of technology in social change. [8] 6
2. What is profession? Describe the code of ethics for engineers. Explain tort and liability. [8] 6
3. What is contract? Explain tendering process and contract agreement. Describe essential elements of contract. [8] 6
4. "Engineering profession always emphasizes on safety first in engineering delivery" Describe with typical examples. [8] 4
5. Write short notes on: (any four) [4×2] 8
 - a) Impact of computers in society
 - b) Labour and business law
 - c) Professional institutions
 - d) Conflict and dispute management
 - e) Building codes and by laws

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Information System (CT751)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. a) Define Information System. Discuss different information system components? What are different quality requirements that an information system should possess. [5] 4
- b) What are different types of information systems? Explain them in brief. [5] 4
2. What are the different security threats while deploying Information System over extranet of a business firm? What are the technologies for mitigating the security risks in Information Systems? [4+4] 5
3. What are the differences between traditional Information Systems and Enterprise Systems? Explain with examples. [8] 6
4. a) Define and explain DSS systems with suitable diagram. Discuss key characteristics of GDSS systems. [5] 3
- b) What is a Data Warehouse? Why do you require data warehouse along with operational databases? How is it related with data mining? [5] 4
- c) Discuss four different areas of information systems that use data analytics and related techniques. [5] 3
5. Why do you think change management is important during IS implementation? What are different change management tactics that is to be applied during execution of change management? [5] 3
6. Define Collective Intelligence. How does it help refinement of Knowledge Management System (KMS) of an organization? Explain with a suitable example. [2+4] 4
7. a) What is a recommender system? How does it work? Discuss different examples of recommender systems. [5] 3
- b) What do you understand by web mining? Discuss web mining with regard to structure mining. 3
8. What is distributed system? Describe Hadoop systems. How voluminous data are handled? [2+2+4] 4
9. Write short notes on: [5×3] 12
 - a) OLTP and OLAP
 - b) Collaborative filtering
 - c) Data mining and data ware housing

70-101 300
 440

Exam.	Regular	
Level	BE	Full Marks : 80
Programme	BCT	Pass Marks : 32
Year / Part	IV / II	Time : 3 hrs.

Subject: - Enterprise Application Design and Development (Elective III) (CT78504)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. a) Describe the challenges faced in development and implementation of enterprise applications. [5] 4
 b) What is the significance of designing software architecture? What is the difference between multi-tier and layered architecture? [3+2] 4
2. Explain the Builder Pattern with an example. Briefly explain Inversion of Control and Dependency Injection. [6+4] 2+2
3. Describe the functions of Data, Business, Services and Presentation layers. What is the role of ODBC? [5+2] 6
4. a) What is XML and its significance? What are the advantages and disadvantages of a SAX parser? [3+3] 3
 b) What is the role of DTD and XML Schema? Briefly describe how we can use XSLT. [2+2] 2
 c) What is SOAP and what is its role in web services? Describe the SOAP message format. [4+4] 7
5. a) What exactly is Java EE and why is it needed? What is the role of containers in Java EE? Explain with example. [5+5] 8
 b) Briefly explain the architecture of JavaServer Faces (JSF) [5] 4
6. Briefly describe the working of Message Driven Beans. Briefly explain how Object-Relational Mapping (ORM) is implemented in Java Persistence API? [5+5] 2
7. Explain with examples how collective Intelligence is harnessed in Web 2.0. What is AJAX? What is its role in Web 2.0? [5+5] 7

Exam.	Regular		
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Programme	BEX, BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Big Data Technologies (Elective II) (CT76507)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What are the technical challenges and characteristics of a big data? Who are the data scientists, list out their roles and skills. 8
[6+6]
2. With diagram, explain general architecture of Google File System. [10] 8

OR

- a) Why do we have single master in a GFS and millions of chunk servers? [4]
- b) A cluster contains 1500 machines, each having 500GB disc capacity. Calculate approximate the number of the chunk servers, the blocks and the total available size if default chunk replica is 3 and 5 respectively. [6]
3. a) What is a map reduce? Explain the execution overview of the map reduce. [6] 4
- b) Draw the output of mapreduce of the following lines:
 "big users big volume data cloud contributes big data"
 "facebook has big users facebook operates big data" [4] 4
4. a) Explain a CAP theorem. [5] 4
- b) Differentiate between a RDBMS and a NoSQL Databases. [3] 3
5. Explain taxonomy of a NoSQL databases. Explain Cassandra database in brief. [10] 7

OR

Using a MongoDB database,

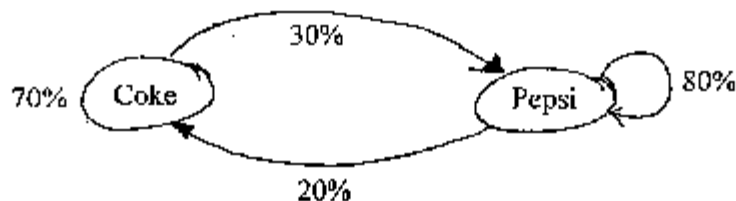
- a) Create a collections named "posts", insert following records: [3]
 title: MongoDB, description: MongoDB is a NoSQL database, by: Tom,
 Comments: We use MongoDB for unstructured data, likes: 100
 - i) Now write a query to search title of the post written by Tom. [3]
 - ii) Write mapReduce function to count number of posts created by various users. [4]
6. What is the Lucene? Describe the typical components involved in the search application. [10] 6
7. Explain various components of Hadoop in brief. [10] 6
8. Write short notes on: (any two) [5×2] 7
 - i) Combiner Functions
 - ii) Fault tolerant systems
 - iii) JSON
 - iv) Unstructured data

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Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
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Subject: - Simulation and Modelling (CT753)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What is simulation and modelling? Explain the steps in simulation study. [2+6]
2. Explain the dynamic physical model with example. [6]
3. What is analog method? Explain with example of automobile suspension problem. [4+6]
4. What is the model of queuing system? What do you mean by the Kendall's notation in queuing systems? What is the meaning of M/D/8/15/LIFO in queuing system? Explain. [5+2.5+2.5]
5. Given figure shows Coke and Pepsi purchaser [6]



- a) If currently Coke purchaser, what is the probability of Pepsi purchaser in 3rd purchase?
- b) If 55% of people use Coke today, what percentage of people will use Coke after 3 purchases?
6. Write an algorithm for gap test. Formulate 4-digit poker test with suitable data with example. [4+6]
7. Define pseudo random numbers. The following numbers have been generated 0.44, 0.19, 0.88, 0.27, 0.55, 0.13, 0.63, 0.74, 0.11 and 0.33. Use the Kolmogorov-Smirnov test with $\alpha = 0.05$ to determine, if the hypothesis that the numbers are uniformly distributed on the interval [0, 1] can be rejected. (Note that the critical value of D for $\alpha = 0.05$ and $N = 10$ is 0.410). [2+6]
8. Explain the iterative process of calibrating a model with example. [5]
9. How can you use estimation methods in an analysis of simulation output? Explain with example. [5]
10. Explain with example of simulation in JAVA with single server queue model. [6]
11. Explain with CPU simulation by sketching a simulation model of computer system. [6]

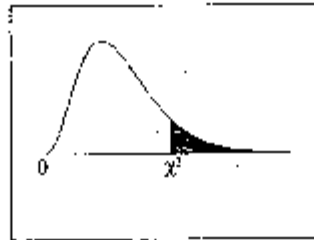
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Subject: - Simulation and Modeling (CT753)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Necessary chart is attached herewith.
- ✓ Scientific calculator is allowed.
- ✓ Assume suitable data if necessary.

1. Define modeling and simulation. Explain steps involved in simulation study. [2+6]
2. What is dynamic mathematical model? Explain with examples. [6]
3. a) Explain significance of differential equation in the context of continuous system simulation. [3]
b) Develop an analog computer model of the liver and explain it. [7]
4. Mention the characteristics of queuing system. Explain the Kendall's notation in queuing systems. What is the meaning of M/D/6/10/FIFO in queuing system? [2.5+5+2.5]
5. Explain Markov Chain with an appropriate example. [6]
6. a) What is a random number? What are the problems associated with generating pseudo random numbers. [8]
b) A set of 10,000 4-digit random values have been generated. An observation shows than 5065 values have all different digits, 2000 have 2 of a kind digits, 760 have 3 of a kind, 1500 have 2 pairs and 675 have all same digits. Test these values for randomness using Poker test (Use $\alpha = 0.05$). [7]
7. Explain Naylor and Finger's steps used in validation in brief. [5]
8. What is initial bias? What is the approach for elimination of initial bias? [5]
9. Explain the at least 5 GPSS block diagram symbols with example. [6]
10. Write short notes on: (any three) [3×3]
 - a) Calibration of a model
 - b) Application of queuing system
 - c) Convolution in random number
 - d) CPU simulation

Chi-Square Distribution Table



The shaded area is equal to α for $\chi^2 = \chi^2_{\alpha}$.

α	$\chi^2_{.995}$	$\chi^2_{.990}$	$\chi^2_{.975}$	$\chi^2_{.950}$	$\chi^2_{.900}$	$\chi^2_{.800}$	$\chi^2_{.700}$	$\chi^2_{.600}$	$\chi^2_{.500}$	$\chi^2_{.400}$	$\chi^2_{.300}$
1	0.000	0.000	0.001	0.004	0.016	2.706	3.841	5.024	6.635	7.879	
2	0.010	0.020	0.051	0.103	0.211	4.605	5.991	7.378	9.210	10.597	
3	0.072	0.115	0.216	0.352	0.584	6.251	7.815	9.348	11.345	12.838	
4	0.207	0.297	0.484	0.711	1.064	7.779	9.488	11.143	13.277	14.860	
5	0.412	0.554	0.831	1.145	1.610	9.236	11.070	12.833	15.088	16.750	
6	0.676	0.872	1.237	1.635	2.204	10.645	12.592	14.449	16.812	18.548	
7	0.989	1.249	1.690	2.167	2.833	12.017	14.067	16.013	18.475	20.278	
8	1.344	1.846	2.180	2.733	3.490	13.362	15.507	17.535	20.090	21.955	
9	1.735	2.088	2.700	3.325	4.168	14.684	16.919	19.023	21.666	23.589	
10	2.156	2.558	3.247	3.940	4.865	15.987	18.307	20.483	23.209	25.188	
11	2.603	3.053	3.816	4.575	5.578	17.275	19.675	21.920	24.726	26.757	
12	3.074	3.571	4.404	5.226	6.301	18.549	21.026	23.337	26.217	28.300	
13	3.565	4.107	5.009	5.892	7.042	19.813	22.362	24.736	27.688	29.819	
14	4.075	4.660	5.620	6.571	7.790	21.064	23.685	26.119	29.141	31.319	
15	4.601	5.229	6.262	7.261	8.547	22.307	24.996	27.488	30.578	32.801	
16	5.142	5.812	6.908	7.962	9.312	23.542	26.296	28.845	32.000	34.267	
17	5.697	6.408	7.551	8.672	10.085	24.769	27.587	30.191	33.409	35.718	
18	6.265	7.015	8.201	9.390	10.865	25.989	28.869	31.526	34.805	37.156	
19	6.844	7.633	8.857	10.117	11.651	27.204	30.144	32.852	36.191	38.582	
20	7.434	8.259	9.501	10.851	12.443	28.412	31.410	34.170	37.566	39.997	
21	8.034	8.897	10.233	11.591	13.240	29.615	32.671	35.479	38.932	41.401	
22	8.643	9.542	10.962	12.338	14.041	30.813	33.924	36.781	40.289	42.796	
23	9.260	10.196	11.689	13.091	14.846	32.007	35.172	38.070	41.638	44.181	
24	9.886	10.856	12.401	13.848	15.659	33.196	36.415	39.364	42.980	45.559	
25	10.520	11.524	13.120	14.611	16.473	34.382	37.652	40.646	44.314	46.928	
26	11.160	12.198	13.841	15.379	17.292	35.563	38.885	41.923	45.642	48.290	
27	11.808	12.879	14.573	16.161	18.114	36.741	40.113	43.195	46.963	49.646	
28	12.461	13.565	15.305	16.928	18.939	37.916	41.337	44.461	48.278	50.993	
29	13.121	14.256	16.047	17.705	19.768	39.087	42.557	45.722	49.588	52.336	
30	13.787	14.953	16.791	18.493	20.599	40.253	43.773	46.979	50.892	53.672	
40	20.707	22.164	24.433	26.009	29.651	61.805	55.758	59.342	63.691	66.760	
50	27.991	29.707	32.357	34.764	37.689	63.167	67.505	71.420	76.154	79.490	
60	35.534	37.485	40.482	43.188	45.156	74.397	79.082	83.298	88.379	91.952	
70	43.275	45.442	48.765	51.739	53.329	85.527	90.531	95.023	100.425	104.215	
80	51.172	53.540	57.153	60.391	61.278	96.578	101.879	106.629	112.320	116.321	
90	59.196	61.754	65.647	69.126	71.201	107.566	113.145	118.136	124.116	128.299	
100	67.328	70.065	74.202	77.929	81.308	118.498	124.342	129.561	135.807	140.169	

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Level	BE	Full Marks	80
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Subject: - Simulation and Modeling (EG778CT)

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- ✓ Attempt All questions.
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- ✓ Assume suitable data if necessary.

1. Explain the static mathematical models and dynamic mathematical models with example. What are the main differences between them? (10)
2. What is queuing system? How it is useful for simulation? Explain the different types of queuing system with example. (2+2+6)
3. Explain Markov chains with example and its applications. (10)
4. Explain the digital analog simulator. Design the analog computer model of the liver and explain it. (4+8)
5. What are the two statistical properties of Random number? Explain the gap test algorithm with example. (2+8)
6. A sequence of 1000 four digit numbers has been generated and analysis indicates the following combinations with frequencies:

Combination (i)	Observed Frequency(O_i)
Four different digits	570
One pair	380
Two pairs	34
Three like digits	15
Four like digits	1
	1000

- Based on poker test check whether the numbers are independent. Use $\alpha=0.10$ and $N=4$ is 7.78 (8)
7. Write different types of simulation output analysis. In the case of infinite population which output analysis method is applicable. Why? Explain. (4+6)
 8. Define the succession of events. Design a telephone system simulation model using GPSS symbols and explain in brief. (2+8)

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- ✓ Necessary table is attached herewith.
- ✓ Assume suitable data if necessary.

1. Define simulation and modeling. Explain dynamic mathematical modeling with an example. [2+6]
2. What is a distributed lag model? Explain with an example. [8]
3. What is Markov chain? Explain an application of Markov chain. [8]
4. What is a random number? Explain linear congruential method for generating random numbers with an example. [4+4]
5. Given below the sequence of 100 random numbers. Use chi-square test with $\alpha = 0.05$ to check the number for uniform distribution and serial auto correlation. [12]

09	05	92	15	10	90	23	15	84	27	20	77	35	25	72	44
30	65	43	35	60	56	40	55	63	45	47	47	42	30	57	70
66	30	91	65	24	99	70	18	8	76	13	14	80	05	72	56
21	85	96	28	90	35	94	85	40	07	78	49	10	72	56	15
63	66	20	60	70	23	58	71	30	43	87	39	49	99	40	36
98	45	30	09	50	24	14	55	18	07	92	87	64	53	22	76
35	42	11	29												

6. Explain a replication of runs in an analysis of simulation output with an example. [8]
7. Explain the significance of elimination of initial bias in modeling with an example. [8]
8. What is a GPSS? List some of the common block diagram symbols used in GPSS. [2-6]
9. Explain a GPSS simulation model of a supermarket. [12]

TABLE A-2: Area in Right tail of a Chi-square Distribution.

Degrees of freedom	.20	.10	.05	.02	.01
1	1.642	2.706	3.841	5.412	6.635
2	3.219	4.605	5.991	7.824	9.210
3	4.642	6.251	7.815	9.837	11.345
4	5.989	7.779	9.488	11.668	13.277
5	7.289	9.236	11.070	13.288	15.087
6	8.558	10.645	12.592	15.033	16.812
7	9.803	12.017	14.067	16.822	18.475
8	11.030	13.362	15.507	18.163	20.090
9	12.242	14.684	16.919	19.679	21.666
10	13.442	15.987	18.307	21.161	23.209
11	14.631	17.275	19.675	22.618	24.725
12	15.812	18.549	21.026	24.054	26.217
13	16.985	19.812	22.362	25.472	27.688
14	18.151	21.064	23.685	26.873	29.141
15	19.311	22.307	24.996	28.259	30.578
16	20.465	23.542	26.296	29.633	32.000
17	21.615	24.769	27.587	30.995	33.409
18	22.760	25.989	28.869	32.346	34.805
19	23.900	27.204	30.144	33.687	36.191
20	25.018	28.412	31.410	35.020	37.566
21	26.171	29.615	32.671	36.343	38.932
22	27.301	30.813	33.924	37.659	40.289
23	28.429	32.007	35.172	38.968	41.638
24	29.553	33.196	36.415	40.270	42.980
25	30.675	34.382	37.652	41.566	44.314
26	31.795	35.563	38.885	42.856	45.642
27	32.912	36.741	40.113	44.140	46.963
28	34.027	37.916	41.337	45.419	48.278
29	35.139	39.087	42.557	46.693	49.588
30	36.250	40.256	43.773	47.962	50.892

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1. What is system modeling? Differentiate between static mathematical model and dynamic mathematical model with example. (3+7)
2. Define Markov Chains. Explain the key features and applications of Markov Chains. (4+6)
3. Explain the analog method with example of automobile suspension problem. (10)
4. What are the components of a queuing system? How can you measure of system performance of queuing system? Explain. (4+6)
5. Explain the gap test and its algorithm with example. (10)
6. Explain the pseudo random numbers and its applications. The following numbers have been generated 0.54, 0.73, 0.98, 0.11, 0.29, 0.23, 0.65, 0.84 and 0.37. Use the Kolmogorov - Smirnov test with $\alpha=0.05$ to determine, if the hypothesis that the numbers are uniformly distributed on the interval [0, 1] can be rejected. (Note that the critical value of D for $\alpha=0.05$ and $N=9$ is 0.432. (4+6)
7. Why an analysis of simulation output is important? Explain the elimination of initial bias with example. (2+8)
8. Design the manufacturing shop model using GPSS and explain it. (10)

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- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. Define simulation. What are the various steps in simulation study? Explain. (2+6)
2. Explain the Markov chains with example and its applications. (8)
3. What are the characteristics of queuing systems? Explain the Kendall notation for queuing systems. Define the meaning of D/M/1/LIFO/8/∞. (4+6+2)
4. Mention the properties of random numbers. Explain the methods of generating pseudo random numbers. (4+8)
5. State the various test for random numbers and explain briefly any one of uniformity test method. (4+6)
6. A sequence of 1000 four-digit numbers has been generated and an analysis indicates the following combinations and frequencies.

Combinations i	Observed Frequency, O_i
Four Different digits	540
One pair	320
Two pairs	70
Three like digit	50
Four like digit	20
	1000

Based on the poker test, test these numbers are independent. Use $\alpha=0.05$. (Note - that the critical value, $\alpha=0.05$ and $N=4$ is 9.49. (8)

7. Explain the estimation method with example. Where we can apply this method? (3+3)
8. Explain the discrete system's modeling and simulation with GPSS. Explain the telephone system in GPSS model. (4+8)

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Simulation and Modeling

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What do you mean by simulation and modeling? Explain the types of models. [4+4]
2. Explain the static physical model, dynamic physical model and compare them. [8]
3. Explain the Markov chains and its application with example. [8]
4. What do you mean by distributed lag models in system simulation? Explain with example. [8]
5. What are the properties of random numbers? Explain the algorithm of Gap Test. [3+5]
6. What do you mean by digital-analog simulators? Explain the analog methods with example. [4+6]
7. Why poker test is used? Develop the poker test for four digit numbers. [4+6]
8. How can you use simulation run statistics in an analysis of simulation output? [8]
9. What do you mean by GPSS? Explain the simulation of telephone system. [4+8]

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Simulation and Modeling

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What do you mean by system modeling? Explain the advantages and disadvantages of simulation. [4+4]
2. Explain the static mathematical model, dynamic mathematical model and compare them. [8]
3. What do you mean by calibration and validation of model? Explain the iterative process of calibrating of model with example. [4+5]
4. Write down the characteristics of queuing system. Explain the queueing notation with example. [4+5]
5. Why random numbers are used in simulation? Explain the random number generation method with example. [3+5]
6. What do you mean by continuous system model? Design the analog computer model of liver with example. [3+5]
7. Why poker test is used? Develop the poker test for five-digit numbers. [4+6]
8. How can you use replication of runs in an analysis of simulation output? Explain. [8]
9. What do you mean by GPSS program? Explain the simulation of manufacturing shop. [4+8]

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Information System

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

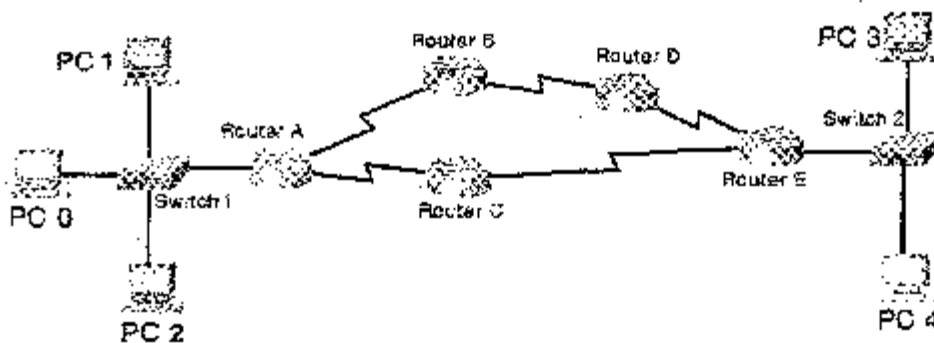
1. Explain expert system and its use in solving business applications. Explain data ware housing, data mining and explain how these tools are used in expert system for business applications. [11]
2. Explain the technical issues involved in geographic information system and its benefits in the business world. List the power of GIS and example of powerful application of GIS. [11]
3. Describe details which need to be addressed for effective communication between human and computer while designing standard user interfaces. [11]
4. Information system implementation is an important managerial responsibility. Describe the activities involved including implementation alternatives. Quote worst case disasters of implementation of large IS system where implementation was not well planned. [11]
5. Describe work group and executive support system. Briefly explain how internet based enterprise and global electronic commerce systems are revolutionizing the operation and management of today's business enterprises. [11]
6. What are the constraints in conceptual design and detailed design of IS system in public sector environment. What do you understand by alternative design in IS system. [11]
7. Short notes on the following (any four): [3.5×4]
 - a) Application Generation Architecture
 - b) Check List Methodology
 - c) Change Control process in maintenance of IS system
 - d) IS for Marketing
 - e) IS for Inventory Control

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Internet/Intranet and Applications (Elective)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. With regards to HTTP protocol, write the difference between persistent and Non Persistent connection. [6]
2. Explain the various types of delays in packet switched Network. [6]
3. Explain the IPV6 datagram format and how the transitions from IPV4 to IPV6 are carried out. Illustrate your answer with appropriate figures. [16]
4. Explain IP Data Fragmentation with appropriate figure and the fragmentation table. [10]
5. With respect to IP, discuss how a datagram is transmitted from PC0 to PC1 and PC0 to PC3 if RIP is enabled in the router. Illustrate your answer with routing tables between source and destination machine (assume the IP address by yourself). [16]



6. Explain the role of Key Distribution Center (KDC) in symmetric key cryptography. Illustrate your answer with appropriate figures and the process involved. [10]
7. Explain malicious program with its taxonomy and different stages of viruses? [8]
8. Write short notes on (any two)
 - a) ATM
 - b) VOIP
 - c) Cookies

[2*4]

Exam. Level	Regular / Back		
	BE	Full Marks	50
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Information Systems (CT751)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. a. Define Information System. What are different quality requirements that an information system should possess? [4]
b. Discuss different classification of information system with regard to different level of management? Provide suitable examples to support your answer. [4]
2. a. Define physical and logical security that can be applied in information systems. What are key threats and vulnerabilities against with any information systems should be protected? What are different controls/measures that can be applied to protect information system against such threats? [2+4+4]
b. How do you define cyber crime and theft of intellectual property rights? Discuss with suitable cases. [4]
3. a. What do you understand by an Enterprise Systems? Discuss the architecture of Enterprise systems. What reason do you think that organizations are motivated to establish enterprise systems? [4]
b. What is the use of CRM systems in enterprise? Discuss key feature and functionality of a CRM system. [4]
4. a. How do you differentiate between MIS and DSS systems with respect to the information they present to users and the way information are processed? [4]
b. What do you mean by a Data Warehouse? Why is it required? Discuss how Data Warehouse is related to Data Mining with a suitable diagram. [4]
c. Discuss four different areas of information systems that use artificial intelligence and related techniques. [4]
5. a. What do you mean by a strategic information system? What are different benefits of using strategic information systems? [5]
b. What do you understand by balanced score card (BSC) approach? Discuss the importance of BSC for managing IS implementations. [5]
6. a. What is a web? How is it organized? Discuss the working method of search engine with respect to the structure of the web? [5]
b. What do you mean by a collaborative filtering? Discuss the concept of collaborative filtering with suitable practical example. [5]
c. What do you understand by a web mining? Discuss web mining with regard to content, usage and structure mining. [4]
7. a. What are different issues that should be taken into consideration while choosing cloud as information system platform? [5]
b. What are different techniques and methods developed to handle voluminous data? Discuss two of such techniques [5]
c. What are the key challenges in handling the voluminous data in the cloud architecture? [4]

Exam:	Regular		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / U	Time	3 hrs.

Subject: - Information Systems (CT751)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. Define Information System. Explain the types of IS used in an organization. [2+6]
2. Explain SSI. Certificates for client server connections over the web. What do you mean by Extended Validation? [6+4]
3. What is an Information Audit? What benefits will you obtain after going through Information Audit? [1+3]
4. What do you understand by Enterprise Systems? Discuss the architecture of Enterprise Systems. For what reason do you think that organizations are motivated to establish enterprise systems? [2+3+3]
5. Describe the role of Analytical Modeling in DSS. What are the differences between Management Information System (MIS) and Executive Support System (ESS)? [5+3]
6. Differentiate between OLTP and OLAP. [4]
7. Why IS planning is needed for an organization. Explain Strategic Information System. [3+2]
8. Why change management is considered as important activity during Information Systems implementation? Discuss different change management practices which should be practiced during implementations. [5]
9. Describe Link Analysis for the web based environment. What is PageRank? What do you mean by cold start problem in Collaborative Filtering? [4+3+3]
10. What do you mean by Collective Intelligence? [4]
11. Discuss cloud computing technology and their types. [8]
12. Differentiate between Mapreduce and Hadoop Systems. [6]

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Information System (EG78ICT)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

- 1) What is an information system? How is it different from Information technology?
Discuss different components of information system? [2+2+2]
- 2) Discuss standard user interface in terms of parts of information system? What are different considerations while designing user interface for an information system. [3+3]
- 3) Feasibility analysis is termed as an important activity during information system selection. Discuss different 'tests' that has to be taken care of during feasibility analysis. Explain the tests using an example situation of information system selection [3+3]
- 4) Why do you think that selection of computer hardware for any kind of information system is an important decision for any organization? Discuss different factors that an organization should consider during hardware selection for information system. [3+3]
- 5) What is meant by conceptual design of Information System? Discuss various steps involved in the conceptual design of a system. [2+4]
- 6) What do you understand by system implementation? Discuss different steps in system implementation along with different approaches in system conversion. [3+3]
- 7) Discuss the characteristics of a Geographic Information System (GIS)? Discuss at least five different uses of (GIS) for scientific/business purpose. [3+3]
- 8) What are different types of information systems? Differentiate the characteristics of a Management Information System (MIS) and Decision support system (DSS). [4+2]
- 9) What do you mean by Data Mining? How is it related to Data Ware house? Discuss the process of generating business knowledge using data mining techniques [2+2+2]
- 10) Discuss how of Internet, Intranet and Extranet technologies are being massively used by the organizations in the 21st century to operate their business and gain competitive edge in terms of managing their customers, employees and partners. Provide suitable example. [6]
- 11) Plan an information system for a marketing company that has one head office and ten branches. Discuss different information system components required for the setup (hardware, system software, communication network, outsources services and any third party software). Provide the detail specification for each of the information system components required for the setup. Also make a top level diagram of the entire setup. [12]
- 12) Write short notes on any Four [2×4]
 - a. System operations and maintenance stage
 - b. Human Resource Information System
 - c. Check List methodology for system design
 - d. Structured design

Exam	Regular / Back
Level	BE
Programme	BCIT
Year / Part	IV / B
	Full Marks 80
	Pass Marks 32
	Time 3 hrs

Subject - Information System

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What are the things to be considered while implementing information system? Explain. [10]
2. Explain multi protocol networks with its special features. [10]
3. Enumerate constraints faced during conceptual and detailed design. [10]
4. Discuss various implementation alternatives and how do you evaluate the implemented system. [10]
5. Differentiate between MIS and Expert system with example. [10]
6. Explain the application generator with suitable diagram. [10]
7. Write short notes on: [5×4]
 - a) Email
 - b) Checklist oriented methodology
 - c) ISP
 - d) Decision support system

Exam.		Regular / back	
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Information System

- ✓ Candidates are required to give their answers in their own words as far as practicable.
 - ✓ Attempt All questions.
 - ✓ All questions carry equal marks.
 - ✓ Assume suitable data if necessary.
1. Where are the various analysis to be carried out while executive feasibility analysis in information system. At what stages these exercises are carried out?
 2. Why geographical information system (GIS) is necessary? Explain different components of GIS. Explain with some case studies.
 3. Describe work group, Executive support system and Decision Support System. Briefly explain how internet based enterprise and global electronic commerce systems are revolutionizing the operation and management of today's business enterprises.
 4. Write short notes on:
 - a) Multi Protocol Networks
 - b) IS for Marketing
 - c) Process Oriented Methodology
 5. Describe internet and intranet. Give examples of several ways in which companies are using the internet and intranet for business applications.

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	BCI	Pass Marks	32
Year / Part	IV / B	Time	3 hrs.

Subject: - Information System

- ✓ Candidates are required to give their answers in their own words as far as practicable.
 - ✓ Attempt All questions.
 - ✓ All questions carry equal marks.
 - ✓ Assume suitable data if necessary.
1. Identify and give examples of several major ways that enterprises are using internet and intranet for business applications? List power of GIS and example of powerful applications of GIS.
 2. What is transaction processing system? What is the difference between management information system and expert system?
 3. Explain expert system and its use in solving business applications. Explain how data warehousing and data mining tools are used in expert system for business applications.
 4. Describe the details, which need to be addressed for effective communication between human and computer while designing standard use interfaces.
 5. Explain multi protocol techniques. What are the features of multi protocol? What are the issues to be focused on communication media for any organization?
 6. Write short notes on: (any four)
 - a) Multi protocol network
 - b) GIS application in business
 - c) IS for marketing
 - d) IS for inventory control
 - e) Process oriented methodology

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Information System

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. Describe intranet. Identify and give examples of several major ways that comprises are using the Internet and Intranet for business applications? [11]
2. Explain groupware tools for electronic communications, conferencing and work group management. Give examples of how they can enhance the collaborations of teams and work group in a business enterprise. [11]
3. Explain Decision Support System (DSS). How it differs from Management Information System? Explain how Data Warehousing and Data Mining tools can be used for DSS applications. [11]
4. Briefly describe all activities to be carried in problem definition and feasibility analysis. Also explain why it is important to carry out such analysis. What should be the background of the experts who carry out such analysis? [11]
5. What is Transaction Process system? What is the basic difference between Management Information System and Expert System? [11]
6. What do you understand by documentation? Why it is an essential part of the system specially from the angle of Software Quality Control process. [11]
7. Write notes on following (any four): [3.5×4]
 - a) Multi Protocol Networks
 - b) GIS Application in Business
 - c) IS for Marketing
 - d) IS for Inventory Control
 - e) Process Oriented Methodology

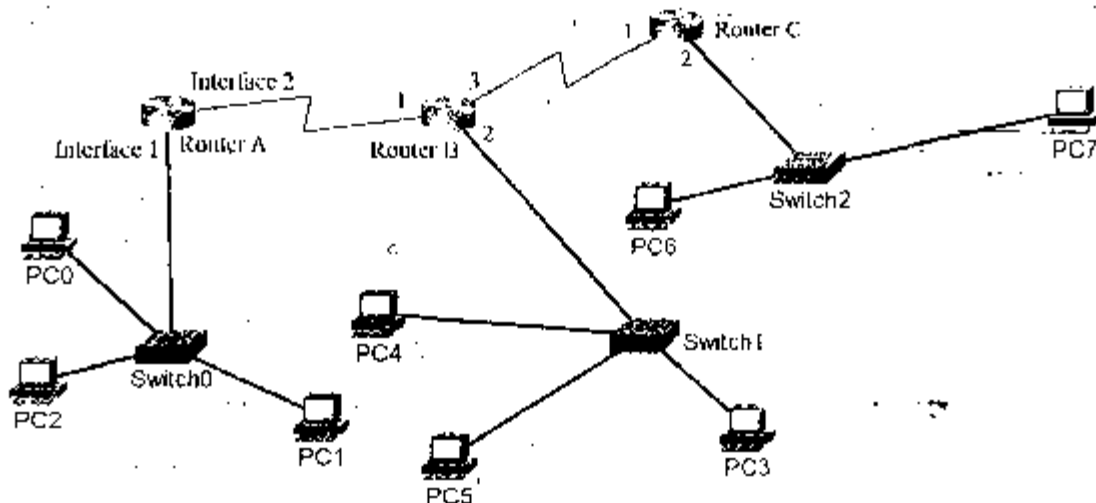
TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
 2064 Jestha

Examination Level	Regular / Back		
	B.E.	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Internet/Intranet and Applications (Elective)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt **All** questions.
- ✓ The figures in the margin indicate **Full Marks**
- ✓ Necessary figures are / is attached herewith.

1. Define and discuss the difference between Message segmentation and Message switching with appropriate figures and analysis. [10]
2. Explain the various types of delay in packet switched Network. [6]
3. Explain the TCP segment structure and discuss how reliable data transfer and flow control is obtained by TCP. Illustrate your answer with appropriate figures. [12]
4. Define Socket and Port. [2]
5. With respect to IP, discuss how a datagram is transmitted from PC0 to PC1, PC0 to PC3 and PC0 to PC7. Illustrate your answer with routing tables between source and destination machine (assume the IP address by yourself). [20]



6. Discuss the need of Domain Name Systems (DNS) in an Internet / Intranet environment. Also explain the service provided by DNS. [12]

7. Explain the desirable properties of secure communication.

[5]

8. How should the Internet Evolve to support Multimedia Better?

[5]

9. Write short notes on (any two)

- a) ATM
- b) Java Script
- c) VOIP
- d) Cookies

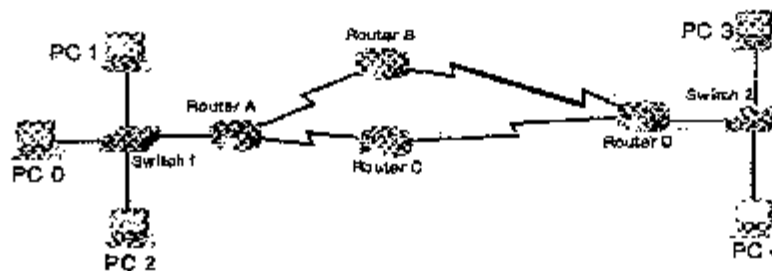
[2*4]

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Internet / Intranet and Applications (*Elective*)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. Discuss in detail how File Transfer protocol (FTP) transfers files from one host to another. [6]
2. Explain ISPs and how they are interconnected. [4]
3. Discuss the generic architecture of router. [6]
4. Explain how Variable Length Subnet Mask (VLSM) technology prevents the loss of IP address. Illustrate your answer with appropriate figures and assume the IP address by yourself. [10]
5. With respect to IP, discuss how a datagram is transmitted from PC0 to PC1 and PC0 to PC3 if RIP is enabled in the router. Illustrate your answer with routing tables between source and destination machine (assume the IP address by yourself). [16]



6. Explain route aggregation in detail and its importance in Internet/Intranet. Illustrate your answer with appropriate figures. [12]
7. Explain the desirable properties of secure communication. [6]
8. Write down the steps involved in RSA encryption algorithm. Encrypt the word ABCDE using RSA algorithm choose the suitable data for encryption by yourself according to RSA algorithm. [12]
9. Write short notes on (any two)
 - a) Tunneling
 - b) VOIP
 - c) Leased Line

[2*4]

03 TRIBHUVAN UNIVERSITY
 INSTITUTE OF ENGINEERING
Examination Control Division
 2071-Bhadra

Exam.	Regular / Back		
	Level	BE	Full Marks
Programme	All (Except B.Arch.)	Pass Marks	16
Year / Part	IV / II	Time	1½ hrs.

Subject: - Engineering Professional Practice (CE752)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. a) ✓ Discuss on the impact of technology into the society. [4]
 b) ✓ Discuss about the engineering practice in Nepal. [4]
2. a) ✓ How does a moral dilemma occur? What are the bases to solve moral dilemma? [4]
 b) ✓ What are the codes of ethics for engineers according to Nepal Engineering Council? [4]
3. ✓ Sub-contractor Mr. A was severely beaten by his labors because he had not paid them for more than seven months. During investigation it was revealed that client did not pay to the contractor and contractor did not pay to the subcontractor. The client didn't pay because consultant did not submit the necessary bill report. The consultant says the work is defective and quality of the work is not as per specifications. While the contractor does not agree because it was not informed on site and blames that the consultant wants covert money. Discuss the case considering contract law, tort, liability and negligence whatsoever applicable. [8]
4. a) Describe briefly the elements of contract? [4]
 b) ✓ Define Tender, what are the essential informations to be given in the Tender Notice? [4]
5. a) ✓ Differentiate Patent right and Trademark right. Write down the characteristics of company business organization. What are the sources of business law in Nepal? [4]
 b) ✓ How the PPP model help in any development activities? What is its significance in a developing country like Nepal? [4]

10/12 D

03 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2071 Magh

Exams.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	40
Programme	All (Except B.Arch.)	Pass Marks	16
Year / Part	IV / II	Time	1½ hrs.

Subject: - Engineering Professional Practice (CE752)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. a) Define society. What are the fundamental social needs to be addressed for the survival of every type of societies? [4]
b) Define moral dilemma. What are fundamental laws of ethics to overcome moral dilemma? [4]
2. a) Define Profession. Illustrate the characteristics of a Profession. [4]
b) What are the detail duties and responsibilities of Nepal Engineering Council (NEC)? How do you differentiate professional ethics with moral behavior? [4]
3. You are working as an Engineer from a Consulting Engineering Firm. You contractor friend Er. Hari is working as a Project Engineer from contractor office in the same project. Mr. Hari invites you for dinner every Friday to celebrate "good Friday" and request you to share the guest house for your accommodation. What would you do in maintaining the code of ethics and friendship relation? [8]
4. a) Define contract document. What are the priorities of contract documents? Explain the rules of contract interpretation. [4]
b) Why should you be aware of Labour Law? What will you do if a construction worker dies by falling from height in your site? [4]
5. Write short notes on: (any two) [4+4]
 - a) Copyrights, Patent and Trademarks
 - b) Public Private Partnership
 - c) Liability and Negligence

03 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2069 Bhadra

Exam.	Regular / Back		
Level	BE	Full Marks	40
Programme	BCE, BEL, BEX, BCT, BME	Pass Marks	16
Year / Part	IV / B	Time	1½ hrs.

Subject: - Engineering Professional Practice (EG766CE)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt any **Four** questions.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.

1. a) What are the differences between community and society? Briefly describe the theories of social change. [2+3]
b) What are the impacts of technology and its changes on society in this 21st century? [5]
2. a) How do you describe engineering profession? Explain the significant features of profession. [2+3]
b) What are Factors affecting the morale of a professional engineer? Describe in brief to justify and satisfy yourself in the context of Nepal, to have and maintain the professional and moral ethics. [2+3]
3. a) Recently Nepal Engineer's Association (NEA) celebrated its golden jubilee years 2069. In this regard, are you satisfied with role played by NEA in enhancing and upgrading engineering profession and welfare of the engineering till date or not? Justify your thoughts. [5]
b) Elaborate the differences between void and voidable contract. Explain briefly about general conditions of contract and its essential contents. [2+3]
4. a) Explain tort. What are the reasons behind introducing tort law in the society? How do you distinguish copyright with patent right? [1+1+3]
b) Differentiate between public limited company and private limited company. [5]
5. Write short notes on: [2.5×4]
 - a) Impact of engineering profession
 - b) Nepal Engineering Council
 - c) Benefits of prequalification
 - d) Trade mark

OR

Recently Samsung Korea was asked to pay compensation of billions of dollar to Apple Inc. by an American court. What do you know about this case? Are you satisfied with the verdict? Express your opinion clearly. [10]

03 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2068 Bhadra

Exam. Level	Regular / Back		
	BE	Full Marks	40
Programme	BCE, BEL, BEX, BCT, BME	Pass Marks	16
Year / Part	IV / II	Time	1 1/2 hrs.

Subject: - Engineering Professional Practice

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt any **Four** questions.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.

1. a) Write five most important rules of conduct for a professional engineer considering code of ethics prevalent in Nepal. [4]
- b) In a telecommunication project, you are the engineer from client's side. The contractor requests you for preparing his final bill of works done, assuring you to pay a handsome amount for your effort, as his engineer recently quit the job. How should you respond? Explain your arguments. [6]
2. a) After being an engineer, what type of business concern should you establish if your team comprising of five engineers wish to be a design/supervision consultant in Nepal and why? Write disadvantages of public limited company. [5]
- b) Number of severe cracks appeared in a building designed by an engineer and also approved by the Municipality within one year of its construction. The house owner approached you for your suggestion about the course of action he should take to get remedy. Explain your suggestion in view of liability and negligence. [5]
3. a) Assume yourself as a recently appointed engineer-in-charge of a newly established brick factory. How do you regulate working hours and overtime hours? What facilities should you provide to the laborers considering the requirements of prevailing labor law on Nepal? [5]
- b) What is negligence? Explain vicarious liability. [5]
4. What is copyright and patent right? Discuss their importance. Explain major features of copyright Act in Nepal. [2+4+4]
5. Write short notes on any two. [2×5]
 - a) Theories of social change
 - b) Role of engineers in social development
 - c) Nepal Engineering Council
 - d) IT specific crimes in the society

Examination Control Division

2067 Mangsir

Exam. Level	Regular / Back		
	BE	Full Marks	40
Programme	BCF, BEI, BEX, BCI, BME	Pass Marks	16
Year / Part	IV / II	Time	1½ hrs.

Subject: - Engineering Professional Practice

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt any **Four** questions.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.

1. a) Define society. Describe how engineers can contribute in the development of the rural society. [1+1]
- b) Differentiate between copy right and patent right. [5]
2. a) Define profession. Describe the characteristics of profession. [1+4]
- b) How do you judge the ethical standard of engineers in Nepal? Describe the role of Nepal Engineering Council in maintaining ethical standard of Nepalese Engineers. [2+3]
3. a) Define contract. Describe any four importance elements of contract. [1+4]
- b) Explain the detailed duties and liabilities of Designers/Professionals. [2+3]
4. During quality control visit in a remote village, it has been found that a building is being constructed on the bank of a river, and it will be damaged due to flood. Approximately 20% of the construction was completed. The survey was done by your friend with the consent of the local people. However, the quality of construction was as per specification. Your job is limited to control the quality of the building only. Discuss the case and recommend your views on whether to continue the construction or not. [10]
5. Write short notes on: (any four) [2.5×4]
 - a) Conflict theory of social change
 - b) Code of conduct
 - c) Objectives of Nepal Engineers Association
 - d) Welfare provisions in labor law
 - e) Characteristics of Private Ltd. Company
 - f) Trademark

03 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2066 Magh

Exams Level	Programme	Regular/Back	
		Full Marks	40
	BEL, BEX, BCT, BTE	Pass Marks	15
Year / Part	IV / II	Time	1½ hrs.

Subject - Engineering Professional Practice

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt any Four questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. Er. Narendra Sah was working with the contractor in a construction project (say construction of housing complex in Kathmandu). He was given the responsibilities to control quality of work in the site. Incidentally, material supplier (Ramchandra) in the construction is a friend of Narendra. Owing to the road blockade and other strikes, Ramchandra was facing difficulty in supplying sand and aggregates as per the given specification. Sand and aggregates materials was available in the close proximity of the site, but it is slightly sub-standard. Ramchandra requested Narendra to allow this material to be used for construction. Ramchandra convinced Narendra that the strength of concrete shall be produced as per specification even with the use of sub standard materials. Ramchandra also offered to share 50% of the cost saved during this process. How do you judge the conduct of Narendra and Ramchandra on an ethical ground? [6+4]
2. a) What do you understand by society, social structure and community? Write down the elements of community. [3+2]
 b) How would you relate technology with social change? Describe briefly the factors causing social change. [2+3]
3. a) Define profession and professionalism. Describe briefly the features of profession. What are the factors affecting morale of profession? Describe briefly the fundamental ethical values for code of ethics. [1+1+1+2]
 b) What do you mean by professional association? Describe briefly the principal objectives of a professional body. State the provision of Engineering Professional Practice in Nepal. [1+2+2]
4. a) Describe intellectual property right? Elaborate what do you understand by the terms patent, design and trade mark. [2+3]
 b) Explain the different provision in the Nepalese legal system related to the practice of Engineering Profession in Nepal. [5]
5. Write short notes on: (any two) [2×5]
 - a) Valid, void and voidable contract
 - b) Occupational health and safety provisions in labor law 2048 BS
 - c) Negligence, liability and tort
 - d) Computer crimes and computer virus

Exam.	Back		
	Level	BE	Full Marks
Programme	All	Pass Marks	16
Year / Part	IV / II	Time	1½ hrs.

Subject: - Engineering Professional Practice

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt any **Four** questions.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.

1. a) Define social change and its theories. Discuss on the various roles to be played by the Engineers in the transformation of Nepalese society towards 'New Nepal'. [1+4]
b) What do you mean by intellectual property right? Differentiate between 'Copyright' and 'Patent right'. [2+3]
2. a) What is profession? Do you agree with the statement 'Engineers are professional'? Give reasons. [1+4]
b) Define ethics. Describe 'Utilitarianism' theory and 'Distributive Justice' theory in making right decision. [1+4]
3. a) What do you mean by professional association? How do you evaluate the role of Nepal Engineers' Association as a professional association of Nepalese Engineers? Discuss. [2+3]
b) Define and discuss on various conditions regarding 'Offer and Acceptance' which is an essential element of contract. Name other essential aspects of contract. [3+2]
4. a) List the information which should customarily appear in an advertisement for tenders. [5]
b) Define 'Employees' and 'Workers' as per labor act in Nepal. Discuss "health and safety" of labors covered by Labor Act. [1+4]
5. You are appointed as a consulting engineer in a project where your best friend is supplying material. The community people knew the fact and asked you to quit the job because you cannot control the quality of the material. How do you cope with this situation? Discuss ethical aspects related to this situation. [10]

03 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

2064 Poush

Exam. Level	Regular/Back		
	BE	Full Marks	40
Programme	BCE, BEL, BEX, BCT, BME	Pass Marks	16
Year / Part	IV / II	Time	1½ hrs.

Subject - Engineering Professional Practice

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt any **Four** questions.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.

1. a) What do you understand by society and community? Illustrate the characteristics of society. Write briefly the theories of origin of society. [5]
- b) What do you understand by Technology and Social change? Write down the factors governing social change? [5]
2. a) Define Contract. Discuss essential elements of contract? [5]
- b) Define Tender, tender notice earnest money and performance bond. Write down the contents of tender notice. [5]
3. a) What do you mean by Professional association? Discuss briefly on the principal objectives of professional body. Introduce Nepal Engineers' Association and Nepal Engineering Council. [5]
- b) What do you mean by moral and ethics? Write down the code of conduct to be follow by Engineers. [5]
4. A trial-bridge (suspension bridge) over the Bheri River at Shubhaghat near Mehaikuna bazaar of Surkhet district collapsed on 25th December, 2007. The collapse of the bridge claimed some 18 people's life and it is speculated that about 70 persons are missing in the Bheri river. The mishap happened while a large crowd of people (some eye witnesses claims 500 to 600 persons) were crossing the bridge to participate in a local fair on the other side of the bank. The bridge is located at about 10km northeast from the Chhinchu bazaar. The span of the bridge was 187 meters and was completed construction in the fiscal year 2063/064 (July 2006 / June 07). This was constructed by DDC-Surkhet, supervised by DTO-Surkhet and the consultant was FACE Consultant Kathmandu. The contractor was the DC Nirman Sewa, Nepalgunj. The fabricator of all the elements of the bridge was Hulas Steel Industries, Simara. Nepal Government has announced to conduct detail investigation of the incident. Initially, it was assumed that the bridge failed due to overload. Prior to the incident, the DIO technician had allegedly instructed the contractor to tighten the nuts of the bulldog grips of the main cables. The Chairperson of the Fair Management Committee has been quoted to say that the contractor has not tightened the nuts as was required. Preliminary investigations by the SBD Engineers seem to indicate that the bridge failed due to faulty building grips. How would you judge the incident on the ground of professional ethics? [10]
5. Write short notes on: [10]
 - a) Health and safety provision of Labor Law 2048 B.S.
 - b) Tort, Negligence, Liability and Vicarious Liability
 - c) Computer Crimes
