Level: BBM (1st Semester)   F.M.: 100

Time: 3 hrs.   P.M.: 50

Course Title: Sociology for Business Management

Date: 2080/12/08

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

Brief Answer questions: (10x2=20)

1.   Give the meaning of sociology.

2.   What do you mean by religion?

3.   Define synthetic thought of school.

4.   Write the notion of modernization.

5.   What is a research problem?

6.   Name four agents of primary socialization.

7.   What is the primary purpose of corporate governance?

8.   Define research ethic with appropriate example.

9.   Give the meaning of social control in one sentence with example.

10.   What is power?

Group B

Short Answer Questions: [6 ×5= 30]

11.   Discuss significant factors contributing to the emergence of sociology.

12.   What are the key functions of family, as outlined in structural functional analysis?

13.   Discuss the gender inequality and women's sub-ordination in Nepali Society.

14.   How does society shape individuals?

15.   Discuss role of applied business anthropology.

16.   Give your views on business acumen with appropriate examples.

17.   Give your views on sociology of labour market.

Group C

Analytical answer questions: [3´10 =30]

18.   Explain the historical context of emergence of sociology.

19.   What is Class? Discuss class inequality in Nepal.

20.   Explain how social inequality arises from social differentiation with appropriate examples.

21.   Discuss family and business with appropriate examples.

22.   Comprehensive answer questions: [4´5 =20]

Social capital has connotation with networks and social relations which serve as social asset to society. Social capital is relative to other forms of capital like human and economic however different in the sense as it is not strictly the property of any individual or entity, since it only exists in interactions between individuals. It is realized through collective goal orientation and shared trust among members.

Social capital is equally important in the context of organizations as it is beneficial to individual as well as firm. Organizational social capital is such resource that reflects characters of social relations within the organization. For competitive advantage and sustainable development of any organization, social capital is considered important. An effective system of management of their social capital is a matter of concern of top managers of managers of many organizations in the recent days.

To assess the existing social capital, to identify factors which might have positive or negative impacts on the promotion of their social capital and to propose an effective approach for its management, A Social Capital Management Research (SCMR) study was carried out in Iron. The study was a combination of quantitative and qualitative case studies constituting a number of organizations of various sizes. It included fifteen large organization and sixteen small and medium scale (SMS) organizations. A 24-item questionnaire was administrated among a stratified random sample of 528 workers; 336 for large and 192 SMS organizations. Semi structured interview are also conducted among selected managers. The study revealed that the organizations, the existing social capital in the organizations are not so desirable. More emphasis have been led in technology based issues rather than social. Comparatively, the larger organizations are not benefitting from the social capital. The study team recommended several managerial and organizational measures like developing trust and informal relations, involvement of employees in decision making, providing organizational support and so forth to improve social capital.

Questions:
a)   What do you know about the social capital? Explain social dynamics of social capital with reference to your knowledge of sociology of organization.
b)   What are the functions of social capital in an organization? What could be reason behind considering effective system of management of social capital as a matter of concerns of top managers?
c)   How do you evaluate Social Capital Management Research (SCMR) study?
d)   Write some managerial and organizational measures (other than listed in the case) for improving organizational social capital.

ALL THE BEST

United College

Level: BBM (1st Semester)   F.M.: 100

Time: 3 hrs.   P.M.: 50

Course Title: Microeconomics for Business   Date: 2080/12/09

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

Brief Answer questions: (10x2=20)

Q.1 Point out limitations of Microeconomics.

Q.2 What is Linear demand function ?

Q.3 Define Movement along the supply curve .

Q.4 Define Market Equilibrium.

Q.5 What is **transitivity and consistency in choice** in ordinal utility Analysis ?

Q.6 What is **MARGINAL RATE OF SUBSTITUTION(MRS)** ?

Q.7 Define Long Run Production function.

Q.8 What is Advertisement Elasticity of Demand?

Q.9 Define Consumer's Equilibrium.

Q.10 If Price elasticity of demand **(Ep) = 2.5** .and **AR=** Rs.**300**,Calculate Marginal Revenue**(MR)**

Group B

Short answer questions

Attempt any SIX (6) questions: (6*5=30)

Q.11 Explain the Uses of Microeconomics in Business Decision Making.

Q.12 How do you measure Price elasticity of Demand by using an **Arc Method**? Illustrate

Q.13 Define Price Effect. How do you derive demand curve for **Normal Goods** by using **IC** approach?

Q.14 Ordinal Utility approach is superior than Cardinal utility approach. Why? Explain.

Q.15 Define **Iso-cost Line**. How do you derive it? Explain.

Q.16 Let us suppose, a consumer has a limited income, which he spends on goods X and goods Y. The market price of goods X and Y is Rs.**30** and RS.**40** respectively. When a consumer draws his budget line, it terminates x-axis at **50** units. Find income and slope of the Consumer's budget line.

Q.17 Consider the Following data:

Units of labour(L)	1	2	3	4	5	6	7	8
Total output(TP)	40	100	180	240	280	300	310	300

a) Compute **AP** and **MP**.

b) Graph **TP, AP** and **MP** and Explain their relationship in reference to Law of variable Proportions.

c)Using schedule, Explain the relationship between TP **a**nd **MP**.

Group C

Long Answer questions

Attempt any THREE (3) questions: **(3*10=30)**

Q.18 What is **Indifference Curve(IC)?** Explain its properties in details.

Q.19 Let, a consumer has Rs.**6000** to spend per month on goods X and Y with market price of goods X and Y RS.**200** and RS.**100** respectively.

    a) Derive the consumer's budget line.

    b) Assume that he splits his entire Income equally on two goods X and Show where the consumer ends up on the budget Line.

    c) Suppose that, price of X goods falls from Rs.**200** to **100**.Derive the new budget line.

    d)   When he spends RS. **3,600** on X –goods and RS. **2,400** on Y-goods after fall in price of goods X, show where the consumer ends up on the New budget constraint.

    e) Derive Price Demand curve. Also explain the nature of goods X and Y.

Q.20 Explain the concept of Least cost combination of two inputs by using **Iso-quan**t and **ISo-cost** line.

Q.21 Consider the following schedule.

Points	A	B	C	D	E	F
Units of Labour (L)	1	3	4	5	6	7
Units of capital(K)	17	-	-	-	-	-
MRTS of L for K	-	-	-	-	-	-

It is also given that per unit price of labour (PL) is RS.**50** and price of capital (Pk) is RS.**20**. The total amount available spent on labour and capital with a firm is RS.**2,000**.

a) Complete the above **Iso-Quant** schedule and also draw an **ISO-Quant**.

b) Find the total cost of each factor combinations.

c) Draw an **Iso-cost line also from the given information.**

GROUP D

Comprehensive answer questions: -   **(1*20=20)**

Q. 22 State and Illustrate the **'LAW OF RETURNS TO SCALE'** with detailed reasons of each Returns to Scale.

ALL THE BEST

Level: BBM (1ˢᵗ Semester)　　　　　　　F.M.: 100

Time: 3 hrs.　　　　　　　　　　　　　P.M.: 50

Course Title: **Fundamental of Management (SET A)**

Date: 2080/12/05

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

*Brief Answer Questions 10*2=20*

1. Management works efficiency and effectively. Explain.
2. Define term theory Y in Management.
3. Explain the main concept of Friedman Doctrine of Social Responsibility.
4. What are the differences between single and standing use planning?
5. What are the key characteristics that distinguish a team from a group?
6. What is feedback and feed-forward control?
7. How does effective communication contribute to the success of teams in achieving their goals?
8. Differentiate between tall and flat structure of the organization.
9. What does Interaction view of conflict say?
10. Define team cohesion and explain its importance in team performance.

Group B

*Short Answer Questions: Attempt any Six questions 6*5=30*

11. Compare and contrast the functions of management: planning, organizing, decision making and controlling. Provide real-world examples for each function.
12. Describe the elements of organizational culture, including artifacts, values, and assumptions. How do these elements interact to create a unique cultural identity for an organization?
13. Discuss what are the barriers to communication in an organization? How do they affect organizational efficiency?
14. Define planning in the context of management and discuss its importance for organizational success.
15. Describe the characteristics of effective teams and what are the key factors that contribute to high-performing teams?
16. Discuss the key ideas of contingency theory in Management. How does contingency theory suggest that management practices should be adapted to fit specific situation factors?
17. Describe the network organizational structure and when it might be appropriate for an organization.

Group C

*Long Answer Questions: Attempt any Three question 3*1=30*

18. Define the controlling function of management and its relationship with other managerial functions such as planning, organizing, and leading.
19. Describe the rational decision-making process and discuss its limitations in real-world scenarios.
20. Discuss the emerging issues in organization design and architecture adopted by Nepalese organization.
21. Discuss the role of ethics and social responsibility in management. How can managers ensure that their organizations operate ethically and responsibly? Provide examples.

Group D

Comprehensive Question/Case Analysis/Situation Analysis Question
(4*5=20)

ABC Pvt. Ltd. was established 12 years back in Kathmandu with an initial investment capital of Rs. 16 million to produce footwear in Nepal. ABC used to import all the raw materials and few from China. Main designers are from India. ABC expanded its business steadily over the years and covered almost all the cities of Nepal and also in India. Its annual turnover was around Rs. 2.7 million last year which was 20% more than the previous year

Mr. Shrestha conducts the executive functions of the company as the General Manager but the company has no departmental managers. All these areas are under the supervision of Mr. Thapa, salaried employee as manager, monthly salary Rs. 30 thousand. He is responsible for overall activities of the company. However, he maintains own filing, secretarial, mailing, and production functions. A junior level part time staff is in charge for finance and accounting activities of the company. All the decisions regarding purchasing, receiving, storing, account payable, factory payroll, cost accounting, and dispatching are control by Mr. Thapa. There are five office assistants who take care of sales, advertising, credit and accounts receivable but they have no fixed responsibilities.

The General Manager of the company has recently been overwhelmed by the difficulty of obtaining various information and customer care efforts. Whenever information is needed, several different sources must be contacted, and much time is wasted locating the information. The General Manager is also beginning to notice idle equipment in the office and delays in the preparation of important operating reports. Customers have regularly complaining about delay in delivery, wrong delivery of the product they order, and frequent problems in account payments. He also noticed that the employee turnover is increasing. The General Manager recently had a meeting with the all the employees of the company. Many employees expressed their dissatisfaction with Mr. Thapa as he does not consult with them and they have no direct reporting system. Mr. Thapa claims that there are many issues with individual employee of gossiping and intimidating.

Questions:

1. What major problem areas can you identify in this case? What can be the probable causes for conflict between Mr. Thapa and other employees? Explain
2. Trace the decision-making process in ABC. What problems do you diagnose in decision making process? Mention
3. Make a SWOT analysis of the business related in the above case.
4. Sketch new organizational structure to restructure the organization for solving existing problem.

ALL THE BEST

Level: BBM (1st Semester)   F.M.: 100

Time: 3 hrs.   P.M.: 50

Course Title: Fundamental of Management (SET B)

Date: 2080/12/05

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

*Brief Answer Questions 10*2=20*

1. Explain Workplace Spirituality.
2. Define the term "Theory X" in management.
3. Define two roots of unethical behavior.
4. Discuss the challenges for managing virtual teams.
5. Define responsibility?
6. What is concurrent control.
7. What are the different structure designs under horizontal differentiation of organizational architecture?
8. What are differences between formal and informal communication.
9. What are the ethical issues in management?
10. Define the contribution given by bureaucratic management theory.

Group B

*Short Answer Questions: Attempt any Six questions 6*5=30*

11. Describe the reasons for cultural change within an organization and provide strategies for overcoming these challenges.
12. Compare and contrast single use planning with standard use planning. How do these two types of planning complement each other to ensure organizational success?
13. Explain the stages of group formation How does group progress through these stages, and what role do leaders play in facilitating the process?
14. What are the common methods of departmentalization, and how do they impact the way work is organized and coordinated within an organization?
15. Explain McGregor's Theory X and Theory Y. How does this theory differ in its assumptions about employee motivation and behavior?
16. Explain in detail the preventive control mechanism towards achieving a unified global of managers.
17. Explain the matrix organizational structure and its suitability for complex projects.

Group C

*Long Answer Questions: Attempt any Three question 3*1=30*

18. Explain the concept of contingency planning and its role in risk management. How do organizations develop contingency plans to prepare for unexpected events or disruptions? Provide examples of contingency plans for various scenarios.
19. Describe the systems theory approach to management. How does this approach view organizations as interconnected systems and what are the implications for managerial decision making?
20. Define organizing. Explain whether the terms organizing and organization structure differ. Explain the meaning and scope of authority, responsibility, and accountability.
21. Explain the concept of nonverbal communication and its significance in interpersonal interactions within organizations.

Group D

Comprehensive Question/Case Analysis/Situation Analysis Question
(4*5=20)

ABC Pvt. Ltd. was established 12 years back in Kathmandu with an initial investment capital of Rs. 16 million to produce footwear in Nepal. ABC used to import all the raw materials and few from China. Main designers are from India. ABC expanded its business steadily over the years and covered almost all the cities of Nepal and also in India. Its annual turnover was around Rs. 2.7 million last year which was 20% more than the previous year

Mr. Shrestha conducts the executive functions of the company as the General Manager but the company has no departmental managers. All these areas are under the supervision of Mr. Thapa, salaried employee as manager, monthly salary Rs. 30 thousand. He is responsible for overall activities of the company. However, he maintains own filing, secretarial, mailing, and production functions. A junior level part time staff is in charge for finance and accounting activities of the company. All the decisions regarding purchasing, receiving, storing, account payable, factory payroll, cost accounting, and dispatching are control by Mr. Thapa. There are five office assistants who take care of sales, advertising, credit and accounts receivable but they have no fixed responsibilities.

The General Manager of the company has recently been overwhelmed by the difficulty of obtaining various information and customer care efforts. Whenever information is needed, several different sources must be contacted, and much time is wasted locating the information. The General Manager is also beginning to notice idle equipment in the office and delays in the preparation of important operating reports. Customers have regularly complaining about delay in delivery, wrong delivery of the product they order, and frequent problems in account payments. He also noticed that the employee turnover is increasing. The General Manager recently had a meeting with the all the employees of the company. Many employees expressed their dissatisfaction with Mr. Thapa as he does not consult with them and they have no direct reporting system. Mr. Thapa claims that there are many issues with individual employee of gossiping and intimidating.

Questions:

1. What major problem areas can you identify in this case? What can be the probable causes for conflict between Mr. Thapa and other employees? Explain
2. Trace the decision-making process in ABC. What problems do you diagnose in decision making process? Mention
3. Make a SWOT analysis of the business related in the above case.
4. Sketch new organizational structure to restructure the organization for solving existing problem.

ALL THE BEST

Level: BBM (1st Semester)　　　　　　　　F.M.: 100

Time: 3 hrs.　　　　　　　　　　　　　　P.M.: 50

Course Title: English　　　　　　　　**Date: 2080/12/04**

Candidates are required to give the answer in their own words as far as practicable.
The figures in the margin indicate full marks.

Group A

Brief Answer questions:　　　　　　　　**(10x2=20)**

a. What do "here" and "there" refer to? (Here I Love You)
b. Why shouldn't the addressee squat down to play marbles? (Girl)
c. Where is the baby's picture? Is the baby a boy or a girl? (Popular Mechanics)
d. "In what sense is the speaker like the fly, or the fly like the speaker? (The Fly)
e. What does Dilliard look at closely and then describe for us to see? (Jest and Earnest)
f. What special abilities do the following superheroes have? Spiderman, the incredible hulk, magneto, superman
g. Discuss the difference between healthy obsession and unhealthy obsession.
h. Complete the sentences using the following sentences with a suitable verb or adverb to match the meaning of the words in brackets. The first letter of the work is given.
　i. One of the main motivations in many people's lives is to **e**…………….. a living (make money).
　ii. If you read the programme, you will find a paragraph at the beginning which **s**………………… the scene (gives the background) brilliantly.

i. Use an appropriate Preposition and gerund to complete the sentences in the following;
　i. Staff are blaming one of the pupils ……
　ii. An effective way of discouraging children …….
j. Write adjectives ending in *-able* to match the following definitions:
　i. for_ _ _ _ _ _ _ _ (something you are unlikely to remember)
　ii. pre_ _ _ _ _ _ _ _ (something you are sure will happen)
　iii. agr_ _ _ _ _ _ (something pleasant)
　iv. tol_ _ _ _ _ _ (something you can present)

Group B
Short Answer Questions (Any Six) (6×5=30)

a. In "The Hundred Dove" by Jane Yolen, analyze the significance of the doves in the narrative. How do they serve as symbols and what themes do they represent? Provide specific examples from the text to support your analysis.?
b. Match the following words a-e with their meanings 1-5.

a. You don't have to/need to	1. It's forbidden to do it.
b. You shouldn't	2. The rules say so.
c. Everyone has to	3. It isn't necessary to do it.
d. You ought to	4. It's advisable to do it.
e. You mustn't	5. It isn't advisable to do it.

c. Lunatics exist at the personal, social, and cosmic levels. Do you agree? Why?
d. In Bhupi Sherchan's poem "The Clock Tower," explores the metaphorical significance of the clock tower in representing societal constructs and human aspirations. How does Sherchan employ imagery and symbolism to convey the poem's thematic message? Provide examples from the text to support your analysis.
e. In Susan Sontag's essay "Beauty," examine the author's exploration of the concept of beauty and its cultural significance. How does Sontag challenge conventional notions of beauty, and what arguments does she present regarding its subjective nature? Provide specific examples from the text to support your analysis.
f. Use the following link words to complete this text about the popularity of soap operas.

although,	after,	on the other hand,	despite,	while,	so
that,		as well as			

i. Despite………... the fact that soaps come in for a lot of criticism. They remain one of the most popular forms of entertainment.
ii. as well as……………being money spinners for their producers.
iii. …………On the Other hand………………, this does not necessarily mean that they are of a consistently high quality.
iv. ……After…………………….. being left on tenterhooks at the end of each episode, fans have no option but to tune in again next time ………so that………… they can learn the character's fate.

g. Divide a-l into two groups of crimes connected with:
  i. violence.
  ii. obtaining money, goods or other advantages.

  a. robbery   g. forgery
  b. murder   h. smuggling
  c. bribery   i. assault
  d. manslaughter   j. blackmail
  e. fraud   k. mugging
  f. burglary   l. theft

Group C
Long Answer Questions (Any Three) (3×10=30)

a. Discuss how Sherchan uses vivid language and comparisons to show that poetry has a strong influence on everyone and connects us all. Also, describe how poetry affects people's feelings, thoughts, and relationships.

b. How does Plato use the imagery of the cave, the prisoners, and the outside world to illustrate his philosophical ideas? Discuss the significance of the journey from ignorance to enlightenment portrayed in the allegory, and analyze its relevance to understanding the nature of truth and the human condition. Support your response with examples and explanations from the text.

c. Point out the obstacles women have to overcome for professional independence. (Professions for Women by Virginia Woolf

d. Explore the role of imagination and introspection in confronting the idea of non-existence as portrayed in the poem. Support your analysis with specific examples and interpretations from the text.

Group D Case Studies (6+8+6=20)
Read the following case and answer the question asked below:

Mr Raj Ranjit was scrolling through his Instagram feed one afternoon when he came across an eye-catching advertisement. The ad, adorned with vibrant colors and bold text, proclaimed a sensational 50% discount on all types of Guitar. His excitement soared as he envisioned himself and his band clad in stylish guitar at a fraction of the usual cost. Eager to take advantage of the enticing offer, he promptly made plans to visit Guitar Shop Nepal with his band. With high hopes and anticipation, he embarked on his journey to the store, imagining the array of stunning guitars that awaited him.

Fueled by excitement, they embarked on a shopping spree, swiftly gathering an assortment of items for himself and his band. With each item he selected, he envisioned the joy of playing them during the loud concerts. Immersed in the thrill of the sale, he scarcely glanced at price tags, confident in the unbeatable deals promised by the advertisement. After meticulously curating a collection of guitars for her entire band, he made his way to the counter, his arms laden with his cherished finds. With a sense of satisfaction, he eagerly awaited the final tally, eager to revel in the substantial savings afforded by the advertised discount.

However, Mr Ranjit's elation quickly turned to disappointment when the salesperson informed him that the advertised discount had not been applied to his purchase. Shocked and perplexed, Mr. Raj struggled to comprehend the discrepancy between the enticing offer he had seen on Instagram and the reality before him. Despite his attempts to rectify the situation, Mr Raj's request for the advertised discount was met with resistance, leaving him feeling disheartened and disillusioned. As he left the store, his once buoyant spirits dampened by the disappointment of unfulfilled expectations, Mr Ranjit couldn't help but feel a sense of betrayal at the disparity between the enticing advertisement and her actual shopping experience.

Questions:
i. How do colorful and exciting advertisements like the one Mr. Raj saw on Instagram affect people's choices when they're shopping? Explain how bold words and big discounts can make someone feel really excited to buy something. (6 marks)
ii. Why do you think Mr. Raj felt disappointed when he went to the Guitar Shop Nepal? What do you think could have caused the problem between what was advertised and what he experienced in the store? (8 marks)
iii. How do you think Mr. Raj's bad experience at the Guitar Shop Nepal might affect his feelings about the store in the future? What do you think the store could do to make things better and make customers like Mr. Raj trust them again?

<u>ALL THE BEST</u>

Level: BBM (1st Semester)   F.M.: 100

Time: 3 hrs.   P.M.: 50

Course Title: Business Mathematics (SET A)   Date: 2080/12/07

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

Brief Answer Questions: **(10×2=20)**

1. Find the equation of the straight line passing through the points (6,9) and (3,-1).

2. Determine whether the following system of linear equations have a unique solution or many solution or no solution.

    $3x + 2y = 6$ and $6x + 4y = 12$

3. Form a quadratic equation whose roots are (3, -3)

4. Solve: $2^{9-x}.8^x = 2^x$

5. Given the national income model

    $Y = E$, $E = C+I$, $C = 300 + 0.3Y$, $I_0 = 60$

    Determine the equilibrium level of income.

6. Find $\frac{dy}{dx}$ of y= e^{7x}

7. The population of a country is changing according to the population p = $5e^{-0.001t}$

    Calculate the number of population at the end of 10 years.

8. Solve: $3log_2 x - log_2 x = 2$

9. Find the compound interest of Rs.1000 at 5% interest of 2 years.

10. Find the sum of 10 terms of the series 5+10+20+…..

Group B

Short Answer Questions: **(6×5 = 30)**

Attempt any 6 questions:

11. In how many years a photocopy machine costing Rs.90,000 be reduced to its half at the rate of 6% depreciation each year.

12. The Bird flu is spread in one of the chicken farm in Nuwakot according to the following equation.

    $N = \frac{500}{1+490e^{-0.2t}}$, where N is the number of infected chickens, t is in days. Calculate the number of chickens infected after 10 days.

13. Find the amount of annuity of Rs.560 a year for 12 years at 4% p.a.

14. A person borrows Rs.59048 and pays it back in 10 installments, each installment being treble of the preceding one. Find the first and last installment.

15. Sketch the graph of y = $x^2 - 2x - 8$. Find vertex, intercepts, domain and range.

16. If 300 units of mobiles are sold when price is Rs. 8000 and 500 units of mobiles are sold when price is Rs. 6000. Determine the demand equation in the form p=f(q). What would be the price of demand of 600 mobiles?

17. Solve the following systems of linear equations:

    $2x - y + z = -2$
    $x + y - 2z = -9$

$$x + 2y + z = 9$$

Return after 1 year (Rs)	15700	14700	18500	20800

Group C

Long Answer Questions: **(3×10 = 30)**

Attempt any 3 questions:

18. The demand and supply function are given by

$$p_d = 54 - 0.3Q$$
$$p_s = 6 + 0.3Q$$

   a) Calculate the equilibrium price and quantity. Plot the demand and supply function.
   b) Calculate the consumer's surplus.
   c) Calculate the producer's surplus.
   d) Calculate the total surplus.

19. The supply and demand functions for a commodity are $P_S = 2Q + 20$

   and $P_d = -3Q + 90$ respectively. The government imposes a tax of

   Rs.t per unit of commodity. Find the value of t that maximizes the

   government tax revenue on the assumption that equilibrium conditions

   prevail in the market. For this level of tax, find

   a) the equilibrium price and quantity
   b) the total tax raised

20. Find the NPV and IRR for the four projects in the table given below.

   Decide whether they are viable or not if the market interest is 7% and

   then rank them according to their profitability.

	Project A	Project B	Project C	Project D
Outlay now (Rs.)	15000	14000	18000	20000

21. Given the national income model is:

$$Y = E, E = C + I_0 + G, C = 60 + 0.7 Y_d$$

Where $Y_d = Y - T$, $I_0 = 90$, $G = 140$, $T = 0.4Y$ (i.e. t = 0.4), find the value of

   a) The equilibrium level of national income algebraically and graphically.
   b) The equilibrium level of consumption and graph the consumption function; expenditure function.

Group D

Comprehensive Answer Questions: **(1×12 = 12)**

22. The total cost of production of x units of a product is

$$c(x) = x^3 - 16x^2 - 15$$

   a) Find the number of units for which the average cost is minimum.
   b) Find the number of units for which the marginal cost is minimum.
   c) Verify the number of units of production for average cost equals to the marginal cost.
   d) Also determine the interval at which c(x) is concave upward and concave downward.

<u>ALL THE BEST</u>

United College
Kumaripati, Lalitpur
PRE - UNIVERSITY EXAM – 2080

Level: BBM (1ˢᵗ Semester)　　　　　　　　　F.M.: 100

Time: 3 hrs.　　　　　　　　　　　　　　　P.M.: 50

Course Title: Business Mathematics (SET B)　　**Date: 2080/12/07**

Candidates are required to give the answer in their own words as far as practicable.
The figures in the margin indicate full marks.

Group A

Brief Answer Questions:　　　　　　　　**(10×2=20)**

1. Find the equation of the straight line passing through the points (3,6) and (4, -2).

2. Determine whether the following system of linear equations have a unique solution or many solution or no solution.

    $6x + 10y = 12$ and $6x + 4y = 24$

3. Form a quadratic equation whose roots are (5, -5)

4. Solve: $3^{9-x} . 27^x = 3^x$

5. Given the national income model

   $Y = E$, $E = C+I$, $C = 200 + 0.2Y$, $I_0 = 40$
   Determine the equilibrium level of income.

6. Find $\frac{dy}{dx}$ of $y = e^{-7x}$

7. The population of a country is changing according to the population $p = 10e^{-0.01t}$

    Calculate the number of population at the end of 5 years.

8. Solve: $5log_3 x - log_3 x = 4$

9. Find the compound interest of Rs.5000 at 10% interest of 5 years.

10. Find the sum of 10 terms of the series 2+4+6+…..

Group B

Short Answer Questions:　　　　　　　　**(6×5 = 30)**

Attempt any 6 questions:

11. In how many years a machine costing Rs. 60,000 be reduced to its half at the rate of 10% depreciation each year.

12. The Bird flu is spread in one of the chicken farm in Ramechhap according to the following equation.

    $N = \frac{1000}{1+980e^{-0.4t}}$, where N is the number of infected chickens, t is in days.

    Calculate the number of chickens infected after 20 days.

13. Find the amount of annuity of Rs.1120 a year for 24 years at 8% p.a.

14. A person borrows Rs.59048 and pays it back in 20 installments, each installment being double of the preceding one. Find the first and last installment.

15. Sketch the graph of $y = -x^2 - 3$. Find vertex, intercepts, domain and range.

16. If 150 units of mobiles are sold when price is Rs. 4000 and 250 units of mobiles are sold when price is Rs. 3000. Determine the demand

equation in the form p=f(q). What would be the price of demand of 300 mobiles?

17. Solve the following systems of linear equations:

$$13x + 6y + z = 52$$
$$5x + 7y + 9z = 38$$
$$10x + 20y + 30z = 100$$

Group-C

Long Answer Questions: **(3×10 = 30)**

Attempt any 3 questions:

18. The demand and supply function are given by

$$p_d = 60 - 0.6Q$$
$$p_s = 10 + 0.4Q$$

a) Calculate the equilibrium price and quantity. Plot the demand and supply function.
b) Calculate the consumer's surplus.
c) Calculate the producer's surplus.
d) Calculate the total surplus.

19. The supply and demand functions for a commodity are $P_S = Q + 10$ and $P_d = -5Q + 94$ respectively. The government imposes a tax of Rs.t per unit of commodity. Find the value of t that maximizes the government tax revenue on the assumption that equilibrium conditions prevail in the market. For this level of tax, find

a) the equilibrium price and quantity
b) the total tax raised

20. Find the NPV and IRR for the four projects in the table given below. Decide whether they are viable or not if the market interest is 7% and then rank them according to their profitability.

	Project A	Project B	Project C	Project D
Outlay now (Rs.)	20000	15000	25000	10000
Return after 1 year (Rs)	20700	15700	25500	10800

21. Given the national income model is:

$Y = E$, $E = C + I_0 + G$, $C = 0.75Y_d$

Where $Y_d = Y - T$,$I_0 = 600$, $G = 900$, $T = 0.2Y$ (i.e. $t = 0.2$), find the value of

a) the equilibrium level of national income algebraically and graphically.
b) the equilibrium level of consumption and graph the consumption function; expenditure function.

Group-D

Comprehensive Answer Questions: **(1×12 = 12)**

22. The total cost of production of x units of a product is

$c(x) = 100 + 5x + 4x^2$ and the demand function $P = 100\text{-}x$.

a) Find the number of units for which the revenue is minimum.
b) Find the maximum revenue.
c) Find the value of x at which profit is maximum.
d) Find the maximum profit.
e) Also determine the interval at which profit function is increasing or decreasing.

ALL   THE   BEST