



**University of Engineering & Management, Kolkata**

**1<sup>st</sup> Term Examination, December 2020**

**Course: B.Tech(All)**

**Semester: 1<sup>st</sup>**

**Paper Name: Essential Studies for Professionals - I**

**Paper Code: HSMC102**

**Full Marks: 70**

**Time: 2 hours**

---

**Answer all the questions. Each question is of 7 marks.**

**1.A.**

- i) The ratio of Sita's, Riya's and Kunal's monthly income is 84 : 76 : 89. If Riya's annual income is Rs. 4,56,000, what is the sum of Sita's and Kunal's annual incomes? (In some cases monthly income is used while in other annual income is used.) **2**
- ii) A man lost 20% by selling an article for Rs. 6800. What is the gain or loss percent, if he sells it for Rs.8160? **2**
- iii) A man purchased pulses from two shops A and B and mixes them together. The shopkeeper at A sells the pulses at cost price but by adulteration makes a profit of 20%. While shopkeeper at shop B sells without any adulteration. When the man reaches home and cleans the pulses using water he observes that  $11\frac{1}{9}\%$  of it gets separated as impurity. How much quantity of pulses the man bought from shop B if he bought 300gms from shop A? **3**

**OR**

**B.**

- i) At what price should a shopkeeper mark a fan that cost him Rs.1200 in order that he may offer a discount of 20% on the marked price and still have a profit of 25%? **2**
- ii) Two numbers A and B are such that the sum of 5% of A and 4% of B is two-third of the sum of 6% of A and 8% of B. Find the ratio of A : B. **2**
- iii) In the income statement of Asha and Ravenna, the ratio of their income in the year 2017 was 5 : 4. The ratio of Asha's income in the year 2018 to that in 2017 is 3 : 5 and the ratio of Ravenna's income in the year 2018 to that in 2017 is 3 : 2. If Rs. 10242 is the sum of the income of Asha and Ravenna in the year 2018, then find the income of Ravenna in the year 2017? **3**

**2. A.**

- i) Zinc and copper are in the ratio 5 : 3 in 400 gm of an alloy. How much of copper (in grams) should be added to make the ratio 5 :4? 2
- ii) If  $A : B = 2 : 3$ ,  $B : C = 5 : 7$  and  $C : D = 3 : 10$ , then what is  $A : D$  equal to? 2
- iii) Akhil purchases a new phone online. The phone is available for Rs. 15000 which is Rs. 1000 less than the Cost price of the phone; he uses a debit card by which he gets 10% instant discount on the purchase. He had an old phone of present market value Rs. 1600, which he puts for exchange and gets rebate of Rs. 1200 on the new phone. He pays by UPI and after transaction gets a scratch card which gets credited directly to his bank account. If in the whole transaction he makes a profit of 13.6%, how much money he got in scratch card? 3

**OR**

**B.**

- i) Anmol had 10 paise, 25 paise and 50 paise coins in the ratio of 10 : 8 : 9 respectively. After giving Rs. 20 his mother he has Rs. 40. How many 50 paise coins did he have? 2
- ii) shopkeeper bought two cycles Rs.2400 each. He sells one at 10% profit and another at  $x\%$  loss in the whole transaction there is no profit or loss, and then find the value of ' $x$ '? 2
- iii) A father distributed some chocolates among his four children and kept some with him. The eldest three children got chocolates in the ratio 3 : 11 : 7. The total number of chocolates with father and youngest child is three times the total chocolates with the three eldest children. The ratio of chocolates with father and that with all the children is 3 : 4. Find the total number of chocolates if the youngest child has 81 chocolates with him? 3

**3.A.**

- i) Vinoth sells an article at 10% profit. He bought it on 20% less price and sells Rs.50 more he gains 100% profit, and then find the cost price of an article 2
- ii) The ratio of Nicotine to Heroine in four types of drugs of equal quantity is 2 : 3, 3 : 7, 4: 11 and 11 :9 respectively. The four drugs are mixed together. What is the ratio of Nicotine to Heroine after mixing? 2
- iii) Sumit hired a travelling car for a tour. If the car is rented for 8 hours or less the charge is Rs. 100 per hour or Rs. 8 per km whichever is more. On the other hand, if the car is rented for more than 8 hours, the charge is Rs. 80 per hour or Rs. 6 per km whichever is more. Sumit used the car for 120 km and paid Rs. 800. For how many hours did he took the car for rent? 3

**OR**

**B.**

- i) Out of three positive numbers, the ratio of the first and the second numbers is 3 : 4 that of the second and the third numbers is 5 : 6 if the product of the second and the third numbers is 4320. What is the sum of three numbers? 2
- ii) The percentage profit earned by selling an article for Rs. 1920 is equal to the percentage loss incurred by selling the same article for Rs. 1280. At what price should the article be sold to make 25% profit? 2
- iii) In class X of a school there are two sections A and B with strength ratio 2 : 1. The ratio of boys and girls in section A is 3 : 1 and that in section B is 3 : 5. Students of both the sections are made to stand in the ground in rows of boys and girls, with each row having equal number of students. If the maximum number of students possible in a row is 96 what is the difference between the number of boys in section A and B? 3

**4.A.Direction: Study the information given below carefully and answer the question that follow (i-iii):**

Reena drives 10 km to the north, turns left and drives 4 km, and then turned right and cover another 5 km, and then again turned right and travels another 4 km.

- i) How far is she from her starting point? 2
- ii) In which direction would she be now? 2
- iii) If in certain code, CONVALENT is written as BWFDUOFM and FORM is written as PGNS. How is SILVER be written in that language? 3

**OR**

**B. Direction: Study the following information and answer the given questions.**

- J is sister of T. T is married to D. D is father of R.
- M is son of H. T is mother-in-law of H
- D has only one son and no daughter.
- J is married to B. L is daughter of B.

- i) How is L related to T? 3
- ii) In a certain language, CLOUD is written as GTRKF. How is SIGHT written in that language? 2
- iii) What will come in place of question mark (?) in the following no. series? 2  
480, 480, 960, 320, 1280, \_\_\_\_\_?

**5.A.Study the following information and answer the question given.**

In a certain code language 'we try go make' is written as '76 62 56 27', make is for good' is written as '52 75 62 26'. 'we are good boys' is written as '52 65 67 27' and 'boys try is for' is written as '75 56 26 67'.

- i) In the same code language how 'go try' can be written? 2
- ii) How 'for' may be written in the above code language? 2
- iii) How 'boys make' can be written in the same code language? 3

**OR**

**B.**

- i) If the letters of the word "CHANDNI" is arranged alphabetically from right to left. How many letters will remain at the same position? 2

- ii) If the letters of the word “SHIKHA” is arranged alphabetically from right to left. How many letters will remain at the same position? **2**
- iii) a) If the letters of the word “SAURABH” is arranged alphabetically from right to left. How many letters will remain at the same position? **1**
- b). In a certain code language, '3a, 2b, 7c' means 'truth is eternal'; '7c, 9a, 8b, 3a' means 'enmity is not eternal' and '9a, 4d, 2b, 6b' means 'truth does not perish'. Which of the following means 'enmity' in that language? **2**
- 6. A. Study the following table and answer the questions based on it.**

**Expenditures of a Company (in Lakh Rupees) per Annum Over the given Years.**

Year	Item of Expenditure				
	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

- i)
- a)What is the average amount of interest per year which the company had to pay during this period? **1**
- b)The total amount of bonus paid by the company during the given period is approximately what percent of the total amount of salary paid during this period? **1**
- ii)
- a)Total expenditure on all these items in 1999 was approximately what percent of the total expenditure in 2002? **1**
- b) The total expenditure of the company over these items during the year 2001 is? **1**
- iii)
- a)The ratio between the total expenditure on Taxes for all the years and the total expenditure on Fuel and Transport for all the years respectively is approximately? **1**
- b)What is the average amount of salary per year which the company had to pay during this period? **1**
- c)What is the difference in bonus paid by the company in the year 1999 to that of 2001? **1**

**OR**

**B . Study the following table and answer the questions based on it.**

**Expenditures of a Company (in Lakh Rupees) per Annum Over the given Years.**

Year	Item of Expenditure				
	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

**i)**

- a)**What is the average amount of taxes per year which the company had to pay during this period? **1**
- b)**The total amount of taxes paid by the company during the given period is approximately what percent of the total amount of salary paid during this period? **1**

**ii)**

- a)**Total expenditure on all these items in 1998 was approximately what percent of the total expenditure in 2002? **1**
- b)**The total expenditure of the company over these items during the year 2000 is? **1**

**iii)**

- a)**The difference between the maximum and minimum Salary paid by the company is? **1**
- b)**What is the average amount of salary per year which the company had to pay during this period? **1**
- c)**In which year was the highest expense in terms of salary? **1**

**7. A. i) Direction: Study the following question carefully & Explain the correct answer .**

- a)**Deepak said to Nitin,” That boy playing football is the younger of the two brothers of the daughter of my father’s wife.” How is the boy playing football related to Deepak? **2**

**ii)Direction: Study the following question carefully &explain the correct answer with diagram.**

Rohit walked 25 metres towards South. Then he turned to his left and walked 20 metres. He then turned to his left and walked 25 metres. He again turned to his right and walked 15 metres. At what distance is he from the starting point and in which direction? **1+1**

**iii) Study the information given below carefully and answer the question(with diagram) that follow:**

a) Reena drives 10 km to the north, turns left and drives 4 km, and then turned right and cover another 5 km, and then again turned right and travels another 4 km. How far is she from her starting point? 1

b) A cat is chasing a mouse. The cat moves towards north for 25m, takes a right turn and move 100m, turns towards the south and moves 25m further. Finally, it turns left and moves 55m. What is the distance between the initial and the final position of the cat? 2

**OR**

**B. Directions(i to iii) : Study the information given below carefully and answer the questions that follow:**

Raman started from point 'P' and walked 2 km towards north. He turned towards right and walked 2 km and then turned left and walked 2 km. He turned to right and walked further 2 km.

i). How far will he be from his original point, if he walked 4 km towards right? 2

ii) Which direction is he facing now? 2

iii)

a) Y is to the East of X, which is to the North of Z. If P is to the South of Z, then P is in which direction with respect to Y? 1

b) Village Q is situated to the north of village P. Village R is situated to the east of village Q. Village S is to the west of village P. What is the position of village S with respect to village R? 1

c) R is to the West of P. T is to the East of S. P is to the North of S. T is in which direction with reference to R? 1

**8. A. Find out the errors in the following questions and justify your explanation in one or two lines ...If a sentence has no grammatical or contextual error , you may answer it as “ no error”.**

i) Prof. Kulkarni, who is on the staff of our college since 1990, is not only an excellent teacher but also a great humanitarian 2

ii) We build the roof with a steep slope so that the rain water could slide off easily 2

iii) My brother had just come from abroad and he seems to have enjoyed his trip very much. 3

**OR**

**B. Find out the errors in the following questions and justify your explanation in one or two lines ...If a sentence has no grammatical or contextual error ,you may answer it as “ no error”.**

i) If I had realized what a bad teacher you are, I would not have come to you for any guidance. 2

ii) He put his hand into his pocket and was astonished when he found that his wallet is not there. 2

iii) I am sorry to disappoint you but I cannot let you have any more money till the end of his month. 3

**9.A. Find out the errors in the following questions and justify your explanation in one or two lines ...If a sentence has no grammatical or contextual error , you may answer it as “ no error”.**

- i) As I reached the hospital, I had found a great rush of visitors whose relatives had been admitted there for one or the other ailment. 2
- ii) One should study the history of his country because it alone can satisfy one's natural curiosity to know what happened in the past. 2
- iii) It is interesting to note that the greatest lines in poetry are simple and yet there is with them some quality which makes them outstandingly great. 3

**OR**

**B. Fill in the following sentences using the appropriate words out of the given list of words and justify in one line behind selection of these words as your answer:**  
(hotspot , booking , parlance, agonized, curbed , minted, evolved, created ,damaged , response)

- i) Known for its pizza, tiramisu and prosecco, Italy is gaining popularity as a destination wedding ..... 2
- ii) Weddings may be made in heaven, but they sure are planned, ..... over and staged on earth. 2
- iii) Over the years, as governance models have ....., so have perceptions about a board's accountability towards good governance. 3

**10.A.Find out the errors in the following questions and justify your explanation in one or two lines ...If a sentence has no grammatical or contextual error , you may answer it as “ no error”.**

- i)In order to make human life happy, man should live as for as possible in perfect harmony with nature. 2
- ii)You have heard Of Socrates, I suppose; undoubtedly he was one of the greatest man of the world. 2
- iii) I have no patience to people who indulge in silly talk and uncivilized behavior. 3

**OR**

**B. Fill in the following sentences using the appropriate words out of the given list of words and justify in one line behind selection of these words as your answer:**  
(hampered, disguise, fortunate ,imperial, cater , avoid )

- i)We are ..... to be in a historic moment when the manufacturing sector is about to go through a transformation wrought by disruptive technologies — we have to find a way of making it work in India's favor rather than against it. 3
- ii)Airlines in India are asking the government to help them obtain unsecured credit from oil companies and airports, as increase in fuel prices push them deeper into losses and ..... their survival. 4

\*\*\*\*\*