University of Engineering & Management, Kolkata

2nd Term Examination, January 2021

Course: B.Tech(All)   Semester: 1st

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) A man has Rs.480 in the denominations of one-rupee notes, five-rupee notes and ten-rupee notes. The number of notes of each denomination is equal. What is the total number of notes that he has ?   **3**
ii) If a - b = 3 and a2 + b2 = 29, find the value of ab**.**   **2**
iii) 126+392÷7 – 35+ (14)2 = ?   **2**

OR

B. i) X% of (19154 - 15644)= $(9)^2 + (6)^2$ then find the value of X?   **3**
ii) √(1686 – 317) + √(3441 – 525) =?   **2**
iii) 7878÷26×13 – 333 = ?   **2**

2. A. i) $\frac{5}{13}$ of 1456 of $\frac{2}{7}$ of $\frac{136}{17}$ = ?   **5**

  ii) $4\frac{5}{7} \times 4\frac{2}{3} + ? = 35\%$ of 158   **2**

OR

B. i) The ratio of the number of boys and girls in a college is 7 : 8. If the percentage increase in the number of boys and girls be 20% and 10% respectively, what will be the new ratio?   **5**

  ii) The sum of three numbers is 98. If the ratio of the first to second is 2 :3 and that of the second to the third is 5 : 8, then the second number is:?   **2**

3. A.i) Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. Find the marks obtained by them?   **3**

  ii) A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had:?   **2**

  iii) The salaries A, B, C are in the ratio 2 : 3 : 5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be new ratio of their salaries?   **2**

OR

B. i) Two number are in the ratio 3 : 5. If 9 is subtracted from each, the new numbers are in the ratio 12 : 23. The smaller number is:?   **3**
  ii) In a bag, there are coins of 25 p, 10 p and 5 p in the ratio of 1 : 2 : 3. If there is Rs. 30 in all, how many 5 p coins are there?   **2**

iii) In a certain school, 20% of students are below 8 years of age is $\frac{2}{3}$ of the number of students above 8 years of age is of the number of students of 8 years of age which is 48. What is the total number of students in the school? **2**

4.A.i) On selling 17 balls at Rs. 720, there is a loss equal to the cost price of 5 balls. Find the cost price of the ball? **3**

ii) When a plot is sold for Rs. 18,700, the owner loses 15%. At what price must that plot be sold in order to gain 15%? **2**

iii) 100 oranges are bought at the rate of Rs. 350 and sold at the rate of Rs. 48 per dozen. Find the percentage of profit or loss ? **2**

OR

B. i) In an election between two candidates, one got 55% of the total valid votes, 20% of the votes were invalid. If the total number of votes was 7500, the number of valid votes that the other candidate got, was:? **3**

ii) Three candidates contested an election and received 1136, 7636 and 11628 votes respectively. What percentage of the total votes did the winning candidate get? **2**

iii) Two tailors X and Y are paid a total of Rs. 550 per week by their employer. If X is paid 120 percent of the sum paid to Y, how much is Y paid per week? **2**

5.A. i) A trader mixes 26 kg of rice at Rs. 20 per kg with 30 kg of rice of other variety at Rs. 36 per kg and sells the mixture at Rs. 30 per kg. His profit percent is:? **5**

ii) Two numbers are in the ratio 3 : 4. If the sum of numbers is 63, find the numbers.? **2**

OR

B. i) Mother divided the money among Ron, Sam and Maria in the ratio 2 : 3 : 5. If Maria got Rs 150, find the total amount and the money received by Ron and Sam **5**

ii) The first, second and third terms of the proportion are 42, 36, 35. Find the fourth term.? **2**

6.A.i) If SYMBOL is written as NZTMPC is a certain code. How is NUMBER written in that code? **3**

ii) One morning Udai and Vishal were talking to each other face to face at a crossing. If Vishal's shadow was exactly to the left of Udai, which direction was Udai facing? **2**

iii) If South-East becomes North, North-East becomes West and so on. What will West become? **2**

OR

B. i) Rahul put his timepiece on the table in such a way that at 6 P.M. hour hand points to North. In which direction the minute hand will point at 9.15 P.M. ? **3**

ii) In a certain code, COMPUTER is written as PMOCRETU, how is DECIPHER written in that code? **2**

iii) In a certain code, NEWYORK is written as 111, how is NEWJERSEY written in that code? **2**

7.A.i) Rasik walked 20 m towards north. Then he turned right and walks 30 m. Then he turns right and walks 35 m. Then he turns left and walks 15 m. Finally he turns left and walks 15 m. In which direction and how many metres is he from the starting position? **5**

ii) In some language, "EXAM" is coded as "FYBN". In the same language, how will we code "RESULT"? **2**

OR

B. i) Two cars start from the opposite places of a main road, 150 km apart. First car runs for 25 km and takes a right turn and then runs 15 km. It then turns left and then runs for another 25 km and then takes the direction back to reach the main road. In the mean time, due to minor break down the other car has run only 35 km along the main road. What would be the distance between two cars at this point? **5**

ii) If "LESD" is written as " @ $ & # ", "NAC" is written as " % ? * ", how "CANDLES" is coded in the same way? **2**

8.A.i) Abhishek is son of Amitabh's father's sister. Prakash is son of Teji who is mother of Vikash and grandmother of Amitabh. Harivansh is father of Neela and grandfather of Abhishek. Teji is wife of Harivansh. How is Abhishek related to Teji? **5**

   ii) One evening before sunset Rekha and Hema were talking to each other face to face. If Hema's shadow was exactly to the right of Hema, which direction was Rekha facing? **2**

<div align="center">OR</div>

B.i) In a family of 8 members, there are only two married couples and only married couples can have child. Shikha is the elder sister of Sahu, who is married to Siya. Salvi is the only daughter of Sumi, who is the nephew of Shikha. Sahil is the brother-in-law of Shri, who does not belong to the first generation. It is to be assumed that wife is younger than his husband. Siya is the grandmother of Sara. How is Sahil related to Shikha? **5**

ii) A boy rode his bicycle Northward, then turned left and rode 1 km and again turned left and rode 2 km. He found himself 1 km west of his starting point. How far did he ride northward initially? **2**

9.A.In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

  i) Speeding and blocking are traffic offences which lead to _____ accidents.(final,ignoble,great,gruesome) **3**

ii) You didn't do your homework, _____?(did you,has you,have not you,did they) **2**

iii) The robbers fell _____ amongst themselves over the sharing of the loot(out,through,off,across) **2**

<div align="center">OR</div>

B. In the following questions, out of the four alternatives, choose the synonym of the given word.

  i) FURTIVELY (Curiously, Stealthily, Delicately, Haphazardly) **3**

  ii) DAINTY (Carefree, Fraud, Prosperous, Delicate) **2**

  iii) Select the antonym of "MENDACITY"(dulcet, falsehood, honesty, curiosity) **2**
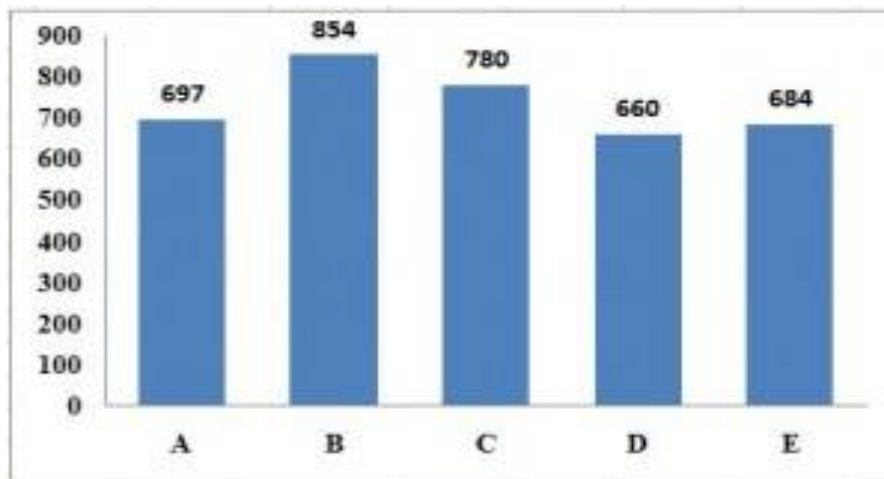
10.A. Read the following Data

Year	Profit/(-Loss) in Crores
2011	-25
2012	-20
2013	-5
2014	20
2015	-20

i) What was the total Profit or Loss of the Company over the five years? **4**

ii) The length and breadth of a room are 8 m and 6 m respectively. A cat runs along all the four walls and finally along a diagonal order to catch a rat. How much total distance is covered by the cat? **3**

<div align="center">OR</div>

B. Directions :Study the following graph and table carefully to answer the given questions.
Number of employees working in 5 different Companies

Ratio of Male and Female ratio		
Company	Male	Female
A	12	5
B	4	3
C	7	8
D	9	11
E	20	18

i. What is the total number of male employee in all the companies together ?   3

ii. What is the average number of female employee taking all the years together ?   2

iii. What is the ratio of male and female employee working in companies D and E together ?   2

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