ROLL NUMBER				

SET	A

INDIAN SCHOOL MUSCAT
HALF YEARLY EXAMINATION 2022
APPLIED MATHEMATICS (241)

CLASS : XI
DATE: 19-11-2022

TIME ALLOTED : 3 HRS.
MAXIMUM MARKS: 80

GENERAL INSTRUCTIONS:

1. This Question paper contains - **five sections** A, B, C, D and E. Each section is compulsory. However, there are internal choices in some questions.
2. **Section A** has 18 **MCQ's and 02** Assertion-Reason based questions of 1 mark each.
3. **Section B** has 5 **Very Short Answer (VSA)-type** questions of 2 marks each.
4. **Section C** has 6 **Short Answer (SA)-type** questions of 3 marks each.
5. **Section D** has 4 **Long Answer (LA)-type** questions of 5 marks each.
6. **Section E** has 3 **source based/case based/passage based/integrated units of assessment** (4 marks each) with sub parts.

SECTION A
(Multiple Choice Questions)
Each question carries 1 mark

1. Given two independent events A and B such that P(A) =0.3, P(B) = 0.6 and $P(A' \cap B')$ is
   (a) 0.9 (b) 0.18 (c) 0.28 (d) 0.1

2. If the perimeter of a circle is equal to that of a square, then the ratio of their areas is
   (a) 22 : 7 (b) 14 : 11 (c) 7 : 22 (d) 11: 14

3. Let R = {(a, a^3): a is a prime number less than 5} be a relation. Then the range of R is
   (a) {1,2,3} (b) {2, 3} (c) {1,8, 27} (d) {8, 27}

4. Which of the following statements are correct?
   (a) $0 \subset \{0, 1, 2\}$ (b) $0 \in \{\{0\}, 1, 2\}$ (c) $\{0\} \subset \{\{0\}, 1, 2\}$ (d) $\emptyset \subset \{\{0\}, 1,2\}$

5. Which of the following is the binary notation of 100?
   (a) 1010100 (b) 1100100 (c) 1100010 (d) 1010010

6. The value of $\left(5\frac{1}{16}\right)^{\frac{-3}{4}}$ is
   (a) $\frac{4}{9}$ (b) $\frac{9}{4}$ (c) $\frac{27}{8}$ (d) $\frac{8}{27}$

7. The value of log 45 + log 9 is:
(a) log 5 + log 81 (b) log 5 + log 27 (c) log 5 + log 243 (d) log 9 + 2 log 5

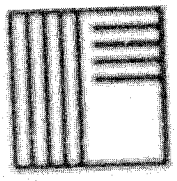
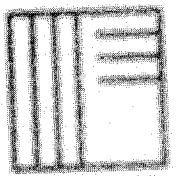
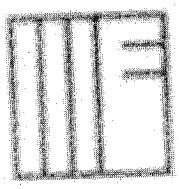
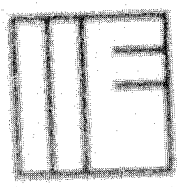
8. If 4th October 1986 was a Saturday, what would be the day on 4th October 1987?
(a) Saturday (b) Sunday (c) Friday (d) Monday

9. The angle between the two hands of a clock at 7:20 is:
(a) 120° (b) 110° (c) 100° (d) 90°

10. If MADAM is coded as *?#?* and DOOM is coded as #%%* then LAD will be coded as:
(a) &?# (b) ?*# (c) $#? (d) *?#

11. Meenakshi is Kriti's sister. Kaavya is Kriti's mother. Dipesh is Kaavya's father. Esha is Dipesh's mother. Then how is Meenakshi related to Dipesh?
(a) Grandfather (b) Grandmother (c) Daughter (d) Granddaughter

12. Find out the odd man from the figures given below:

a  b  c  d 

13. The product of 5 terms of a G.P. whose third term is 2 is:
(a) 5^2 (b) 2^5 (c) 3^2 (d) 3^5

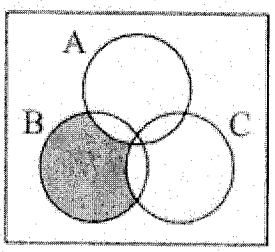
14. If the nth term of the sequence is defined as $a_n = \frac{2n-3}{6}$, then find the common difference.
(a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{1}{6}$ (d) $-\frac{1}{6}$

15. The simple interest on ₹600 @$3\frac{1}{2}$% p.a. for 5 years is
(a) ₹ 200 (b) ₹ 150 (c) ₹ 205 (d) ₹ 105

16. ITC stands for:
(a) Integrated Tax Credit (b) Income Tax Credit
(c) Input Tax Credit (d) Inverted Tax Credit

17. A card is drawn from a deck of 52 cards. The probability of getting a king or a heart or a red card is
(a) $\frac{11}{26}$ (b) $\frac{15}{26}$ (c) $\frac{4}{13}$ (d) $\frac{7}{13}$

18. The shaded region in the given figure is



(a) $B \cap (A \cup C)$ (b) $B - (A \cup C)$

(c) $B \cap (A - C)$ (d) $B \cup (A \cap C)$

ASSERTION-REASON BASED QUESTIONS

In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

19. Let R be a relation on the set N of natural numbers defined by
nRm $\Leftrightarrow n \; is \; a \; factor \; of \; m \; (i.e. n|m)$.
Assertion: R is not an equivalence relation
Reason: R is not symmetric

20. Let A = {1, 2, 3} and B = {3, 8}
Assertion: $(A \cup B) \times (A \cap B) = \{(1,3), (2,3), (3,3), (8,3)\}$
Reason: $(A \times B) \cap (B \times A) = \{(3,3)\}$

SECTION B

This section comprises of very short answer type-questions (VSA) of 2 marks each

21. (a) In a certain language, PAC is coded as 61. How will NEP be coded?

OR

(b) If GOMTI is coded as 74521 and YAMUNA is coded as 835963, then how is GANGA coded?

22. The following question has two statements and these are followed by two conclusions. Read the conclusions and then using venn diagram decide which of them logically follow from the two given statements, disregarding commonly known facts.
STATEMENTS: I. Some pictures are beds.
II. All beds are trees.
CONCLUSIONS: I. Some pictures are trees.
II. At least some trees are beds.

23. Suppose three bulbs are selected at random from a lot. Each bulb is selected and tested and classified as Deffective (D) or Non-Deffective (N). Write the sample space of this experiment.

24. Explain any two annuities on the basis of time of payment.

25. (a) In what time a sum of money will double itself at 4% p.a. simple Interest?

OR

(b) Find the compound amount on ₹1000 for 5 years at 5% p.a. if interest is payable annually.

$[(1.05)^5 = 1.276]$

SECTION C

This section comprises of short answer type questions (SA) of 3 marks each

26. (a) A committee of 7 has to be formed from 9 boys and 4 girls. In how many ways can this be done when committee consist of (i) At least 3 girls

(ii) At most 3 girls?

OR

(b) Find **n** if $P_3^{n-1} : P_3^{n+1} = 5:12$

27. (a) Simplify: $\dfrac{(32)^{\frac{2}{5}} \times 4^{\frac{-1}{2}} \times 8^{\frac{1}{3}}}{2^{-2} \div (64)^{\frac{-1}{3}}}$

OR

(b) If log (x + 5) + log (x – 5) = 4 log 2 + 2 log 3, find x.

28. A dealer in Mumbai sells a computer monitor to a customer in Mumbai at ₹ 8400. If the rate of GST is 18%, find (i) IGST

(ii) CGST

(iii) SGST

29. A credit card company charges 21% interest per year, compounded monthly. What effective annual interest rate does the company charge? $[(1.0175)^{12} = 1.2314]$

30. A bag contains 9 balls of which 4 are red, 3 are blue and 2 are yellow. The balls are similar in shape and size. A ball is drawn at random from the bag. Calculate the probability that it will be: (i) red

(ii) not blue

(iii) either red or blue

31. (a) A shopkeeper sells three types of seeds A1, A2 and A3. They are sold as a mixture where the proportions are 4 : 4 : 2 respectively. The germination rates of three types of seeds are 45%, 60% and 35%. Calculate the probability of a randomly chosen seed to germinate.

OR

(b) Assume that each born child is equally likely to be a boy or a girl. If a family has two children, what is the conditional probability that both are girls?

Given that (i) the youngest is a girl.

(ii) atleast one is a girl.

SECTION D

(This section comprises of long answer type questions (LA) of 5 marks each)

32. In a University, out of 100 students 15 offered Mathematics only, 12 offered Statistics only, 8 offered only Physics, 40 offered Physics and Mathematics, 20 offered Physics and Statistics, 10 offered Mathematics and Statistics and 65 offered Physics. By drawing a Venn Diagram, find the number of students who
(i) offered Mathematics
(ii) offered Statistics
(iii) did not offer any of the above three subjects.

33. (a) L, M, N, O, P, Q, R and S are sitting around a circular table facing the center but not necessarily in the same order. They all are having discussion on an important topic. N is an immediate neighbour of both L and R, who is an immediate neighbour of P. P sits second to the left of N. Only two persons sit between P and S. M is an immediate neighbour of O. Only one person sits between M and Q.
Show the seating arrangement for the above situation and answer the following questions:
(i) Who is the person sitting second to the left of the one who is on the immediate right of O?
(ii) Who is the person sitting between M and Q?
(iii) Who is the person sitting third to the right of the one who is opposite to N?
(iv) Who is the person sitting second to the right of S?

OR

(b) Evaluate the following using log tables:

$$(42.87)^{\frac{1}{2}} \times 84.9$$

34. (a) A consumer in North Delhi consumes 587 units of electricity in a month. He has the connection of 4KW. The Tariff plan of Delhi is given below:
Fixed Charges (in kW / month)

≤ 2 kW	2-5 kW	5 – 15 kW	15 – 25 kW	>25 kW
₹ 20/kW	₹ 50 /kW	₹ 100/ kW	₹ 200 /kW	₹ 250 / kW

Energy Charges (₹/ Unit)

No. of units	0 – 200	201 – 400	401- 800	801 – 1200	>1200
Price	₹3	₹ 4.5	₹ 6.5	₹ 7	₹ 8

If energy tax is 5% of tariff rates calculate the electricity bill of the consumer for that month if the surcharge is ₹0.40 per unit for that month.

OR

(b) During a financial year, the monthly salary of Mr. Rajdeep Varma is ₹85200 (HRA not included). He also gets ₹60,000 as bonus during the year. If ₹ 7500 is deducted each month from his salary as Income Tax, find the Income Tax payable in the last month by Mr. Rajdeep Varma as per the new Tax Regime.

For the financial year 2020-21 (Assesment year 2021-2022) rate of income tax is as under

Slab	Income Tax Rate	Health and Education Cess
Upto 2.5 Lakh	Nil	4%
2.5 - 5.0 Lakh	5% of amount by which taxable income exceeds Rs 2,50,000	
5.0 - 7.5 Lakh	Rs 12500 + 10% (taxable income 2,50,000)	4%
7.5 - 10 Lakh	Rs 37500 + 15% (taxable income 7,50,000)	4%
10 - 12.5 Lakh	Rs 75000 + 20% (taxable income 10,00,000)	4%
12.5 - 15 Lakh	Rs 1,25000+25% (taxable income 12,50,000)	4%
Above 15 Lakh	Rs 187500 + 30% (taxable income 15,00,000)	4%

35. Find the amount of an ordinary annuity if payment of ₹500 is made at the end of every quarter for 10 years at 8%p.a. compounded quarterly.

SECTION E

This section comprises of 3 case-study/passage-based questions of 4 marks each with two sub-parts. First two case study questions have three sub-parts (i), (ii), (iii) of marks 1, 1, 2 respectively. The third case study question has two sub-parts of 2 marks each.

36. **Case study 1:** Riya and her 5 friends went for a trip to Shimla. They stayed in a hotel. There were 4 vacant rooms A, B, C and D. Out of these 4 vacant rooms, two room A and B were double share rooms and two rooms C and D can contain one person each.

(i) Find the number of ways in which room A can be filled. 1

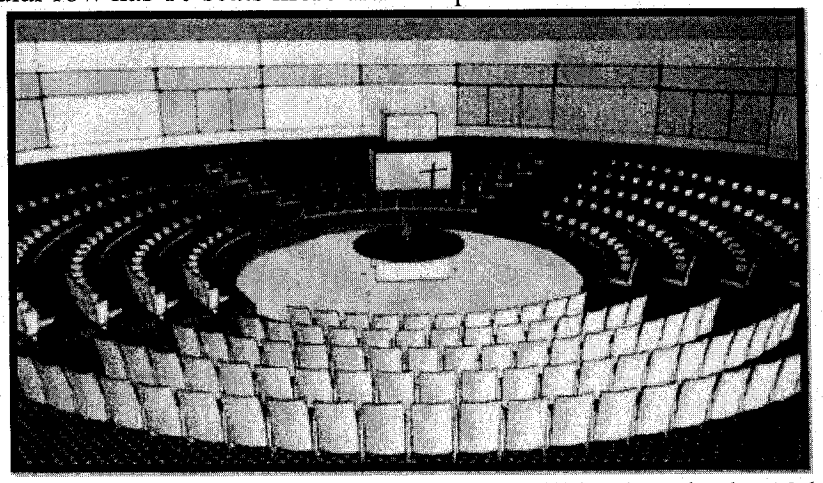
(ii) If room A and B are already filled each, then find the number of ways in which room C can be filled. 1

(iii) Find the total number of ways of accommodating Riya and her friends in these 4 vacant rooms . 2

OR

If room A is filled with 2 persons, then find the number in which rooms C and D can be filled.

37. **Case Study 2:** The school auditorium was to be constructed to accommodate at least 1500 people. The chairs are to be placed in concentric circular arrangement in such a way that each succeeding circular row has 10 seats more than the previous one.



(i) If the first circular row has 30 seats, how many seats will be there in the 10th row? 1

(ii) If there were 17 rows in the auditorium, how many seats will be there in the middle row? 1

(iii) For 1500 seats in the auditorium, how many rows need to be there? 2

OR

If 1500 seats are to be arranged in the auditorium, how many seats are still left to be put after 10th row?

38. **Case-Study** 3: An insurance company believes that people can be divided into two classes: those who are accident prone and those who are not. The company's statistics shows that an accident-prone person will have an accident at sometime within a fixed one-year period with probability 0.6, whereas this probability is 0.2 for a person who is not accident prone. The company knows that 20 percent of the population is accident prone.

Based on the given information, answer the following questions.

(i) What is the probability that a new policy holder will have an accident within a year of purchasing a policy? 2

(ii) Suppose that a new policy holder has an accident within a year of purchasing a policy. What is the probability that he or she is accident prone? 2

******END OF THE QUESTION PAPER******

ROLL NUMBER				

SET	B

INDIAN SCHOOL MUSCAT
HALF YEARLY EXAMINATION 2022
APPLIED MATHEMATICS (241)

CLASS : XI
DATE: 19-11-2022

TIME ALLOTED : 3 HRS.
MAXIMUM MARKS: 80

GENERAL INSTRUCTIONS:

1. This Question paper contains - **five sections** A, B, C, D and E. Each section is compulsory. However, there are internal choices in some questions.
2. **Section A** has 18 **MCQ's and 02** Assertion-Reason based questions of 1 mark each.
3. **Section B** has 5 **Very Short Answer (VSA)-type** questions of 2 marks each.
4. **Section C** has 6 **Short Answer (SA)-type** questions of 3 marks each.
5. **Section D** has 4 **Long Answer (LA)-type** questions of 5 marks each.
6. **Section E** has 3 **source based/case based/passage based/integrated units of assessment** (4 marks each) with sub parts.

SECTION A
(Multiple Choice Questions)
Each question carries 1 mark

1. Let R = {(a, a^3): a is a prime number less than 5} be a relation. Then the range of R is
(a) {1,2,3} (b) {2, 3} (c) {8, 27} (d) {1,8, 27}

2. Which of the following is the binary notation of 200?
(a) 10101000 (b) 11001000 (c) 11000100 (d) 10100100

3. The value of log 45 + log 9 is:
(a) log 5 + log 81 (b) log 5 + log 27 (c) log 5 + log 243 (d) log 9 + 2 log 5

4. If MADAM is coded as *?#?* and DOOM is coded as #%%* then LAD will be coded as:
(a) &?# (b) ?*# (c) $#? (d) *?#

5. If 29th November 1972 was a Wednesday, what would be the day on 29th November 1971?
(a) Wednesday (b) Thursday (c) Monday (d) Tuesday

6. A card is drawn from a deck of 52 cards. The probability of getting a king or a heart or a red card is
(a) $\frac{11}{26}$ (b) $\frac{15}{26}$ (c) $\frac{4}{13}$ (d) $\frac{7}{13}$

7. Which of the following statements are correct?
(a) $0 \subset \{0, 1, 2\}$ (b) $0 \in \{\{0\}, 1, 2\}$ (c) $\{0\} \subset \{\{0\}, 1, 2\}$ (d) $\emptyset \subset \{\{0\}, 1,2\}$

8. If the nth term of the sequence is defined as $a_n = \frac{2n-3}{6}$, then find the common difference.
(a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{1}{6}$ (d) $-\frac{1}{6}$

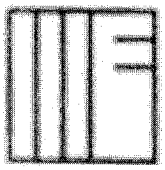
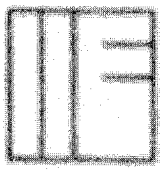
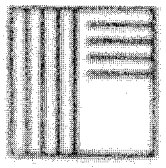
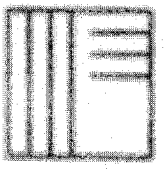
9. Given two independent events A and B such that P(A) =0.3, P(B) = 0.6 and $P(A' \cap B')$ is
(a) 0.9 (b) 0.18 (c) 0.28 (d) 0.1

10. ITC stands for:
(a) Integrated Tax Credit (b) Income Tax Credit
(c) Input Tax Credit (d) Inverted Tax Credit

11. The simple interest on ₹600 @$3\frac{1}{2}$% p.a. for 5 years is
(a) ₹ 200 (b) ₹ 150 (c) ₹ 205 (d) ₹ 105

12. The value of $\left(5\frac{1}{16}\right)^{\frac{-3}{4}}$ is
(a) $\frac{4}{9}$ (b) $\frac{8}{27}$ (c) $\frac{27}{8}$ (d) $\frac{9}{4}$

13. Find out the odd man from the figures given below:

a  b  c  d 

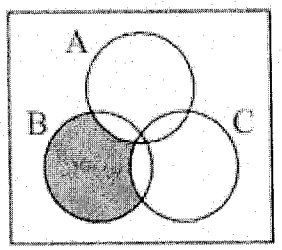
14. The angle between the two hands of a clock at 4:20 is:
(a) 20° (b) 10° (c) 15° (d) 25°

15. If the perimeter of a circle is equal to that of a square, then the ratio of their areas is
(a) 22 : 7 (b) 14 : 11 (c) 7 : 22 (d) 11: 14

16. The product of 5 terms of a G.P. whose third term is 2 is:
(a) 5^2 (b) 2^5 (c) 3^2 (d) 3^5

17. Meenakshi is Kriti's sister. Kaavya is Kriti's mother. Dipesh is Kaavya's father. Esha is Dipesh's mother. Then how is Meenakshi related to Dipesh?
(a) Grandfather (b) Grandmother (c) Daughter (d) Granddaughter

18. The shaded region in the given figure is



(a) $B-(A \cup C)$ (b) $B \cup (A \cap C)$
(c) $B \cap (A-C)$ (d) $B \cap (A \cup C)$

ASSERTION-REASON BASED QUESTIONS

In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

19. Let R be a relation on the set N of natural numbers defined by
nRm $\Leftrightarrow n\ is\ a\ factor\ of\ m\ (i.e. n|m)$.
Assertion: R is an equivalence relation
Reason: R is not symmetric

20. Let A = {1, 5, 7} and B = {7, 8}
Assertion: $(A \cup B) \times (A \cap B) = \{(1,7),(5,7),(7,7),(8,7)\}$
Reason: $(A \times B) \cap (B \times A) = \{(7,7)\}$

SECTION B

This section comprises of very short answer type-questions (VSA) of 2 marks each

21. The following question has two statements and these are followed by two conclusions. Read the conclusions and then using venn diagram decide which of them logically follow from the two given statements, disregarding commonly known facts.
STATEMENTS: I. Some actors are singers.
II. All the singers are dancers.
CONCLUSIONS: I. Some actors are dancers.
II. No singer is an actor.

22. (a) In what time a sum of money will double itself at 4% p.a. simple Interest?

OR

(b) Find the compound amount on ₹1000 for 5 years at 5% p.a. if interest is payable annually.
$[(1.05)^5 = 1.276]$

23. (a) In a certain language, PAC is coded as 61. How will NEP be coded?

OR

(b) If GOMTI is coded as 74521 and YAMUNA is coded as 835963, then how is GANGA coded?

24. A bag contains 4 identical red balls and 3 identical black balls. The experiment consists of drawing one ball, then putting it into the bag and again drawing a ball. Write the possible outcomes of this experiment.

25. Explain any two annuities on the basis of payment term.

SECTION C

This section comprises of short answer type questions (SA) of 3 marks each

26. A dealer in Mumbai sells a computer monitor to a customer in Mumbai at ₹ 8400. If the rate of GST is 18%, find (i) IGST
(ii) CGST
(iii) SGST

27. A credit card company charges 12% interest per year, compounded quarterly. What effective annual interest rate does the company charge? $[(1.03)^4 = 1.1255]$

28. (a) Assume that each born child is equally likely to be a boy or a girl. If a family has two children, what is the conditional probability that both are girls?
Given that (i) the youngest is a girl.
(ii) atleast one is a girl.

OR

(b) A shopkeeper sells three types of seeds A1, A2 and A3. They are sold as a mixture where the proportions are 4 : 4 : 2 respectively. The germination rates of three types of seeds are 45%, 60% and 35%. Calculate the probability of a randomly chosen seed to germinate.

29. (a) How many 3-digit numbers can be formed from the digits 1, 2, 4, 8 and 9 assuming that :
(i) Repetition of the digits is not allowed?
(ii) Repetition of the digits is allowed?

OR

(b) Find n if $\frac{n!}{2!(n-2)!} : \frac{n!}{4!(n-4)!} = 1:6$

30. A bag contains 9 balls of which 4 are red, 3 are blue and 2 are yellow. The balls are similar in shape and size. A ball is drawn at random from the bag. Calculate the probability that it will be: (i) blue
(ii) not red
(iii) either red or blue

31. (a) Simplify: $\frac{2^{-2} \div (64)^{\frac{-1}{3}}}{(32)^{\frac{2}{5}} \times 4^{\frac{-1}{2}} \times 8^{\frac{1}{3}}}$

OR

(b) If $\log (x + 5) + \log (x - 5) = 4 \log 2 + 2 \log 3$, find x.

SECTION D

(This section comprises of long answer type questions (LA) of 5 marks each)

32. L, M, N, O, P, Q, R and S are sitting around a circular table facing the center but not necessarily in the same order. They all are having discussion on an important topic. N is an immediate neighbour of both L and R, who is an immediate neighbour of P. P sits second to the left of N. Only two persons sit between P and S. M is an immediate neighbour of O. Only one person sits between M and Q.
Show the seating arrangement for the above situation and answer the following questions:
(i) Who is the person sitting second to the left of the one who is on the immediate right of O?
(ii) Who is the person sitting between M and Q?
(iii) Who is the person sitting third to the right of the one who is opposite to N?
(iv) Who is the person sitting second to the right of S?

OR

(b) Evaluate the following using log tables:

$$\sqrt{\frac{31.67 \times 42.36}{9.25}}$$

33. (a) A consumer in North Delhi consumes 587 units of electricity in a month. He has the connection of 4KW. The Tariff plan of Delhi is given below:
Fixed Charges (in kW / month)

≤ 2 kW	2-5 kW	5 – 15 kW	15 – 25 kW	>25 kW
₹ 20/kW	₹ 50 /kW	₹ 100/ kW	₹ 200 /kW	₹ 250 / kW

Energy Charges (₹ /Unit)

No. of units	0 – 200	201 – 400	401- 800	801 – 1200	>1200
Price	₹3	₹ 4.5	₹ 6.5	₹ 7	₹ 8

If energy tax is 5% of tariff rates then calculate the electricity bill of the consumer for that month if the surcharge is ₹0.40 per unit for that month.

OR

(b) During a financial year, the monthly salary of Mr. Rajdeep Varma is ₹85200 (HRA not included). He also gets ₹60,000 as bonus during the year. If ₹ 7500 is deducted each month from his salary as Income Tax, find the Income Tax payable in the last month by Mr. Rajdeep Varma as per the new Tax Regime.

For the financial year 2020-21 (Assesment year 2021-2022) rate of income tax is as under

Slab	Income Tax Rate	Health and Education Cess
Upto 2.5 Lakh	Nil	4%
2.5 - 5.0 Lakh	5% of amount by which taxable income exceeds Rs 2,50,000	
5.0 - 7.5 Lakh	Rs 12500 + 10% (taxable income 2,50,000)	4%
7.5 - 10 Lakh	Rs 37500 + 15% (taxable income 7,50,000)	4%
10 - 12.5 Lakh	Rs 75000 + 20% (taxable income 10,00,000)	4%
12.5 - 15 Lakh	Rs 1,25000+25% (taxable income 12,50,000)	4%
Above 15 Lakh	Rs 187500 + 30% (taxable income 15,00,000)	4%

34. In a University, out of 100 students 15 offered Sociology only, 12 offered Economics only, 8 offered only Mathematics, 40 offered Mathematics and Sociology, 20 offered Mathematics and Economics, 10 offered Sociology and Economics and 65 offered Mathematics. By drawing a Venn Diagram, find the number of students who
(i) offered Sociology (ii) offered Economics (iii) did not offer any of the above three subjects.

35. Find the amount of an ordinary annuity if payment of ₹500 is made at the end of every quarter for 10 years at 8%p.a. compounded quarterly.

SECTION E

This section comprises of 3 case-study/passage-based questions of 4 marks each with two sub-parts. First two case study questions have three sub-parts (i), (ii), (iii) of marks 1, 1, 2 respectively. The third case study question has two sub-parts of 2 marks each.

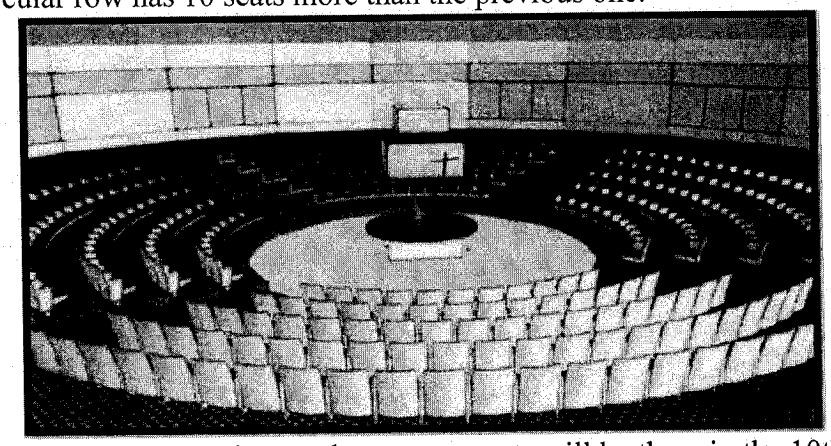
36. **Case study 1:** Riya and her 5 friends went for a trip to Shimla. They stayed in a hotel. There were 4 vacant rooms A, B, C and D. Out of these 4 vacant rooms, two room A and B were double share rooms and two rooms C and D can contain one person each.

(i) Find the number of ways in which room A can be filled. 1
(ii) If room A and B are already filled each, then find the number of ways in which room C can be filled. 1
(iii) Find the total number of ways of accommodating Riya and her friends in these 4 vacant rooms. 2

OR

(iii) If room A is filled with 2 persons, then find the number in which rooms C and D can be filled.

37. **Case Study 2:** The school auditorium was to be constructed to accommodate at least 1500 people. The chairs are to be placed in concentric circular arrangement in such a way that each succeeding circular row has 10 seats more than the previous one.



(i) If the first circular row has 30 seats, how many seats will be there in the 10th row?

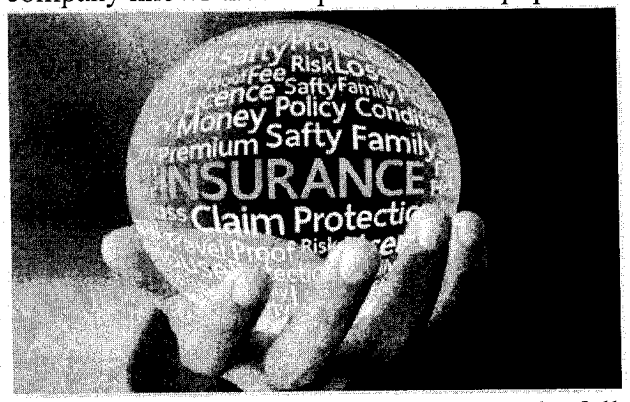
(ii) If there were 17 rows in the auditorium, how many seats will be there in the middle row? 1

(iii) For 1500 seats in the auditorium, how many rows need to be there? 1

OR

If 1500 seats are to be arranged in the auditorium, how many seats are still left to be put after 10th row? 2

38. **Case-Study 3**: An insurance company believes that people can be divided into two classes: those who are accident prone and those who are not. The company's statistics shows that an accident-prone person will have an accident at sometime within a fixed one-year period with probability 0.6, whereas this probability is 0.2 for a person who is not accident prone. The company knows that 20 percent of the population is accident prone.



Based on the given information, answer the following questions.

(i) What is the probability that a new policy holder will have an accident within a year of purchasing a policy? 2

(ii) Suppose that a new policy holder has an accident within a year of purchasing a policy. What is the probability that he or she is accident prone? 2

******END OF THE QUESTION PAPER******