GATE 2014: General Instructions during Examination

1. Total duration of the GATE examination is **180** minutes.
2. The clock will be set at the server. The countdown timer at the top right corner of screen will display the remaining time available for you to complete the examination. When the timer reaches zero, the examination will end by itself. You need not terminate the examination or submit your paper.
3. Any useful data required for your paper can be viewed by clicking on the **Useful Common Data** button that appears on the screen.
4. Use the scribble pad provided to you for any rough work. Submit the scribble pad at the end of the examination.
5. You are allowed to use a non-programmable type calculator, however, sharing of calculators is not allowed.
6. The Question Palette displayed on the right side of screen will show the status of each question using one of the following symbols:

1	You have not visited the question yet.
3	You have not answered the question.
5	You have answered the question.
7	You have NOT answered the question, but have marked the question for review.
9	You have answered the question, but marked it for review.

The **Marked for Review** status for a question simply indicates that you would like to look at that question again. *If a question is answered, but marked for review, then the answer will be considered for evaluation unless the status is modified by the candidate.*

Navigating to a Question :

7. To answer a question, do the following:
   a. Click on the question number in the Question Palette to go to that question directly.
   b. Select an answer for a multiple choice type question by clicking on the bubble placed before the 4 choices, namely A, B, C and D. Use the virtual numeric keypad to enter a number as answer for a numerical type question.
   c. Click on **Save & Next** to save your answer for the current question and then go to the next question.
   d. Click on **Mark for Review & Next** to save your answer for the current question and also mark it for review, and then go to the next question.

Caution: Note that your answer for the current question will not be saved, if you navigate to another question directly by clicking on a question number without saving the answer to the previous question.

You can view all the questions by clicking on the **Question Paper** button. This feature is provided, so that if you want you can just see the entire question paper at a glance.

Answering a Question :

8. Procedure for answering a multiple choice (MCQ) type question:
    a. Choose one answer from the 4 options (A,B,C,D) given below the question, click on the bubble placed before the chosen option.
    b. To deselect your chosen answer, click on the bubble of the chosen option again or click on the **Clear Response** button.
    c. To change your chosen answer, click on the bubble of another option.
    d. To save your answer, you MUST click on the **Save & Next** button.

9. Procedure for answering a numerical answer type question:
    a. To enter a number as your answer, use the virtual numerical keypad.
    b. A fraction (e.g. -0.3 or -.3) can be entered as an answer with or without '0' before the decimal point. As many as four decimal points, e.g. 12.5435 or 0.003 or -932.6711 or 12.82 can be entered.
    c. To clear your answer, click on the **Clear Response** button.
    d. To save your answer, you MUST click on the **Save & Next** button

10. To mark a question for review, click on the **Mark for Review & Next** button. *If an answer is selected (for MCQ) or entered (for numerical answer type) for a question that is* **Marked for Review**, *that answer will be considered in the evaluation unless the status is modified by the candidate.*

11. To change your answer to a question that has already been answered, first select that question for answering and then follow the procedure for answering that type of question.

12. Note that ONLY Questions for which answers are *saved* or *marked for review after answering* will be considered for evaluation.

Choosing a Section :

13. Sections in this question paper are displayed on the top bar of the screen. Questions in a Section can be viewed by clicking on the name of that Section. The Section you are currently viewing will be highlighted.

14. A checkbox is displayed for every optional Section, if any, in the Question Paper. To select the optional Section for answering, click on the checkbox for that Section.

15. If the checkbox for an optional Section is not selected, the **Save & Next** button and the **Mark for Review & Next** button will NOT be enabled for that Section. You will

only be able to see questions in this Section, but you will not be able to answer questions in the Section.

16. After clicking the **Save & Next** button for the last question in a Section, you will automatically be taken to the first question of the next Section in sequence.

17. You can move the mouse cursor over the name of a Section to view the answering status for that Section.

Changing the Optional Section :

18. After answering the chosen optional Section, partially or completely, you can change the optional Section by selecting the checkbox for a new Section that you want to attempt. A warning message will appear along with a table showing the number of questions answered in each of the previously chosen optional Sections and a checkbox against each of these Sections. Click on a checkbox against a Section that you want to reset and then click on the **RESET** button. Note that RESETTING a Section will DELETE all the answers for questions in that Section. Hence, if you think that you may want to select this Section again later, you will have to note down your answers for questions in that Section. If you do not want to reset the Section and want to continue answering the previously chosen optional Section, then click on the **BACK** button.

19. If you deselect the checkbox for an optional Section in the top bar, the following warning message will appear: "Deselecting the checkbox will DELETE all the answers for questions in this Section. Do you want to deselect this Section?" If you want to deselect, click on the **RESET** button. If you do not want to deselect, click on the **BACK** button.

20. You can shuffle between different Sections or change the optional Sections any number of times.

GATE 2014 Examination

TF: Textile Engineering & Fibre Science

Duration: **180 minutes**   *Maximum Marks*: **100**

Read the following instructions carefully.

1. To login, enter your Registration Number and password provided to you. Kindly go through the various symbols used in the test and understand their meaning before you start the examination.
2. Once you login and after the start of the examination, you can view all the questions in the question paper, by clicking on the **View All Questions** button in the screen.
3. This question paper consists of **2 sections**, General Aptitude (GA) for **15 marks** and the subject specific GATE paper for **85 marks**. Both these sections are compulsory.
   The GA section consists of **10** questions. Question numbers 1 to 5 are of 1-mark each, while question numbers 6 to 10 are of 2-mark each.
   The subject specific GATE paper section consists of **55** questions, out of which question numbers 1 to 25 are of 1-mark each, while question numbers 26 to 55 are of 2-mark each.
4. Depending upon the GATE paper, there may be useful common data that may be required for answering the questions. If the paper has such useful data, the same can be viewed by clicking on the **Useful Common Data** button that appears at the top, right hand side of the screen.
5. The computer allotted to you at the examination center runs specialized software that permits only one answer to be selected for multiple-choice questions using a mouse and to enter a suitable number for the numerical answer type questions using the virtual keyboard and mouse.
6. Your answers shall be updated and saved on a server periodically and also at the end of the examination. The examination will **stop automatically** at the end of **180 minutes**.
7. In each paper a candidate can answer a total of 65 questions carrying 100 marks.
8. The question paper may consist of questions of **multiple choice type** (MCQ) and **numerical answer type**.
9. Multiple choice type questions will have four choices against A, B, C, D, out of which only **ONE** is the correct answer. The candidate has to choose the correct answer by clicking on the bubble (◯) placed before the choice.
10. For numerical answer type questions, each question will have a numerical answer and there will not be any choices**. For these questions, the answer should be entered** by using the virtual keyboard that appears on the monitor and the mouse.
11. All questions that are not attempted will result in zero marks. However, wrong answers for multiple choice type questions (MCQ) will result in **NEGATIVE** marks. For all MCQ questions a wrong answer will result in deduction of ⅓ marks for a 1-mark question and ⅔ marks for a 2-mark question.
12. There is **NO NEGATIVE MARKING** for questions of **NUMERICAL ANSWER TYPE**.
13. Non-programmable type Calculator is allowed. Charts, graph sheets, and mathematical tables are **NOT** allowed in the Examination Hall. You must use the Scribble pad provided to you at the examination centre for all your rough work. The Scribble Pad has to be returned at the end of the examination.

Declaration by the candidate:

"I have read and understood all the above instructions. I have also read and understood clearly the instructions given on the admit card and shall follow the same. I also understand that in case I am found to violate any of these instructions, my candidature is liable to be cancelled. I also confirm that at the start of the examination all the computer hardware allotted to me are in proper working condition".

Q. 1 – Q. 5 carry one mark each.

Q.1   Choose the most appropriate word from the options given below to complete the following sentence.

A person suffering from Alzheimer's disease _____ short-term memory loss.

(A) experienced   (B) has experienced
(C) is experiencing   (D) experiences

Q.2   Choose the most appropriate word from the options given below to complete the following sentence.

_____ is the key to their happiness; they are satisfied with what they have.

(A) Contentment   (B) Ambition   (C) Perseverance   (D) Hunger

Q.3   Which of the following options is the closest in meaning to the sentence below?

"As a woman, I have no country."

(A) Women have no country.
(B) Women are not citizens of any country.
(C) Women's solidarity knows no national boundaries.
(D) Women of all countries have equal legal rights.

Q.4   In any given year, the probability of an earthquake greater than Magnitude 6 occurring in the Garhwal Himalayas is 0.04. The average time between successive occurrences of such earthquakes is ____ years.

Q.5   The population of a new city is 5 million and is growing at 20% annually. How many years would it take to double at this growth rate?

(A) 3-4 years   (B) 4-5 years   (C) 5-6 years   (D) 6-7 years

Q. 6 – Q. 10 carry two marks each.

Q.6   In a group of four children, Som is younger to Riaz. Shiv is elder to Ansu. Ansu is youngest in the group. Which of the following statements is/are required to find the eldest child in the group?
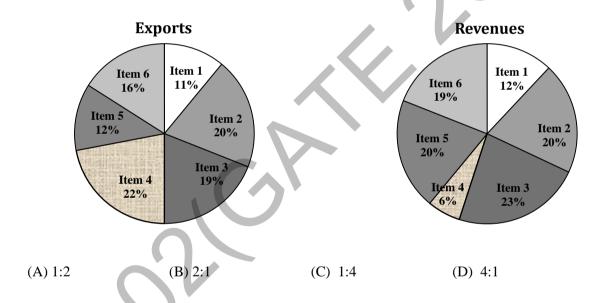   **Statements**
                1.   Shiv is younger to Riaz.
                2.   Shiv is elder to Som.

(A) Statement 1by itself determines the eldest child.
(B) Statement 2 by itself determines the eldest child.
(C) Statements 1 and 2 are both required to determine the eldest child.
(D) Statements 1 and 2 are not sufficient to determine the eldest child.

Q.7   Moving into a world of big data will require us to change our thinking about the merits of exactitude. To apply the conventional mindset of measurement to the digital, connected world of the twenty-first century is to miss a crucial point. As mentioned earlier, the obsession with exactness is an artefact of the information-deprived analog era. When data was sparse, every data point was critical, and thus great care was taken to avoid letting any point bias the analysis.
From "BIG DATA" Viktor Mayer-Schonberger and Kenneth Cukier

The <u>main</u> point of the paragraph is:

(A) The twenty-first century is a digital world
(B) Big data is obsessed with exactness
(C) Exactitude is not critical in dealing with big data
(D) Sparse data leads to a bias in the analysis

Q.8   The total exports and revenues from the exports of a country are given in the two pie charts below. The pie chart for exports shows the quantity of each item as a percentage of the total quantity of exports. The pie chart for the revenues shows the percentage of the total revenue generated through export of each item. The total quantity of exports of all the items is 5 lakh tonnes and the total revenues are 250 crore rupees. What is the ratio of the revenue generated through export of Item 1 per kilogram to the revenue generated through export of Item 4 per kilogram?

Exports   **Revenues**

(A) 1:2   (B) 2:1   (C) 1:4   (D) 4:1

Q.9   X is 1 km northeast of Y. Y is 1 km southeast of Z. W is 1 km west of Z. P is 1 km south of W. Q is 1 km east of P. What is the distance between X and Q in km?

(A) 1   (B) $\sqrt{2}$ (C) $\sqrt{3}$ (D) 2

Q.10   10% of the population in a town is HIV$^+$. A new diagnostic kit for HIV detection is available; this kit correctly identifies HIV$^+$ individuals 95% of the time, and HIV$^-$ individuals 89% of the time. A particular patient is tested using this kit and is found to be positive. The probability that the individual is actually positive is _____

END OF THE QUESTION PAPER

Q. 1 – Q. 25 carry one mark each.

Q.1   The range of values of x satisfying the inequality $x^2 - 3x + 2 < 0$ is

(A) $x < 0$ (B) $0 < x < 1$ (C) $1 < x < 2$ (D) cannot be determined

Q.2   A very large tank contains 10 liters of pure water. Salt solution (20 g/l) is pumped into the tank at 2 liter per minute. The salt concentration in g/l in the tank after a very long time will be

(A) 5   (B) 10   (C) 20   (D) 40

Q.3   The inverse Laplace transform of $\dfrac{2}{s^2 + 2s} + \dfrac{s}{s^2 + 4s + 4}$ is

(A) $1 - 2te^{-2t}$ (B) $1 - e^{-2t} + 2te^{-2t}$
(C) $1 - 2e^{-2t} + 2te^{-2t}$ (D) $e^{-2t} + 2te^{-2t}$

Q.4   The probability of obtaining a total of 5 in two throws of a dice is

(A) $\dfrac{1}{6}$ (B) $\dfrac{1}{9}$ (C) $\dfrac{1}{12}$ (D) $\dfrac{1}{18}$

Q.5   Medulla is associated with

(A) Cotton   (B) Silk   (C) Wool   (D) Nylon

Q.6   A good fibre forming polymer should **NOT** have

(A) Linear polymeric chain
(B) Branched polymeric chain
(C) High DP
(D) High inter-molecular interaction

Q.7   The DP of viscose fibre is approximately

(A) 25000   (B) 2500   (C) 250   (D) 25

Q.8   A synthetic yarn is stretched by 5% and kept in the extended condition. With time, the registered stress will

(A) Increase linearly
(B) Decrease linearly
(C) Increase exponentially
(D) Decrease exponentially

Q.9   In a cotton card, the wire point density on

(A) Cylinder is lesser than that on flat
(B) Doffer is greater than that on cylinder
(C) Cylinder is greater than that on flat
(D) Flat is greater than that on doffer

Q.10   In a drawframe with 3 over 3 drafting system, the roller most prone to slip is

(A) Middle top roller
(B) Front top roller
(C) Back top roller
(D) Front bottom roller

Q.11   Fibre parallelization in drawn sliver improves with

(A) Increase in draft
(B) Increase in doubling
(C) Decrease in roller setting
(D) Increase in roller pressure

Q.12   The combing force increases with

(A) Decrease in mass/unit length of lap
(B) Decrease in pre-combing draft
(C) Decrease in needles/cm on half lap
(D) Decrease in nips per minute

Q.13   Pirn winding is an essential preparatory process for weaving on

(A) Air-jet loom
(B) Water-jet loom
(C) Rapier loom
(D) Drop-box loom

Q.14   Double acting dobby is driven from

(A) Bottom shaft
(B) Crank shaft
(C) Tappet shaft
(D) Rocking shaft

Q.15   In air-jet loom

(A) All the relay nozzles start jetting at the same time
(B) Each relay nozzle has separate jetting time
(C) Relay nozzles of a group start jetting at the same time
(D) Main and relay nozzles have same jetting time

Q.16   If the diameter of a torsion rod used in projectile loom is doubled then the torque required to twist it would increase by

(A) 2 times   (B) 4 times   (C) 8 times   (D) 16 times

Q.17   In a sizing process, if add-on is 12.8% and paste concentration is 16%, the value of wet pick-up (%) would be

(A) 16   (B) 50   (C) 80   (D) 200

Q.18   The fibre parameter that **CANNOT** be obtained from Baer sorter diagram is

(A) Mean length   (B) Effective length
(C) Span length   (D) Modal length

Q.19   A 25 tex cotton yarn has a twist factor of 30. The yarn twist, in turns per cm, is

(A) 4   (B) 5   (C) 6   (D) 7

Q.20   With an increase in gauge length, the tenacity of a spun yarn would

(A) Increase   (B) Decrease
(C) Remain the same   (D) First increase and then decrease

Q.21   Sodium chlorite bleaching of cotton is carried out in the temperature range of

(A) 95-110 $^{\circ}$C   (B) 80-85 $^{\circ}$C   (C) 50-60 $^{\circ}$C   (D) 30-40 $^{\circ}$C

Q.22   K/S ratio is related to reflectance (R) as

(A) K/S = $(1-R^2)$ / 2R   (B) K/S = $(1+R^2)$ / 2R
(C) K/S = (1-R) / 2R   (D) K/S = $(1-R)^2$ / 2R

Q.23   A print paste **CANNOT** be prepared without

(A) Colourant   (B) Thickener
(C) Dispersing agent   (D) Carrier

Q.24   In the Limiting Oxygen Index (LOI) test, the sample is kept in

(A) Horizontal position and burnt from the left side
(B) Inclined position and burnt from the bottom
(C) Vertical position and burnt from the top
(D) Vertical position and burnt from the bottom

Q.25   A fabric was dyed in acidic medium. If the dye could be stripped out in strong aqueous alkaline
solution at room temperature, the dye-fibre combination is

(A) Direct dye - Cotton   (B) Acid dye - Wool
(C) Vat dye - Cotton   (D) Disperse dye - Polyester

Q. 26 – Q. 55 carry two marks each.

Q.26
Of the two eigen values of the matrix $\begin{bmatrix} 1 & 2 \\ 4 & 3 \end{bmatrix}$

(A) One is positive, one is negative   (B) Both are positive
(C) Both are negative   (D) Both form a complex conjugate

Q.27   The 51st common term of the two arithmetic sequences 15, 19, 23 ...... and 14, 19, 24 ......, is ......

Q.28
The integrating factor for solving the differential equation $\dfrac{dy}{dx}\cos(x) + y\sin(x) = 2\cos^3(x)$ is

(A) sin(x)   (B) cos(x)   (C) tan(x)   (D) sec(x)

Q.29   X is a continuous random variable whose probability density function is given by

$$f(x) = \begin{cases} K(4x - 2x^2) & for\ 0 < x < 2 \\ 0 & otherwise \end{cases}$$

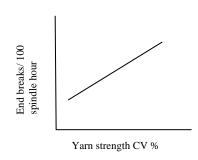The value of the constant K, accurate to three decimal places, is......

Q.30 $\int_0^2 e^x dx$ is evaluated both by Trapezoidal rule and Simpson's $\frac{1}{3}$ rule by taking two subintervals.

The difference between the results, accurate to the second decimal place, is ......
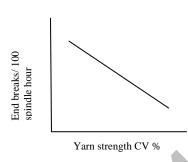
Q.31   Consider the following assertion **[a]** and reason **[r]** and choose the most appropriate answer.
        [a] The apparent blend ratio of polyester / viscose fabric would increase as a result of drying
        [r] The moisture content of viscose is significantly higher than that of polyester

(A) **[a]** is right **[r]** is wrong
(B) **[a]** is right **[r]** is right
(C) **[a]** is wrong **[r]** is wrong
(D) **[a]** is wrong **[r]** is right

Q.32   Consider the following assertion **[a]** and reason **[r]** and choose the most appropriate answer.
        [a] In the case of condensation polymerization of PET, diethylene glycol terephthalate (DGT) is prepared first
        [r] In condensation polymerization, it is important to have a correct stoichiometric balance of comonomers

(A) **[a]** is right **[r]** is wrong
(B) **[a]** is right **[r]** is right
(C) **[a]** is wrong **[r]** is wrong
(D) **[a]** is wrong **[r]** is right

Q.33   A polypropylene yarn, melt spun at a throughput rate of W (g/s) and winding speed of S (m/min), was drawn to a draw ratio of D. The denier of this yarn is a function of W, S, D and a constant K. The value of K, accurate to the nearest integer, is............

Q.34   Consider the following assertion **[a]** and reason **[r]** and choose the most appropriate answer.
        [a] Cut and crush method for tow to top conversion uses cutting roller with embedded helical blade
        [r] This helps to impart crimp in the cut fibres

(A) **[a]** is right **[r]** is wrong
(B) **[a]** is right **[r]** is right
(C) **[a]** is wrong **[r]** is wrong
(D) **[a]** is wrong **[r]** is right

Q.35   Consider the following assertion **[a]** and reason **[r]** and choose the most appropriate answer.
        [a] Before SEM analysis of carbon fibre, it is sputter coated with gold or silver
        [r] This is done because the carbon fibre is electrically insulating

(A) **[a]** is right **[r]** is wrong
(B) **[a]** is right **[r]** is right
(C) **[a]** is wrong **[r]** is wrong
(D) **[a]** is wrong **[r]** is right

Q.36   A cleaning unit in a blowroom is processing cotton at 600 kg/h. The waste generated is 2%. The lint to trash ratio is 60:40. The lint (in kg) accumulated in 8 hours, accurate to one decimal place, will be ......

Q.37   The twist contraction factor of a filament yarn is 1.06. For producing 5 ton twisted yarn of 50 tex, the untwisted yarn length required, in km, accurate to the nearest integer, is ......

Q.38   For producing a coarse count yarn from short staple trashy cotton sliver, the most suitable rotor is

(A) Large diameter rotor with narrow groove
(B) Large diameter rotor with wide groove
(C) Small diameter rotor with narrow groove
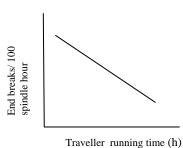(D) Small diameter rotor with wide groove

Q.39   Consider the following figures. Choose the alternative that represents the correct relation
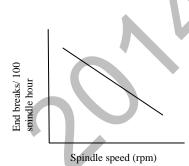
(A)

(B)

(C)

(D)

Q.40   The surface helix angle of a fibre in a yarn of 0.3 mm diameter is 30°. Assuming ideal helix geometry, the helix angle (in degrees), of a fibre situated at 0.1 mm from the yarn axis, accurate to one decimal place, will be ......

Q.41   Higher value of stitch cam setting in a weft knitting machine would

(A) Increase the loop length and decrease the fabric areal density
(B) Increase the loop length and increase the fabric areal density
(C) Decrease the loop length and decrease the fabric areal density
(D) Decrease the loop length and increase the fabric areal density

Q.42   A shuttle loom producing 3 up 1 down twill fabric is running at 180 picks per minute. The angular velocity of the tappet (cam) shaft in radian per second, accurate to two decimal places, would be ......

Q.43   A yarn is passing over a multiplicative tensioner with an angle of wrap of 90°. If the input yarn tension is 100 cN and coefficient of friction between yarn and tensioner is 0.2, then the output yarn tension in N, accurate to two decimal place, would be ......

Q.44   During beat-up, possibility of bumping increases if

(A) Warp tension is low and cloth fell displacement is low
(B) Warp tension is low and cloth fell displacement is high
(C) Warp tension is high and cloth fell displacement is low
(D) Warp tension is high and cloth fell displacement is high

Q.45   A needle-punched nonwoven fabric has 2 mm thickness and 400 g/m^2 areal density. If the fibre density is 0.9 g/cm^3, the volume porosity (%) of the fabric, accurate to the nearest integer, will be ......

Q.46   For a square plain fabric, crimp in one set of yarns would be completely removed without jamming, if the ratio of modular length (*l*) to the sum of the yarn diameters (*D*) is

(A) Between $\pi/8$ and $\pi/6$
(B) Between $\pi/6$ and $\pi/4$
(C) Between $\pi/4$ and $\pi/2$
(D) Greater than $\pi/2$

Q.47   The breaking load of a 300 mtex fibre is 110 mN. If the density of the fibre is 1.24 g/cm^3, breaking stress in kN/cm^2, accurate to one decimal place, will be ......

Q.48   A 60.5 tex yarn with an unevenness CV of 10% is produced from 0.5 tex polyester fibre. The index of irregularity of the yarn, accurate to one decimal place, will be ......

Q.49   The vibroscope method for determination of fibre fineness does **NOT** take into account

(A) Length of specimen   (B) Natural frequency of specimen
(C) Tension in specimen   (D) Tensile strength of specimen

Q.50   In the context of Kawabata Evaluation System, match the fabric properties from **Group I** with the units from **Group II.**

	Group I		**Group II**
P	Tensile energy	1	gf . cm^2 / cm
Q	Linearity of load-elongation curve	2	percentage
R	Bending rigidity	3	gf . cm / cm^2
S	Compressional resilience	4	dimensionless

(A) P-3, Q-4, R-1, S-2   (B) P-3, Q-1, R-4, S-2
(C) P-2, Q-4, R-1, S-3   (D) P-1, Q-4, R-3, S-2

Q.51   The Barium Activity Number (BAN) was determined using the standard procedure. For this, 30 ml of 0.25N Ba(OH)$_2$ solution was used, in each of the three titrations, i.e. (a) blank titration, (b) back titration where mercerized fabric sample was immersed and (c) back titration where unmercerized fabric sample was immersed in Ba(OH)$_2$ solution. If the volume (ml) of 0.1N HCl consumed was 10, 1 and 4.5 respectively, the BAN of the mercerized sample, accurate to one decimal place, is ....

Q.52   Scoured and bleached cotton fabric was dyed with reactive dye under the following conditions:
         Temperature of dyeing: 40 ^{o}C
         Shade: 3%
         Fixation efficiency: 65%
If the rate of hydrolysis of dye is known to be 5% more for every 10 ^{o}C rise in dyeing temperature, the amount of dye fixed on cotton (g of dye / kg of fibre), if dyed at 50 ^{o}C, accurate to one decimal place, would be......

Q.53   Consider the following assertion **[a]** and reason **[r]** and choose the most appropriate answer.
       [a] In a roller printing machine, the doctor blade is closely set over the printing roller
       [r] This is to remove the lint collected on the roller

(A) **[a]** is right, **[r]** is wrong
(B) **[a]** is right, **[r]** is right
(C) **[a]** is wrong, **[r]** is wrong
(D) **[a]** is wrong, **[r]** is right

Q.54   A cotton fabric is finished with DMDHEU. As a result, its

(A) Tensile strength decreases, abrasion resistance increases, stiffness decreases
(B) Tensile strength decreases, abrasion resistance decreases, stiffness decreases
(C) Tensile strength decreases, abrasion resistance decreases, stiffness increases
(D) Tensile strength increases, abrasion resistance increases, stiffness decreases

Q.55   During burning, a flame retardant does **NOT**

(A) Increase heat absorption   (B) Reduce supply of oxygen
(C) Increase char content   (D) Lower glass transition temperature (Tg)

END OF THE QUESTION PAPER

GATE 2014
Answer Keys for TF - Textile Engineering and Fibre Science

Section	Q. No.	Key / Range	Marks	Section	Q. No.	Key / Range	Marks
GA	1	D	1	TF	24	C	1
GA	2	A	1	TF	25	B	1
GA	3	C	1	TF	26	A	2
GA	4	25 to 25	1	TF	27	1019 to 1019	2
GA	5	A	1	TF	28	D	2
GA	6	A	2	TF	29	0.374 to 0.376	2
GA	7	C	2	TF	30	0.47 to 0.51	2
GA	8	D	2	TF	31	B	2
GA	9	C	2	TF	32	B	2
GA	10	0.48 to 0.49	2	TF	33	540000 to 540000	2
TF	1	C	1	TF	34	A	2
TF	2	C	1	TF	35	C	2
TF	3	A	1	TF	36	57.5 to 57.7	2
TF	4	B	1	TF	37	106000 to 106000	2
TF	5	C	1	TF	38	B	2
TF	6	B	1	TF	39	A	2
TF	7	C	1	TF	40	10.7 to 11.1	2
TF	8	D	1	TF	41	A	2
TF	9	C	1	TF	42	4.67 to 4.74	2
TF	10	A	1	TF	43	1.35 to 1.39	2
TF	11	A	1	TF	44	B	2
TF	12	B	1	TF	45	78 to 78	2
TF	13	D	1	TF	46	D	2
TF	14	A	1	TF	47	45 to 46	2
TF	15	C	1	TF	48	1.1 to 1.1	2
TF	16	D	1	TF	49	D	2
TF	17	C	1	TF	50	A	2
TF	18	C	1	TF	51	163 to 164	2
TF	19	C	1	TF	52	18.4 to 18.6	2
TF	20	B	1	TF	53	A	2
TF	21	B	1	TF	54	C	2
TF	22	D	1	TF	55	D	2
TF	23	B	1				